Midlands Striper Club

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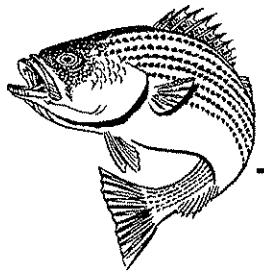

March 12, 2008

Mr. James M. Landreth
Vice President
Fossil and Hydro Operations
South Carolina Electric & Gas Company
111 Research Drive
Columbia, S.C. 29203

Attn: Bill Argentieri

SUBJECT: Comments on Draft Application
Saluda Hydroelectric Project
FERC Project 516

Dear Mr. Argentieri:

The Midlands Striper Club, the largest striped bass fishing club in South Carolina, has participated as a shareholder throughout the Saluda Hydroelectric Project relicensing process. The primary mission of the club is to promote striped bass fishing and to assist the South Carolina Department of Natural Resources to provide a healthy striped bass fishery in Lake Murray. Members of the club have served on the Water Quality and Fish and Wildlife Resource Groups and Technical Working Committees and the club has been represented at all quarterly meetings during the relicensing process.

During the past three years, we have been pleased with the efforts to study all areas in which Lake Murray impacts the midlands of South Carolina. Of particular interest is the level of effort to study the summer striped bass die offs that have occurred in the past in the forebay of Lake Murray. Members of our club have reviewed and evaluated presentations and reports developed by Kleinschmidt Associates and Reservoir Environmental Management (REM) concerning water quality and its impact on fish habitat in the lake. The issues presented in these reports have been discussed at several club meetings.

The consensus opinion of the membership of the Midlands Striper Club is that the recommendations presented in the Conclusion Section of the December 2007 Draft Report on the Application of the W2 Model for Lake Murray be adopted for inclusion in the new license requirements (Copy Enclosed). We believe these recommendations have been developed using historic data from the Lake Murray Reservoir system and experience from other systems throughout the United States. The recommendation for periodic drawdowns of the lake during the winter as recommended by REM has been discussed with fisheries biologists with the South Carolina Department of Natural Resources who are familiar with the Lake Murray system and they believe the proposed drawdowns are beneficial for improving water quality and fish habitats in Lake Murray.

In addition to the recommendations discussed above, we believe additional studies should be

conducted to identify sources of pollution from tributaries to Lake Murray and to develop recommendations for reducing or eliminating these sources of pollution. This study could be used by local groups including the Lake Murray Association, Lake Watch, Midlands Striper Club, etc. to encourage the South Carolina Department of Health and Environmental Control (SCDHEC) to establish TMDL's for these tributaries to eliminate or reduce the sources of pollution. Based on the REM study, the reduction of pollutants such as phosphorus and nitrogen from the tributaries is critical for the long term improvement of water quality and fish habitat in the Lake Murray Reservoir System.

Thank you for the opportunity to comment on the Draft License Application and we look forward to continuing our involvement in this most important relicensing process.

Respectfully submitted,

Harold B. Alewine Jr.

Harold Alewine
President
Midlands Striper Club, Inc.

Enclosure

DRAFT REPORT - DECEMBER 2007 - APPLICATION OF THE WZ MODEL FOR LAKE MURRAY.

6. Conclusions

- Nutrients loads to Lake Murray are the dominant factor, the relative quantities and/or control of which can and do have the greatest impact on striped bass habitat.
- High inflow and outflows, especially during March-June, are a primary cause for fish kills.
- Higher outflows cause the bottom of the lake to warm, and low DO levels are associated with this warmer water.
- While flow is a dominant factor, it cannot be controlled in a manner effectively to avoid fish kills
- Meteorological conditions can affect striper habitat, but cannot be used to drive operating policies
- Model results indicate that the temperature and DO ranges of tolerable striper habitat in Lake Murray are approximately: $T < 27\ ^{\circ}C$ and $DO > 2.5$ mg/l
- Model results show that a preferential use of Unit 5 would help to preserve cooler bottom water, resulting in improved DO and increased striper habitat in some years
- Maintaining the target summer (May – August) pool level at 358 either increases or has no effect on striped bass habitat. Of the eight years modeled, there was noticeable improvement in the volume of striped bass habitat in four years. The other four years showed either slight improvement or no change. One of the years that showed no change was 2005, which stands to reason since in 2005 the pool level was held up until September 1.
- The combination of Unit 5 preferential operations and maintaining the target summer (May – August) pool level at 358 can further increase striped bass habitat. Of the eight years modeled, there was noticeable improvement in the volume of striped bass habitat in three years. The other five years showed either slight improvement or no change.
- The combination of Unit 5 preferential operations and maintaining the target summer (May – August) pool level at 358 can improve water quality in the releases.

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There was noticeable improvement in temperature in the releases in five of the eight years that were modeled.

- Unit 5 operations after August or September do not affect striped bass habitat.
- The following protocol for unit operations was developed: for minimum flows, use units 1, 3, or 4 June 15 thru Dec 1 and U5 for Dec 1 to June 15. For generation flows (i.e., flows > minimum flow), use Unit 5 preferentially for 11 months of the year: November 1 until October 1 of the following year, and use Units 1-4 preferentially in October.

- These results of using the proposed unit operations protocol showed the following:
    1. Temperature in the releases was improved for all years, compared to other unit operational procedures. The temperature at the 5 to 20% levels of exceedence frequency was usually cooler, and at the 80% levels of exceedence frequency was usually warmer. This characteristic for temperature exposure for fish is best for trout fish growth rates. The maximum temperatures for the proposed protocol were usually about the same as the next-best alternatives for this consideration, but temperature results for near-maximum levels was much better for the proposed protocol.
    2. The proposed protocol for turbine unit operations for minimum flows and generation flows had very little or no effect on striped bass habitat enhancements achieved previously by increasing summer pool levels and using Unit 5 preferentially for 1991, 1992, 1996, 2000, 2001, and 2005. For 1997 and 1998, striped bass habitat was marginally impacted by the proposed protocol for turbine unit operations and the impacts were considerably less than the improvements provided by the higher summer pool level and Unit 5 preferential operations in the months preceding June 15.
- Regarding the assessment of setting the minimum winter pool level at elevation 354', under summer conditions it appears that two-thirds of the phosphorus in the water column was caused by internal phosphorus cycling. This finding indicates

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that the phosphorus cycling in Little Saluda embayment is sensitive to organic matter that is formed and settles to the bottom sediments in the embayment. It is also interesting to note for the case where phosphorus loads are reduced to zero that chlorophyll a is reduced for the early part of the summer but not for the latter part of the summer.

- There is a potential for the internal cycling of phosphorus in the Little Saluda embayment to impact SCDHEC's TMDL considerations on the Little Saluda River embayment.
- Other parts of the lake are likely to be impacted by raising the minimum pool level to elevation 354:
    1. Sediments and suspended solids that enter the lake from tributaries, and they settle and accumulate near the inflow region to the lake. Dropping the pool level periodically on a regular basis causes these sediments to be resuspended and redeposited to deeper locations in the lake where they do little harm.
    2. Dropping the pool level also causes aquatic plants to be killed or "die back" by freezing conditions. Exposure of plants to dry and freezing conditions causes plants to be reduced. This process is likely controlling weeds in Lake Murray to some extent, especially in the Little Saluda embayment.
    3. Raising the pool level causes sediments to accumulate where aquatic weeds can grow and take root. After they establish roots, the plants cause even more sediment to accumulate. Once such sediment complexes get established, normal periodic scouring action (i.e., scouring flows every few years like every other year or annually) is not sufficient to re-suspend these sediments. So in some ways this is practically an irreversible impact.
    4. The phenomena of sediment accumulation in reservoirs at their inflow areas is a complex process dependent on many factors: watershed size, land uses in watershed, hydrology of watershed, types of soil, frequency of high runoff, location within/without channel (velocity,

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erosion is important), and minimum pool level. The frequency/duration of minimum pool level occurring increases opportunity for sediment to be moved to lower depths of the lake and avoid build up that is difficult to be moved.

- Regarding considerations for developing a policy for winter minimum pool levels, based on data for 1980 through 2007, the winter pool level was down to about 350 ± 2' about half the time. It would be best to maintain this frequency of drawing the lake down to this level each year or risk poorer water quality (sediment accumulation, weeds, increased nutrient cycling from the sediments especially in embayments, and greater potential TMDL designation by DHEC that could lead to very expensive sediment treatments) compared to current conditions.
- Maintaining the frequency of drawing the lake down to 350' for an average of every two years should not be difficult based on historical inflows and pool level data as well as taking advantage of using November flows to predict the years when Jan-Apr flows would likely be sufficient.
- One interesting observation is that it appears that the minimum winter pool level has very little to do with attaining and maintaining a target summer pool level at elevation 358 ± 1'. It appears that it is the lack of sufficient inflows during the summer period that causes the pool elevation to drop like it did in 2007 as well as in other years with low flows.
- The months with highest average flows are Jan-April (i.e., the flow for these four months averages 77% greater flow than for the other months of the year), and based on data from 1927-2007 (81 years), only 9 years had what appeared to be "challenging" low flows that might prevent the lake from being filled to 358'; however, for the years where pool level data were available (1980-2007) there was only 1 year when the 358 ± 1' was not attained: 2006. During 1980-2007, there were 8 years with "challenging" low flows available to fill the pool to 358 ± 1', but 2006 was the only year that this goal was not attained.
- Based on data from 1927-2007, when Nov mean flows were 1200 cfs or greater at Chappells (see Figure 5-11), the Jan-Apr flows were sufficient to safely attain the 358 ± 1' goal. The Nov mean flow of 1200 cfs was equaled or exceeded for 41 of

the 81 years of record. Using this approach, the pool level in the winter could be dropped to 350' on an average frequency of every 2 years. Considering these 41 years, 3 of the years had "challenging" low flows that might prevent the lake from being filled to 358 but 2 of these years occurred during the period 1980-2007 when pool level data were available and in both of these years the 358 ± 1' goal was attained.

- Although there is more likelihood of having greater flows for the period Jan-Apr when flows are high for the previous Nov, the consequence of dropping the winter pool elevation to 350 every year and not attaining the 358 ± 1' goal is not great: the estimated maximum number of years when the goal would not be attained is about 1 in 10 years, but based on experience between 1980 and 2007 it would likely be closer to 1 in 25-50 years. Again, when the summer pool drops after the 358 ± 1' goal is attained, it is because of low summer inflows, minimum flow provision, and high evaporation.

7. References

Cole, T. M. and D. H. Tillman (2001); "Water Quality Modeling of Allatoona and West Point Reservoirs Using CE-QUAL-W2;" US Army Engineer Research and Development Center Environmental Laboratory; Vicksburg, Mississippi; July.

Crance, J. H. 1984. Habitat suitability index models and instream flow suitability curves: Inland stocks of striped bass. U. S. Fish Wildl. Serv. FWS/OBS-82/10.85.

Schaffler, J. J., J. J. Isely, and W. E. Hayes. 2002. Habitat use by striped bass in relation to seasonal changes in water quality in a southern reservoir. Transactions of the American Fisheries Society 131: 817-827.

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