

## APPENDIX J

### Peer Review Comments and the Response

## **Reviewer 1**

Comment: You need to highlight the findings in a way that is easy to read and understand.

Response: We disagree. We reviewed our outline and the logical sequence of findings etc. Other reviewers found the report easy to follow and understand.

Comment: The descriptions through section 3 were excessive and sounded like project justification.

Response: We believe it is important to detail the approach and sampling strategy for the purpose of "fully" informing our primary client, the state monitoring and 305b coordinators, who generally are unfamiliar with the probability-based sampling design approach.

Comment: There are too many wholesale citations of SOPs which make the document difficult to stand on its own merits.

Response: We disagree. We only referred to SOPs in conjunction with field and laboratory efforts. The document is more sound when SOPs are used because the methods are based on a wealth of experience and quality control checks.

Comment: Lake Embayments - It would be helpful to estimate what you found and follow that with a discussion and interpretation section. It is hard to follow as written, but it might be a start on a scientific publication.

Response: We have no intent of publishing the lake study results in a scientific publication. We don't think the results will add anything new to science.

Comment: A lot of the figures were hard to read or missing or needed to be redrawn.

Response: Good Point. The figures were enlarged and put at the end of their respective sections.

Comment You need somewhere near the front to say what all the appendices deal with so that there is some understanding of the bulk.

Response: The titles in the table of contents and at the beginning of each appendix sufficiently describes the contents.

Comment: Important figures and tables in the appendices need to be pulled up into the main body of the report so the reader can get the message much more concisely and see what is being presented.

Response: We agree. Some tables were summarized and brought forward.

Comment: I would like to see if elevation or stream order plots of the data show the same trends as ecoregions. I am not convinced due to the disproportionate sample site distribution in the Lower Piedmont that this is the best way to parse the data. Other analytical approaches don't appear to have been explored.

Response: Our original intent was to examine the Basin as a whole (see appendices H and I). The "trend spatially" in the report is very subjective and based on few data points in some ecoregions. We noticed that there seems to be a "trend," but a new sampling design and strategy would have to be used to confirm our observations. Ecoregions provide a necessary spatial framework for monitoring ecological resources. Ecoregions represent areas of relative homogeneity. The 1991 Science Advisory Board's evaluation of the ecoregion concept said, " that the ecoregions not only provide a valuable framework for monitoring and assessment, but also provide a geographic context for defining biological criteria. Stream order and/or elevations could encompass several ecoregions.

## **Reviewer 2**

Comment: The only substantive comment relates to recommendations for future studies. Add some more data for some of the ecoregions.

Response: We agree and there will be an opportunity in the summer of 1999 when SESD initiates the Regional REMAP study.

Comment: Add major streams to figure 1.2.

Response: We disagree. It would clutter up the figure which is intended to show the lakes that potentially could be sampled under our large lake criteria. The description in the text is sufficient.

Comment: In one place of section 5.1.1, the authors say 15 ug/L of chlorophyll A is satisfactory, but they imply that 57 ug/L of chlorophyll A when it is derived from 5 mg

dryweight/L of AGP.

Response: The 15 ug/L is a growing season average based on intensive sampling of small lakes in Georgia, South Carolina, and North Carolina. The 57 ug/L is instantaneous and based on standing crop potential under optimum conditions. Since it is potential growth, a higher number derived in a laboratory setting is appropriate to initiate further investigation into a potential problem.

### **Reviewer 3**

Comment: Overall, I think you have done an outstanding job summarizing the methods and results. The LPEI looks like a reasonable way to holistically portray the ecological information. I also like the way you answered the initial questions/objectives at the end.

Response: None.

Comment: When possible, future statistical studies should be designed to incorporate sufficient sites in each ecoregion to allow inferences to be drawn for each of the ecoregions of interest.

Response: The EMAP is designed to address ecoregion sampling. We focused at the basin scale because ecoregional sampling would have required more sampling and time. Additionally, ecoregions in the basin were not well defined at the beginning of sampling. The states of South Carolina and Georgia are in the midst of defining ecoregion boundaries and determining reference sampling sites. We and the states are in agreement with respect to the Lower Piedmont Ecoregion Boundaries.

Comment: Identification of reference areas may include subjectively selected sites if least impacted areas are under represented by the statistical sample in an ecoregion.

Response: We agree.

Comment: Further investigation of landscape/instream relationships is encouraged to build on the correlations documented here. Development of such relationships has considerable potential as a screening tool to identify potentially impaired sites.

Response: We agree. We plan to look at these relationships in an upcoming regional REMAP survey of wadeable streams.

**Reviewer 4**

Comment: Related to clarification and better sentence structure.

Response: Agreed with comments and expanded some sections to better explain findings.

Comment: I have concerns about the development of the LPEI and its use of the LPEI on the same data set used to develop it. Usually an index or criterion is developed on a reference set of data collected across the entire range of the target population and then applied to independent data. This data set only represents a part of the Lower Piedmont Ecoregion, and it may not capture the total range of any of the component metrics. It is truly only a Savannah Basin Lower Piedmont Index.

Response: We agree. We had not looked at the entire range (across the Lower Piedmont Ecoregion) for the individual metrics used. We only focused on the Savannah Basin. We corrected the LPEI in the text to SB-LPEI (Savannah Basin-Lower Piedmont Ecological Index). We will have an opportunity to test the index's power across many ecoregions within the Regional REMAP study beginning in the summer of 1999.

Comment: I think the appendix about locating probability sites on maps and in the field, and obtaining access permission will be very useful to us. That is exactly the stage we are at in establishing our probability network.

Response: We agree and think it is state of the art.

Comment: We have had a workshop on integration of judgement data with probability data and adequately answered state concerns. At that workshop, we were presented with some theoretical approaches for integrating data, but weren't given any procedures to use. The workshop addressed state concerns, but it didn't provide us with tools to accomplish integration. It did help illustrate the beneficial uses of probability-based designs in answering 305b and other resource-wide condition questions, and demonstrated the limitations of judgement-based designs in addressing those same questions. I think you have overstated the accomplishments of that workshop.

Response: The statement concerning the workshop was changed to reflect the reviewer's viewpoint. The follow up report in Appendix G addresses the question of merging judgement and probability data more fully.

Comment: The three-project lake system is authorized and operated...by the Corps of Engineers...for fish...etc. You mentioned who operates the other lakes, but failed to mention the COE on these major lakes.

Response: Correction noted and made by authors.

## **Review 6**

Comment: We recognize the potential usefulness of probability sampling in our river basin sampling rotation and statewide monitoring.

Response: None

Comment: We are concerned that the results of the present report will prove difficult to fit into our 305b/303d listing process. That is, the "good," "fair," and "poor" evaluations may not provide a good fit with the 305b categories of support, partially support, and not support. For example, will fair mean partially support? The real concern is that we will probably have to take these results and fit them into 305b even though that has not been the primary purpose of the study.

Response: We agree that the primary purpose of the study was to demonstrate the feasibility of using the EMAP probability sampling approach for monitoring purposes. We believe the information gathered is amenable for inclusion into a 305b report and will work with the state on this concern.