February 28, 2007

Ms. Terri Marceron
Supervisor
Lake Tahoe Basin Management Unit
United States Forest Service
35 College Drive
South Lake Tahoe, CA 96150

RE: TSC review of the SNPLMA Round 8 Lake Tahoe capital project proposals

Dear Ms. Marceron,

The Tahoe Science Consortium (TSC) has completed its review of the SNPLMA Round 8 Lake Tahoe capital project proposals. The TSC comments are both programmatic and specific in nature. These review comments are based on individual reviews by Committee of Scientist members, and on information received in the February 16, 2007 meeting with Lake Tahoe Basin Executive representatives and capital project sponsors.

Direction for this review comes from the charge on pages 33 (figure 3) and 34 of the June 7, 2006 SNPLMA Implementation agreement, which state:

"TSC reviews capital projects for adaptive management and monitoring opportunities."

"4. Science and Research Considerations (i.e., Adaptive Management).

a. Anticipated environmental threshold benefits of the proposed projects.
b. Likelihood of contributing to achievement of environmental thresholds.
c. Anticipated impacts of the proposed projects on environmental improvements.
d. Certainty of the impacts of the proposed projects.
e. Risk to the environment from unintended impacts or failure of the proposed projects.
f. Applicability of project monitoring to adaptive management guidelines."

We recognized that the TSC would not be able to fulfill this review charge given the scope and breadth of information provided in the capital project proposals. Over the course of three meetings between TSC and LTBEC representatives, we mutually agreed to focus this review on monitoring and the opportunities to gain additional information through implementation of the proposed Round 8 capital

projects. We also mutually agreed to consider ways in which the SNPLMA Implementation Agreement "Science and Research Considerations" review charge could be amended to correct the imbalance between the review charge and the information provided in the project proposals.

The TSC believes two fundamental information needs create the prerequisite for SNPLMA capital project monitoring:

1. Quantitative assessments are needed to demonstrate the degree to which the SNPLMA capital projects contribute to attaining or sustaining the environmental thresholds. Every project proposal lists the environmental thresholds it is expected to benefit. This creates the expectation that project sponsors will develop the information to describe the effects of these projects at spatial scales (e.g., project, watershed, or Basin-wide) of relevance to Tahoe Basin thresholds.
2. The second motivation relates to adaptive management: research, monitoring and analysis are needed to generate information that will allow project sponsors to learn from the implementation of past projects and apply that knowledge to the design and implementation of future projects.

The TSC believes the obligation to obtain and apply this kind of information comes attached to the funding.

Many of the capital projects in the Round 8 list are not at the point of development where monitoring details or a monitoring plan are available. The TSC understands the reasons for this. However, the TSC believes that even in the absence of project specific monitoring details, the sponsoring agencies can commit to a consistent, programmatic approach for obtaining the kinds of information to address the fundamental information needs listed above.

The TSC recognizes the real need for project specific/compliance monitoring, and it is clear this kind of monitoring is occurring. Indeed, more than $2.3 million of Round 8 capital project funding is proposed to support this type of monitoring for USFS projects alone. However, the kind of monitoring needed to understand the effects of restoration actions at multiple spatial scales requires the development and implementation of monitoring efforts that are consistently applied to groups of projects such as the BMP retrofit projects, stream restoration projects, or forest health projects. We do not believe this means every project needs to be monitored, but it does mean three things are needed:

- Clear identification of the program-level questions we want to answer.
- Design and implementation of consistent sampling approaches across groups of projects.
- Establishment of the infrastructure for timely analysis and reporting.

During our February 16th meeting, Phil Brozek stated that we all agree better monitoring is needed; the challenge is progressing from a programmatic concept to specific, on-the-ground implementation. The TSC understands that

implementing this kind of approach across all SNPLMA program areas is an enormous task. In fact, some progress has already occurred. The 5-year monitoring plan now being developed by USFS/LTBMU staff is a critical component to developing a program-level approach to monitoring. Further, the Tahoe Yellow Cress Conservation Strategy provides a useful model for how project implementation, applied research, and monitoring can all proceed in an integrated and synergistic fashion. Based on this review, the TSC suggests initial efforts to develop and implement program-level monitoring should focus on: 1) the forest health (i.e., forest fuel reduction) projects; and 2) the water quality improvement/BMP retrofit projects.

The TSC believes forest health is a top management issue in the Tahoe Basin, because of the magnitude and extent of excessive forest fuels, and because it is an issue that cuts across the important concerns of terrestrial habitat quality, wildlife diversity and sustainability, Lake clarity, air quality, and safety. During our February 16th meeting, USFS staff stated they have the tools and data to assess how fuel reduction projects affect fire regime and wildfire probability. However, data and information is lacking that would allow us to understand how these projects might affect some cross-cutting concerns such as air quality or wildlife sustainability. These are program-level information needs, and the TSC sees a real opportunity to address these information needs with consistently designed and implemented project-level monitoring. During our February 16th meeting, we identified a series of steps that should be pursued, including: 1) review and synthesize existing information on the effects of fuels treatment projects; 2) develop conceptual models to describe how we think fuels treatment projects affect habitats and processes, identify points of management concern, and describe where uncertainties and information gaps exist; and 3) develop approaches (e.g., research, monitoring, or modeling) to address the uncertainties and information gaps. Pursuing these steps could also help to address some of the existing obstacles to completing fuel reduction projects. Dave Marlow (management agency representative) and Peter Stine (science community representative) agreed to work together to begin pursuing these steps.

Water quality improvement/BMP retrofit projects are also an important capital program area because of their direct potential benefit to Lake Tahoe clarity. Currently, much of the monitoring data is qualitative in nature (e.g., visual surveys), but there is interest in developing information that could be considered in the context of the Lake Tahoe TMDL. In addition, USFS staff would like to obtain data that could be used to estimate effects through the WEPP model. These are also program-level information needs, and the TSC sees a real opportunity to address these information needs with consistently designed and implemented project-level monitoring. Thus, the TSC suggests pursuing an approach similar to that described above for forest fuels, with the aim of developing a program-level monitoring program.

Development of these program-level monitoring programs should occur as a collaborative effort between management agency and science community

representatives. To that end, the TSC is prepared to commit $75,000 of its SNPLMA Round 6 grant budget to fund TSC and science community participation in this effort. The TSC hopes the management agencies would commit funding to provide the appropriate commitment of staff involvement to ensure a truly collaborative effort can occur. This level of funding should be sufficient to develop detailed program level monitoring frameworks for both program areas identified above. Such frameworks would serve as the foundations for the development of more detailed monitoring plans (plans that include the what, when, where, and how). These frameworks also would provide the basis for initiation of discussions to determine the amount and sources of funding needed to carry out the monitoring programs.

Some of the proposed capital projects present opportunities for project-scale collaboration to maximize the potential information return. Two specific examples are the NRCS-sponsored BMP retrofit program for private properties, and the USBR- and USFS-sponsored Upper Truckee River restoration projects. In the case of the BMP retrofit program, it is really a matter of developing consistent monitoring protocols that can be implemented as the opportunity (e.g., landowner permission) arises. For example, for a modest amount of funding, science community representatives could work with NRCS staff to develop a consistent sampling design to obtain data that could be used to inform agency representatives about the efficacy of the trench equation now used as a BMP design standard. Consistent sampling applied before and after individual projects are installed could greatly extend our ability to quantify the effects of these projects over time. Overall, modest amounts of funding could really bolster the information base we have to guide implementation of the BMP retrofit program, and maximize the effectiveness of the estimated $28 million to $131 million investment needed to retrofit all private properties in the Lake Tahoe Basin.

Two Upper Truckee River (UTR) Restoration projects are among several habitat restoration projects proposed or planned to occur in this watershed. Under the leadership of the California Tahoe Conservancy, several agencies are collaborating to develop a standardized monitoring program to assess the effects of these restoration projects, and collectively the effects all of these projects would have on watershed-scale factors such as total sediment loading to Lake Tahoe. Development of a single monitoring scheme would allow the various projects to share the cost of collecting and analyzing the resulting data. The TSC applauds the agencies for pursing this approach.

Framing the questions and clearly describing the criteria used to evaluate project performance will be critical to establishing a cost-effective and information rich monitoring program for the UTR. This is a situation where the agencies should consider the sampling designs used by existing monitoring programs (e.g., the LTIMP monitoring program), to permit aggregation and synthesis of project-specific or watershed-specific data with other similar data collected in other parts of the Basin. This is also a situation where it would be appropriate to share the

cost of expensive surveys (e.g., a LiDAR survey) that would provide data and information of use to multiple projects.

During our February 16th meeting, USFS staff noted that we do not have consistent approaches for monitoring stream restoration projects. Currently, numerous approaches are pursued, which elevates the cost of monitoring stream restoration projects. Focusing existing and future monitoring efforts is a high priority for the agencies. These issues are ripe for discussion between the management agencies and science community to identify and focus the management issues of concern, identify the most important questions, identify clear criteria for assessing performance, and develop appropriate and consistent monitoring approaches. Although each stream restoration project has its particular issues and challenges, it is likely that there are a common set of issues and questions that confront all of these projects. Again, the Tahoe Yellow Cress Conservation Strategy provides a good model for how to frame these issues. As a start, the TSC is willing to work with agency representatives to organize a one-day workshop to pursue discussions on these issues. The TSC recommends the LTBEC reserve some Round 9 SNPLMA capital funds to implement some program-level stream restoration monitoring. The UTR is a promising place to start.

Some of the SNPLMA proposed projects could benefit from the inclusion of time and funding for independent peer review. Specifically, projects proposing the development of management plans (e.g., Incline Lakes Management Plan, Aquatic Invasive Species Management Plan, and the South Shore Recreation Area Capacity Plan) would all likely benefit from independent peer review of the final draft plan. Overall, the TSC suggests the LTBEC make independent peer review a requirement of any plan that is used to guide future capital investments.

Some of the proposed Round 8 capital projects could be considered pilot projects, where basic information is collected to confirm hypotheses and assumptions, and ultimately develop the knowledge needed to support broader application. Specific examples include the USFS-sponsored Invasive Warm Water Fish Species Management and Control, and the FWS-sponsored Restoration/Recovery of Lahontan Cutthroat Trout in Fallen Leaf Lake. These projects are examples of the application of adaptive management, where the information gained from the project may be nearly as important as the actions on the ground. The TSC urges the LTBEC to ensure these projects have the means to: 1) fully assess and report the outcome of these projects, and 2) consider the outcomes in a forum that includes agency and science representatives. These outcomes and their interpretations should be used as the basis for future funding. Again, the Tahoe Yellow Cress Conservation strategy is a useful model for framing this kind of an approach.

The TSC also examined the opportunity for collaboration between the proposed Round 8 capital projects and the science theme areas. The TSC believes opportunities for collaboration do exist, as described in the table below.

Capital Project	Science Theme Area	Comments
NRCS-sponsored BMP retrofit project USFS-sponsored Erosion Control Grants to Local Governments	Water Quality and Cross-cutting	Research under the Best Management Practices sub-theme could address questions and uncertainties related to implementation. Research under the monitoring program development sub-theme could help to design a quantitative, program-level monitoring program.
USFS-sponsored Forest Health projects	Ecology and Biodiversity	Research under the Fires and Fuels sub-theme could address questions and uncertainties related to the effects of these projects.
USFS-sponsored South Shore Recreation Area Capacity Plan	Social Sciences	The area considered in this capacity plan could be the study area considered in a research project called for under the Recreation sub-theme: Develop the scientific information to support setting recreation capacity guidelines.

The June 7, 2006 SNPLMA Implementation Agreement presents a substantial imbalance between the kinds of issues raised in the Science and Research Considerations (page 34) and the kinds of information provided in the capital project proposals (Appendix I). There are at least three ways to address this imbalance:

1. Substantially increase the scope and breadth of information provided in the proposals. This would lead to capital project proposals that are more similar to the kinds of proposals the federal sponsor is receiving for the SNPLMA science theme areas.
2. Modify the review charge to scope the review commensurate with the level of information provided in the project proposals. The TSC believes this approach would obviate the need for a science review, because the level of information provided in the capital project proposals does not allow someone to understand the proposed project at the level needed to complete a review of the technical merits.
3. Modify both the scope of the proposals and the review charge. The aim is to find the middle ground between a reasonable request for information provided in each proposal and a review charge that can be fulfilled by examining the information provided.

Clearly identifying the essential information needed to make informed project funding recommendations is the first step in determining how the Implementation Agreement should be modified. The current Science and Research Considerations suggest there is interest in understanding how the proposed projects would affect environmental thresholds, and in understanding the potential impacts and risks of the proposed projects. If this information is deemed essential to making project funding recommendations, then modifications to the scope and content of the proposals is required. Once the

essential information needs are determined, the LTBEC and LTFAC could work to determine which of the options listed above to pursue.

During our February 16th meeting, you mentioned the need to "front load" the communication between the science community and capital project proponents. The TSC agrees there is great potential benefit in identifying the opportunities to gain information from proposed projects early in the project development process. However, the current SNPLMA proposal development process does not lend itself to a front-loading approach. This year, project proponents had approximately three weeks to prepare the capital project proposals, while the proposal review process will last more than three months. The TSC recommends extending the timeline for proposal development, to allow project proponents the time they need to communicate with science representatives and other project proponents. For example, you might want to consider initiating proposal efforts in October for existing projects or in July for new projects.

Extending the project proposal timeline would provide project proponents the time to inform the science community about the opportunities to gather information from capital projects that are ready for implementation. Communication between project sponsors and scientists also could identify where they see the greatest need to gather specific information to address information gaps. Right now, the science proposal relevancy check is the only point at which this kind of consideration occurs.

LTBEC representatives also might want to consider the point in the project delivery process where you engage input from the science community. For example, project sponsors could commit to an independent peer review of the monitoring plans, when those plans are completed rather than reviewing project proposals for monitoring opportunities.

There also may be opportunities to adjust the processes for developing the capital projects and science themes to enhance the potential for mutually beneficial project integration. Currently, there is very little interaction until the capital project and science theme proposals are presented to the TWG. This is late in the process. The limited interaction that does occur is opportunistic, occurring largely as a result of individual motivation.

Overall, the TSC believes there are several ways in which the SNPLMA proposal process could be improved to meet the information needs of the many parties involved. Thoughtful changes to the process should lead to better projects on the ground. There are several existing proposal processes the LTBEC might want to examine as appropriate models. Maybe a subcommittee composed of LTBEC and LTFAC representatives could work to develop a set of specific recommendations aimed at improving the SNPLMA proposal process?

In closing, I want you to know that the TSC appreciates your efforts to increase the communication and interaction between the Federal sponsors, project proponents, and the science community. The TSC firmly believes this type of communication and collaboration is the best way to achieve the Federal Vision for Lake Tahoe in a timely and cost-effective manner.

Please contact me if you have any questions about the comments in this letter, or to follow-up on any of the recommendations.

Sincerely,

Zach Hymanson
Executive Director,
Tahoe Science Consortium

Cc: Andrew Strain (LTFAC Chair)
Patrick Wright (TWG Co-chair)
Tim Rowe (TWG Co-chair)
TSC Committee of Scientists