

Tahoe Science Consortium Purpose/Functions Statement

(This work product is intended to convey a workable model for constituting a Consortium. The Work Group recognizes that additional details need to be considered and refinements made as decision-makers engage this topic.)

Purpose

The purpose of the Tahoe Science Consortium (Consortium) is to contribute to the restoration of Lake Tahoe, its watershed, and its air basin by providing the best scientific information possible for management of the basin's natural resources. It is recognized that substantial gaps exist in our current understanding of environmental processes in the Lake Tahoe basin, and that a unified and collaborative research effort can provide the most efficient path to restoring and maintaining the multiple components of the basin's complex ecosystems.

Environmental management depends on reliable scientific information and science carried out in an applied and integrative manner. Numerous institutions are actively involved in research, modeling, and monitoring in the Tahoe basin, and it is a primary objective of the Consortium to provide environmental managers and decision-makers with the most comprehensive and well-synthesized advice that can be drawn from those endeavors. The Consortium will accomplish this task by promoting integration among the many current and future scientific projects in the basin, prioritizing future research informed by a comprehensive science plan, creating an environment that promotes the contributions of the best available science, and emphasizing close cooperation with land and resource managers to facilitate the transfer of information in an effective manner. The Consortium will communicate in a timely and user-friendly manner, so that new policies and decisions will benefit from the current science, and existing policies can be adjusted to benefit from emerging findings.

The work of the Consortium will expand collaboration and cooperation with many groups, including, but not limited to, decision-makers, agency staff, managers of Environmental Improvement Program projects, and the public. It is recognized that environmental policy is best informed when scientific data from numerous sources can be evaluated and synthesized in a comprehensive manner. The Consortium builds on a considerable history of science in the Lake Tahoe basin and strives to assist in the restoration of this ecosystem. Finally, the Consortium will modify its workplan and operations as appropriate.

Functions

1) Scientific Advancement

Provide an organizational capacity to support ongoing science efforts, including the development and promulgation of research, monitoring, and modeling efforts designed to supply basin decision-makers and managers with the most relevant, high priority, and readily applied science and scientific products. The diverse activities of a Science Consortium-based research program will include:

- Research Plan – Development of a research plan that identifies key areas of research concern, describes critical uncertainties, suggests approaches to reducing those uncertainties through research, modeling, and monitoring, and identifies data-gathering activities to best facilitate the development and application of new knowledge.
- Independent Scientific Review – Provide objective, independent scientific review of proposed research (upon request) to ensure proposals funded and conducted in the basin are scientifically sound, consistent with the basin’s research plan, compatible with previous research activities, and in compliance with the federal Data Quality Act (Section 515 of Public Law 106-554). In addition, the research plan will be subject to external scientific review and updating on a regular basis.
- Synthesis and Assessment – Support efforts to conduct investigations and research products promote and facilitate interdisciplinary research opportunities, and conduct scientific assessments that integrate and synthesize scientific knowledge on key topics in the region. Pertinent findings and experiences from science and management practices developed outside of the basin will be included.
- Scientific Outreach – Facilitate and engage in efforts to enrich collaboration, communication, and exchange of scientific information among scientists, agencies, and the public. Organize technical workshops and symposia, accompanied by production of subsequent “state of the basin’s scientific knowledge” reports that address new and established information on the status of key Lake Tahoe basin resources. Those activities will include reaching out to research institutions that may be new to the Tahoe basin, yet may provide specific and needed scientific expertise.
- Information Archive – Establish, in cooperation with basin agencies, an archive of metadata, reports, and scientific publications linked to the Tahoe Integrated Information Management System (TIIMS).

2) Adaptive Management

Contribute to the design, administration, and implementation of adaptive management of Lake Tahoe basin resources. The Consortium will encourage and facilitate adaptive management through the following contributions:

- Program and Project Design -- Assist in identification of adaptive management opportunities to enhance contributions to meeting the basin's management directives. Collaborate with agency staff in the design of adaptive management programs and projects in key resource management issue areas.
- Monitoring Approaches – Cooperate with agencies in the development of effectiveness monitoring schemes, including goal setting, development of conceptual models, indicator selection, sampling design, data analysis, and interpretation of results.

- Management Feedback – Assist agencies in translation and evaluation of monitoring results, and integration of new knowledge into resource management plans.

3) Scientific Consultation

Provide scientific information to Lake Tahoe basin land and resource management agencies, participants in the basin's Environmental Improvement Program, members of the Federal Advisory Committee, and interested stakeholders. All aspects of land, water, and biological resource management in the Lake Tahoe basin require the best available technical information to assure that management, conservation, and restoration efforts are effective and efficient. In order to avail the basin of the most current knowledge that is appropriate to assist management actions in the basin, the Consortium will provide the following services on request:

- Document Review – Provide assistance to agencies in the development of environmental documents, facilitation of scientific review of documents for scientific accuracy and consistency, and review of reports to determine specific contributions that may be incorporated into the larger, more integrative view of science and policy in the Tahoe basin.
- Planning Consultation – Provide assistance with updates of key management and restoration planning efforts, including the Regional Plan (Pathways 2007), the basin's Threshold and Environmental Improvement Program, and others.
- Project and Product Review – Provide assistance in evaluation of management and restoration projects to enhance their potential to contribute toward sound science in meeting the basin's planning directives. The Consortium may assist in the review of project performance and monitoring effectiveness relative to policy goals.
- Project Design – Collaborate with resource agency staff in project design and implementation to assure that the best available scientific information is considered.
- Overview of Resource Status and Trends – Develop white papers and guidance documents that assess current risks and uncertainties in key management issue areas.

To: Work Group Participants
From: Bennett Brooks and Scott McCreary, CONCUR, Inc.
Date: March 11, 2005
Re: Final Ratified Proposed Consortium Structure

Attached is the final Proposed Consortium Structure. Work Group participants unanimously ratified this document at their March 3, 2005, meeting.

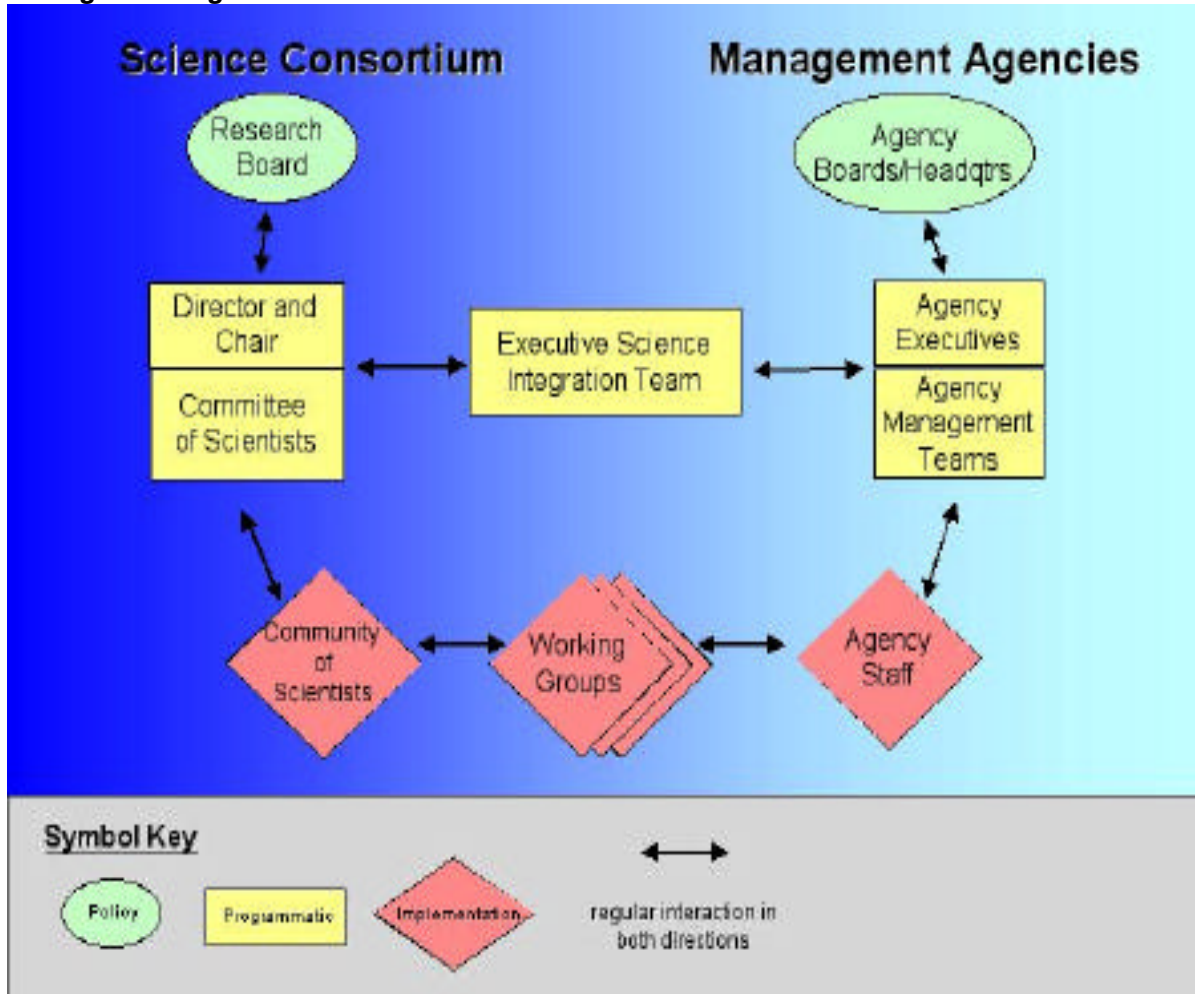
Proposal for a Tahoe Science Consortium

(This work product is intended to convey a workable model for constituting a Consortium. The Work Group recognizes that additional details need to be considered and refinements made as decision-makers engage this topic.)

Science Consortium Structure

The Tahoe Science Consortium (Science Consortium, or Consortium) is part of a larger effort to advance science, identify and fill knowledge gaps, and accomplish the goals of adaptive management in the Tahoe basin (Figure 1). The Consortium will construct a collaborative framework between science and management. Individual agencies will retain the authority to determine their level of interaction with the Consortium. The Consortium will pursue its work consistent with scientific norms and practices. Both agencies and the Consortium will maintain their independence in their respective decision-making functions.

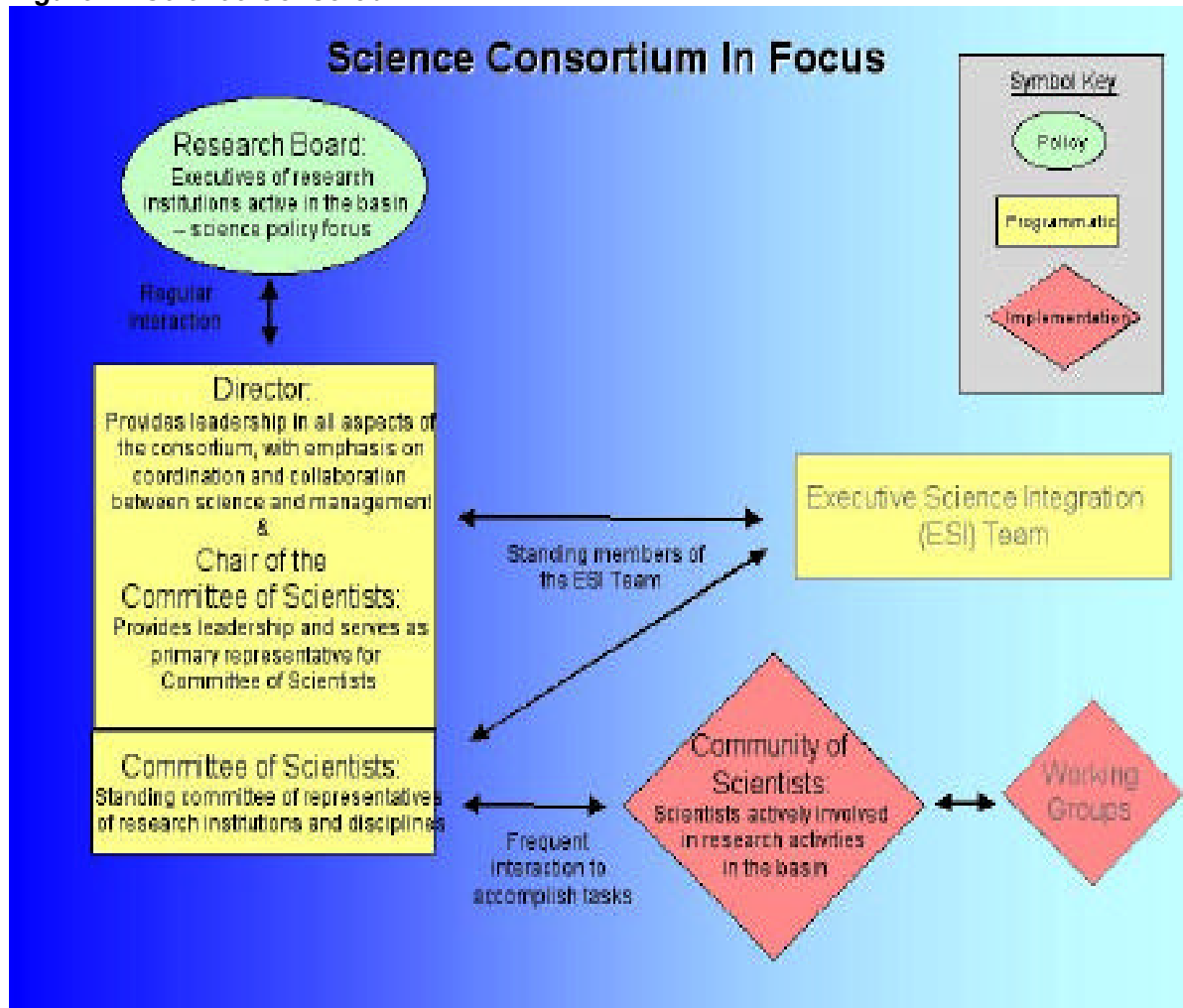
Figure 1: Conceptual Model Depicting Interaction Between Consortium and Resource Management Agencies



The structure of the Science Consortium and its associated functional groups include: Committee of Scientists and its Chair, Community of Scientists, Director, Business Manager, and a Consortium Board (Figure 2). The Science Consortium is to be configured as a 501(c)3 non-profit organization and will consist of the collective community of current and future research scientists engaged in the Lake Tahoe basin. The Committee of Scientists is responsible for facilitating the goals of the Consortium, as codified in its charter and reflected in the following guiding documents: the five-year research plan, the five-year work plan, and an annual program of work.

As currently envisioned, the Committee of Scientists is to consist of 12 representatives of Consortium institutions active in the basin. Each seat has a three-year tenure that can be renewed. The six founding members of the Consortium (University of California – Davis, Desert Research Institute, University of Nevada – Reno, U.S. Geological Survey, USFS Pacific Southwest Research Station, U.S. EPA Office of Research and Development) are each guaranteed at least one seat on the Committee. The remaining seats will be filled by Consortium institutions covering primary areas of scientific expertise including socioeconomics, air quality, water quality, forestry, geology, fire ecology, biodiversity, and (these categories may be refined). In filling these seats, the Committee will take the following factors into consideration: broad representation with respect to area of expertise; inclusion of new research institutions, based on their commitment to contribute to the advancement of science in the Tahoe basin; and bi-state representation. Involvement is not to be constrained to institutions within Nevada and California.

The Chair of the Committee of Scientists (1) must have served on the committee as Vice Chair prior to nomination, (2) is nominated by the committee at the beginning of the third quarter of the year, and (3) has a tenure of two years. The initial Chair and Vice Chair will be nominated by the Committee of Scientists and confirmed by the Consortium Board. The sitting and Vice Chairs will collaborate in consultation with the full Committee to (1) provide recommendations for the remaining seats on the Committee of Scientists and (2) work with representative institutions to obtain recommendations for Committee members for subsequent terms. The Consortium Board is responsible for approving new Committee members, based on nominations by the Committee of Scientists. Specific scientific tasks identified by the Committee of Scientists, in collaboration with the Executive Science Integration Team, are undertaken by the Community of Scientists.

Figure 2: Science Consortium

The Community of Scientists will be open to all researchers active in the Tahoe basin, or other scientists invited to participate by the Consortium. One goal of the Consortium is to broaden the diversity of scientific expertise available to inform decision-makers. The organization of this group will be based on thematic or programmatic areas; examples include, but are not limited to air quality, restoration ecology, water quality, forest health, fire ecology, biological diversity, socio-economics, geology, and remote sensing. Organizing in this manner will facilitate integration of science and management, promote the construction of research plans based on focused scientific expertise, encourage integrative and synthesis-based evaluations, and provide a center for broader attention, whereby new researchers can more easily be brought into the Tahoe basin community of scientists.

The Director is to oversee the Consortium's day-to-day operations and serve as a strategic planner in collaboration with the Committee of Scientists and its Chair. The Director will lead tasks related to – among other things – outreach, product delivery, and independent scientific review activities. The Director is selected by the Consortium Board, upon consultation with the Committee of Scientists. As depicted in Figure 2, the Director and the Chair will work in close cooperation to achieve Consortium goals. The Business Manager for the Consortium is to

attend to all business functions of the Consortium, such as budget and marketing. The Business Manager is selected by the Director, in consultation with the Committee of Scientists. Annual performance evaluations of the Director are to be conducted by the Consortium Board. The Director is responsible for evaluating all other staff.

The Consortium Board provides oversight for the Consortium by participating in shaping strategic direction, making key hiring decisions, approving the Consortium budget, setting/revising bylaws, approving the annual plan, and assisting in fund-raising efforts to sustain the activities of the Consortium. Initially, the Board will be composed of research executives from the founding institutions. As new institutions join the Committee of Scientists, Board membership will expand. Current plans are to include the following members¹: Station Director – USFS Pacific Southwest Research Station; Regional Director – USGS; Science Advisor – ORD; Vice President for Research– DRI; Vice Chancellor for Research – UCD; and Vice President for Research – UNR. In addition, it is intended that the Board will also include public members capable of bringing beneficial qualifications to the Board. The research executives on the Board will determine the number and areas of expertise needed from the public representatives. Research executives will occupy the majority of seats on the Board unless otherwise decided.

Consortium Collaboration with Management Agencies

The Consortium will work in close cooperation with management agencies to achieve its objectives and forge greater collaboration among scientists and agency personnel. Fundamental to successful communication between science and management will be the creation of an Executive Science Integration Team (ESIT) (Figure 1). This team will serve as the nexus for the integration of Consortium activities, projects, and products into decision-making and management actions. The Consortium will receive direction and input from the ESIT on matters related to policy needs and science. The ESIT will consist of representatives from agency management teams and the Consortium. Similar to Pathway 2007, the ESIT will consist of two parts: (1) an executive-level work group consisting of Basin Executives and Consortium leadership (Consortium Director, the Chair of the Committee of Scientists and the Committee of Scientists) and (2) a senior-level work group consisting of appointed agency staff and Consortium leadership (as above). The executive-level work group is expected to meet one to two times per year to review the contribution of science towards meeting policy goals. The senior-level work group is expected to meet four to six times per year to more directly guide the integration effort. The ESIT provides the forum for management agencies to request and recommend Consortium activities and contributions, and for management agencies to provide feedback and recommendations on all aspects of Consortium business. The ESIT provides for research institutions to identify and recommend investments in activities, projects, and products by management institutions.

A second avenue of communication between the Consortium and management will take place between the Community of Scientists and agency staff active at the programmatic level (Figure 1). An already existing model for this activity is the Working Group concept. New and existing Working Groups will play a fundamental role in activities such as identifying and cataloging studies/data relevant to their specific topical theme, participating in the creation of the research

¹ Federal research agencies are currently looking into whether their representatives can legally serve on the Consortium board, given the interpretation of applicable federal ethics rules. The agencies have already identified several options for structuring their participation and will continue work to identify the most viable alternative.

plan, identifying critical knowledge gaps, reviewing scientific documents, reporting on state of knowledge, etc. The Executive Science Integration Team will play a key role in helping to integrate the activities of the individual Working Groups.

Science Consortium Operations

The Consortium will operate in accordance with bylaws and a business plan. The bylaws will delineate the philosophical basis and overarching operational underpinnings for the Consortium. Formal bylaws will be drafted by the founding research institutions in concert with agency staff. Public stakeholders will be asked to provide comments. The Consortium Board is responsible for approving final bylaws. The business plan – a standing document that is to be reviewed and updated annually – will articulate the Consortium’s function and structure, identify individuals occupying each seat in the Consortium structure (Committee of Scientists, the Chair of the Committee, Director, and Business Manager), and articulate the program of work and budget for the year. Attachments to the business plan will include copies of current bylaws, institutional agreements (MOUs), a research plan, a five-year Consortium work plan, and a report of activities and accomplishments from the previous year. The Consortium will operate according to a communications plan, which provides guidance on how the each functional group communicates with each other and with groups external to the Consortium (e.g., public, agencies).

Public Involvement and Outreach

The Consortium will support and provide multiple opportunities for public outreach and input as part of its overall mission. This outreach effort will be implemented at different scales and through different mechanisms. The Consortium will sponsor and promote scientific workshops, symposia, website, newsletter in order to transfer scientific findings and information to other scientists, agencies and the public. The Consortium will utilize existing public involvement mechanisms (e.g., Lake Tahoe Federal Advisory Committee, Tahoe Regional Planning Agency Advisory Planning Commission and Agency Board hearings, etc.) to present and seek input on Consortium products and to discuss strategic direction. In concert with these activities, any agency that utilizes the Consortium will follow their established procedure for public review of documents/products. Public participation on the Consortium Board will also significantly contribute to the desired outreach goals. The Director and staff will be responsible for implementing informal outreach and public input through networking opportunities and meetings.

Year-One Focus

Consortium activities during the first year will focus on tasks necessary to establish the Consortium, develop a detailed research plan, and provide scientific review. A number of administrative milestones must be met during Year-One, including but not limited to application for 501(c)3 status, draft and approve bylaws, convene Consortium Board, hire director and business manager, establish office, establish and convene Committee of Scientists and Chair, establish the Executive Science Integration Team and evaluate Working Group structure.

Once commitments to this Consortium have been confirmed, scientific efforts will focus on building a preliminary research plan using the list of Key Management Questions as a starting point. (The Consortium will replace the Science Advisory Group, which will sunset once the Consortium is operational.) During Year-One, the Consortium will work with agencies to update the current catalog of research and monitoring activities, identify knowledge gaps, and identify

key areas of research needed for funding under Southern Nevada Public Land Management Act (SNPLMA) Round 7². All of this information will be directly used to formulate a detailed science plan during Year-Two. In addition, by cataloging current activities the Consortium will identify possible direct overlaps in activities thereby helping to identify and suggest elimination of inefficiencies. Activities during Year-One will also include independent scientific review of SNPLMA projects as requested.

Budget Considerations

During Year-One, the Consortium is to be funded through SNPLMA allocations. The bulk of the Year One funding is needed to fund hiring of the initial staff and cover costs associated with convening the Committee of Scientists and carrying out independent scientific review of SNPLMA Round 7 applications. The intent is to identify additional resources, including funding, to allow for an expansion of activities in subsequent years. (Annual Consortium activities could cost roughly \$750,000 per year once the Consortium is fully staffed and pursuing its full suite of functions.) The annual budget must be approved by the Consortium Board.

Next Steps – Transitioning to the Consortium

An aggressive work plan is needed to transition to the Tahoe Science Consortium. The Work Plan needs to pursue several tracks. These include: (1) briefing research institution heads and securing their commitment to launch the Consortium; (2) meeting with the broader Tahoe community (agencies and stakeholders) to explain Consortium intent and seek feedback; (3) creating opportunity for the management agencies to develop a shared strategy for interacting with the Consortium; (4) working with the current Science Advisory Group and others to initiate research-focused activities intended to foster the timely establishment of the Consortium; and, (5) rolling out the Consortium concept to the greater Tahoe basin public. In pursuing these activities, participants are committed to modeling the collaborative interactions expected to be a hallmark of the Consortium's work.

² If the Consortium were not established in a timely fashion, parties would work – to the extent practicable – with the Science Advisory Group to meet some of the needs identified here.

**Tahoe Science Consortium
Statement of Concurrence
March 3, 2005**

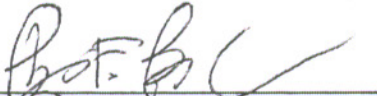
We, the members of the Working Group to Develop the Tahoe Science Consortium, convened by the signatories of the Science Advisory Group Memorandum of Understanding, the U.S. Army Corps of Engineers and the U.S. EPA, unanimously endorse the attached proposed Tahoe Science Consortium (Consortium) Purpose and Structure.


As a group that brings together primarily researcher and agency perspectives, we believe the proposed approach offers an important and pragmatic strategy to contribute to the restoration of Lake Tahoe, its watershed and air basin by providing the best scientific information possible for management of the basin's natural resources. It also offers a tangible and sustainable vehicle to expand collaboration and cooperation among researchers, management agencies and the public.

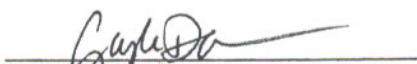
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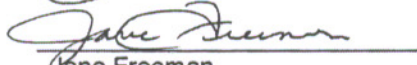
This document was produced through an intensive collaborative effort. Twenty one members of this Work Group met in five face-to-face sessions and 15 work team meetings over five months. The effort also was informed by interviews with 25 agency directors, resource managers and researchers active in the basin, and two teleconferences with Pathway 2007 executives.

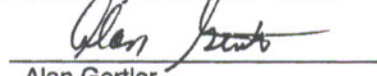
We are committed to working with the broader Tahoe basin community to transform this model into an effective, viable and broadly supported institution. Our signatures below represent our participation in the drafting process, our agreement with the content and our personal commitment to work towards implementation.



Phil Brozek
U.S. Army Corps of Engineers

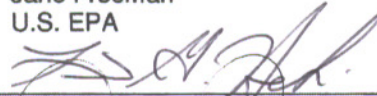

Michael Collopy
University of Nevada - Reno

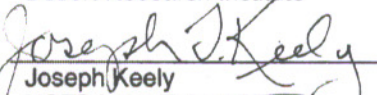

Gayle Dana
Desert Research Institute

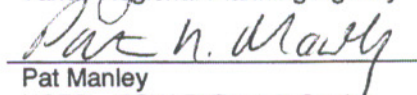

Jane Freeman
U.S. EPA

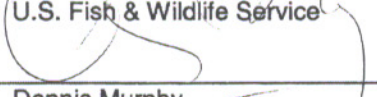

Alan Gertler
Desert Research Institute

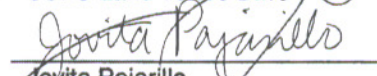

Carl Hasty
Tahoe Regional Planning Agency



Lisa Heki
U.S. Fish & Wildlife Service

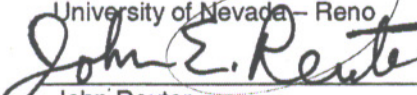

Joseph Keely
USFS Lake Tahoe BMU

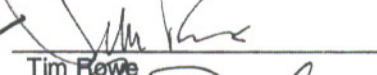

Pat Manley
USFS - PSW Research Station

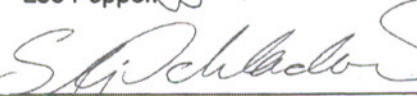

Dennis Murphy
University of Nevada - Reno

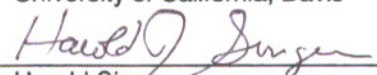

Jovita Pajarillo
U.S. EPA

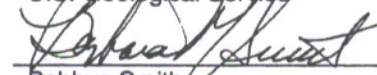

Leo Poppoff

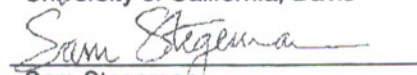

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University of California, Davis

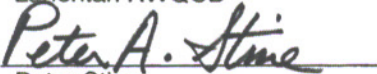

Tim Rowe
U.S. Geological Service

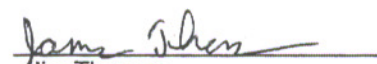

Geoffrey Schladow
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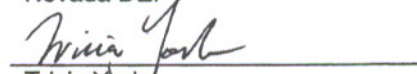

Harold Singer
Lahontan RWQCB


Bobbye Smith
U.S. EPA


Sam Stegeman
Nevada DEP


Peter Stine
USFS - PSW Research Station


Jim Thomas
Desert Research Institute


Tricia York
Tahoe Regional Planning Agency