MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
LAKE AND LAND MANAGEMENT TWC

SCE&G Training Center
May 26, 2006

Final ACG 7-5-06

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Tommy Boozer, SCE&G
David Hancock, SCE&G
Ron Ahle, SCDNR
Steve Bell, LW
Roy Parker, LMA
Bill Argentieri, SCE&G
Tony Bebber, SCPRT
Rhett Bickley – Lexington County
Van Hoffman – SCE&G
Amanda Hill, USFWS
Dick Christie, SCDNR

DATE: May 26, 2006

HOMEWORK ITEMS:

- Develop Erosion Evaluation Form – Tommy Boozer and David Hancock

DATE OF NEXT MEETING: **June 15, 2006 at 9:30 a.m.**
Located at the Lake Murray Training Center

INTRODUCTIONS AND DISCUSSION

Alan Stuart opened the meeting and welcomed the group. He noted that the first item would be to discuss the edits to the bank stabilization criteria. David Hancock and Tommy Boozer explained that they would like that a permit be obtained from the Corps for any riprapping projects exceeding 1000 feet in length. There was some discussion on this issue. Ron Ahle made the suggestion that the homeowner be required to obtain a permit for riprapping exceeding 500 feet or have the option of bioengineering the bank for any lengths above 500 feet in lieu of obtaining the permit. Ahle also noted that it was an opportunity to encourage people to employ bioengineering techniques. Stuart asked, in the past few years, how many applications exceeding 500 feet are typically received by SCE&G. Tommy Boozer replied that there had only been a few. After continued discussion on this issue, the group decided to proceed with Ron Ahle's presentation on bioengineering before a decision was made.

Ahle began the presentation and noted that the purpose was to provide education on the various bioengineering techniques that are available. He noted that a goal would be to provide stabilization along with a vegetated shoreline and wildlife habitat. He explained that it was important to educate the public that there are other ways to stabilize the shoreline naturally. He noted that an education program could also inform people on where bioengineering supplies would be available and who was able to do the work.

After Ahle presented a few examples of bank erosion, Roy Parker noted that he had observed, on Bomb Island, that although there is vegetation and trees it continues to severely erode. Ahle noted that he would address this later in his presentation.

Ahle began his presentation with a discussion on live stakings and noted that they were the most appropriate for areas in the backs of coves. He explained that one important thing with live staking is that the downside of the staking has a sharp point and is at or below normal pool elevation. Ahle pointed out that the easiest and cheapest method for live staking is to use live cuttings. He also noted in his presentation that the homeowner could have the work done costing in the ranges of $1.50 to $3.50 a stake. Ahle explained that this method was applicable for escarpments that are less than 1 foot. Steve Bell asked if an individual has an escarpment that is less than one foot, would it be best to cut it out or fill it in. Ahle replied that it should probably be sloped back.

The next method of bioengineering that Ahle discussed was the installation of a Bio-log, with vegetation planted behind and around. Ahle noted that this method would not prevent the homeowner from being able to see the lake. Ahle explained that less desirable species would need to be weeded out when they began to come in. Ahle also explained that the plants used would be perennials. Dick Christie asked Ahle if the lake went down for a few years if some of the vegetation was drought hardy. Van Hoffman replied that it may have to be watered and Ahle also noted that he believed that you would still be able to maintain a good protected bank with vegetation during a drought.

There was some discussion on the bioengineering method of Contour Wattleing. Hancock expressed concern because many times in performing this bioengineering method the trees have to be taken out 40 to 50 feet back. Boozer also noted that he was concerned that if the bioengineering was made too difficult, many people are not going to want to do it. Ahle explained that Contour Wattleing was probably not the most recommended method for bioengineering.

Parker pointed out that there are some individuals who like the look of riprap. Ahle noted that if people become used to seeing the natural shoreline they many begin to like that better. Rhett Bickley noted that the increased vegetation would also benefit water quality that may be an

incentive to some. Ahle explained that he believed that one important key is that options are available to allow the homeowner to choose what is best for them.

Ahle went on to explain a few more options for bioengineering. Ahle discussed live facine but noted that it was probably not the best solution for the private property owner. He noted that brush layering was another option for steeper slopes. He explained that with this method notches are cut into the slope at angles. Ahle began to describe Brush Mattresses that are secured with wire lacing and grow thick. Ahle noted that one of the drawbacks of this method is that it tends to be very expensive.

Ahle noted that vegetated rip rap is another option for bioengineering. He explained that some plants that might grow well among riprap are swamp mallow and hibiscus. Ahle pointed out that vegetated rip-rap may be a transition if an individual is insistent on riprap.

The group went on to discuss what could be done on severely eroded banks. Ahle explained that the bioengineering technique for this circumstance is a vegetated gabion wall which uses rock baskets with plantings. He noted that a similar vegetated gabion mattress is used for a less steep slope. Hancock pointed out that one drawback to a gabion was that the Lake may eventually break it up. Ahle also explained a vegetated crib wall to the group. He concluded his presentation by explaining what is called A-Jacks, interlocking structures that allow plants to grow in between.

Amanda Hill noted that on different slopes that different methodologies worked better. She noted that it would be helpful to show the slope calculations along with the best associated bank stabilization techniques. Ahle noted that one helpful thing that SCE&G could do to promote bioengineering was to buy Bio-logs wholesale and provide them wholesale to homeowners.

The group began to discuss the options for bioengineering and Boozer explained to the group that typically, individuals who buy a piece of property cannot do everything at one time financially. He continued to note that they typically do it in phases, get the boat dock first, then look into stabilization at a later date. Hill added that when the individuals do come to SCE&G for a boat dock, that is when SCE&G should give them a consultation on options available for the future, in terms of stabilization and such. Stuart suggested having a pamphlet on bank stabilization available in those circumstances. Boozer also suggested using areas in the public parks to give examples of bioengineering. Ahle and Hill agreed that that would be a good idea. Ahle added that the cabins in front of Dreher Island would be a good place to set up one of the examples.

The group then began to discuss the topic of receiving a Corps permit for 1000 ft of rip-rap or the suggested 500 feet of rip rap. Boozer suggested that if the riprap request was over 500 feet then it should be reviewed by the USFWS and SCDNR. Ahle and Hill agreed. Boozer also noted that they

would take the first shot at the development of an Erosion Evaluation Form that would be included in the SCE&G application packet. Hill noted that instead of having a box in the application form that asks if the homeowner is interested in riprap, to have a box that asks if the homeowner is interested in bank stabilization, under which the different forms of stabilization could be listed, including bioengineering.

After lunch the group began their discussion on limbing and Hancock gave a presentation to the group that he had prepared on this topic. In his presentation, Hancock proposed that trees may be limbed if they have a minimum DBH of 6" and a minimum height of 20'. He noted in his proposal that an individual can only limb up to 8' in height. Hancock further noted that they would not allow the limbing of willow trees, only pine, oak, sweet gum, and maple. Christie noted that without the proper knowledge and tools, DBH may be difficult for the average person to decipher. Christie went on to suggest that circumference be listed as well, in parenthesis. The group agreed to the limbing proposal and concluded the meeting. It was noted that at the next meeting the group would discuss excavations and Hancock passed out the excavation packet for review prior to the meeting. The next meeting date was set for June 15th at 9:30 at the Lake Murray Training Center.

Shoreline Stabilization Memo edits attached below:

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: Straw-man for Shoreline Stabilization Criteria

Criteria for Shoreline Stabilization Permits [*Provide good diagrams*]

All shoreline stabilization efforts must be approved by SCE&G Lake Management prior to implementation and/or construction.

Develop slope criteria matrix similar to what Ron provided at May 26 TWC.

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Provide a description or definition of bioengineering

Include an erosion evaluation form in the application package (SCE&G will develop this)

1) Since every possible situation cannot be anticipated, SCE&G Lake Management reserves the right to make special rulings in cases not specifically covered by these guidelines.

2) Adjoining property owners should be aware that conducting all shoreline stabilization activities at a federally licensed hydroelectric project (e.g., Saluda Hydroelectric Project, FERC Project No. P-516) is a privilege that can only be granted with authorization from the Licensee. No riprapping, seawalls, or retaining walls may be constructed, replaced, repaired, or added to without a permit from SCE&G. Furthermore, there are some areas of the lake where facilities may not be permitted because of environmental considerations, development patterns, physical lake characteristics, impacts to cultural resources, or other reasons.

3) New or expanding stabilization activities (excluding bio-engineering) may not be undertaken within a 50 feet offset from an Environmentally Sensitive Area (ESA) classification identified in the Shoreline Management Plan (SMP). All shoreline stabilization activities affecting ESA will be assessed on a case-by-case basis.

4) The applicant must be the owner of the tract of land immediately adjoining the high water mark (360-foot elevation), or SCE&G-owned buffer zone or have the written permission of the easement property owner on water rights tracts (i.e. SCE&G only has a flowage easement). SCE&G Lake Management will hold the applicant fully responsible for ongoing adherence with the current SMP (*including maintaining structures in good repair*). This responsibility transfers automatically along with ownership.

5) All shoreline stabilization activities must comply with all local, state, and federal regulations, if applicable. Prior to beginning any activity/construction within the high water mark (360-foot elevation), the applicant must obtain all necessary governmental permits or approvals, and written authorization from SCE&G Lake Management, *especially for any stabilization activities associated with native aquatic plants. Stop sentence here such as water willow beds.*

6) Consultation with SCDNR and USFWS will be required for stabilization that exceeds 500 linear feet of shoreline. Additionally, the South Carolina Department of Health and Environmental Control (SCDHEC) may require an individual permit for large shoreline stabilization projects.
7) In order to protect aquatic resources shoreline stabilization activities shall typically be performed when water elevation is below work area. When water elevation is above the work area,

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critical/emergency shoreline stabilization activities may be performed in the inundated work area during the months of July through February. The applicant should make every reasonable effort to minimize any adverse impact on fish, wildlife, shoreline vegetation and other natural resources.

8) Riprap material must be SCDOT Class B or larger quarry-run stone, natural stone, or other material approved by SCE&G. Tires, scrap metal, crushed block, construction/demolition debris or other types of material are not allowed for stabilization.

9) Minimal clearing below the high water mark (360-foot elevation) is allowed to create corridors for equipment access for stabilization projects. Access corridors should be incorporated into permanent pier/dock access corridors (i.e. foot paths) where practical. Vegetation removed to accommodate construction access for shoreline stabilization shall be replaced with native vegetation.

10) Applicants are encouraged to avoid activities (including stabilization) that could have an adverse impact upon existing native aquatic plants. Bio-engineering is a preferred shoreline stabilization technique and is encouraged especially in eroded areas associated with emergent aquatic vegetation. Shoreline stabilization activities are limited to the eroded bank. Any unavoidable impacts to existing emergent aquatic vegetation, as a result of stabilization installation, require replanting vegetation in the impacted area(s). Rip rap installed below the high water mark (360-foot elevation) in vegetated areas must be limited to one layer deep to allow spaces between the stone for vegetation recruitment.

11) The type of plantings utilized in bioengineering and landscape-planting projects should be native to South Carolina, and must be reviewed and approved by SCE&G Lake Management prior to introduction.

12) Approved bioengineering techniques are always the preferred method for shoreline stabilization. However, approved bioengineering techniques are generally required for eroded banks of two feet or less of erosional scarp. Approved bioengineering and/or vegetated riprap techniques are preferred for eroded banks exceeding two feet of erosional scarp. (Figure for examples of acceptable bioengineering and vegetated rip-rap techniques).

13) Riprap use should be limited to only that area necessary to adequately stabilize the existing eroded bank. Riprap should be confined to the area between 6 feet below the high water mark (360 foot elevation) and high water mark (360 foot elevation) except where the entire placement is on above severely eroded banks. These areas must be sloped back or terraced to provide minimum bank stability.

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14) Stabilization of eroded banks that are 2 feet in height or higher or that are not associated with emergent aquatic vegetation can be stabilized using S C D O T Class B or larger size riprap with filter cloth, bio-engineering using significant live staking and planting, or other forms of bio-engineering within the riprap.

15) Retaining walls are only allowed for erosion control where the average eroded bank height is greater than 3 feet and the wall is constructed at the high water mark (360-foot elevation). Earth fills below the high water mark (360-foot elevation) are prohibited.

16) A layer of riprap (SCDOT Class B or larger) extending 6 feet lake-ward from full pond must be placed along the entire base of all retaining walls. The 6-foot requirement is measured vertically for steep slopes and horizontally for more gradual slopes where the vertical requirement would prove impractical.

Consequences for Violations

1. SCE&G Lake Management representatives will issue Stop Work Directives for any violations that are detected within the high water mark (360 foot elevation) of Lake Murray. Consequences for violations will include one or more of the following:

   - Unwanted delays.
   - Suspension or cancellation of approved shoreline stabilization permit.
   - Modification or removal of non-complying structures and restoration of disturbed areas at the owner's expense.
   - Cancellation of all current shoreline permits and loss of consideration for future shoreline permits

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