

**U.S. Department of Agriculture Forest Service
Pacific Southwest Research Station**



With funding through the Southern Nevada Public Lands
Management Act
Announces



**A Request for Proposals (RFP) to Conduct Research
in Support of the
Lake Tahoe Restoration Act and the
Lake Tahoe Environmental Improvement Program**



Closing October 27, 2010 at 4:30 p.m.

Notice: Please read the RFP carefully, as there have been significant changes from last year.

This RFP seeks projects to address the following subthemes within the Lake Tahoe basin. *Be advised that the Round 11 science subthemes and funding still require approval by the Secretary of Interior.*

Theme	Subtheme
Forest Health	1a: Integrating the effects of forest management into the Lake Tahoe TMDL
	1b: Impact of climate change on ecological communities and evaluation of adaptation strategies
Water Quality	2a: Understanding the impacts of aquatic invasive species
	2b: Quantifying the benefits of urban stormwater management
	2c: Quantifying the effects of actions to reduce sediment loads using Stream Environment Zones (SEZs)
Air Quality	3a: Secondary pollutant formation and the impacts of TMDL-related primary and secondary atmospheric pollutants
	3b: Assessing the impacts of fire on air quality
Integrating Science	4a: Understanding current and future resource conditions through analysis of remote sensing data
	4b: Identifying environmental indicators and developing approaches for monitoring and evaluation
	4c: Development of robust methods for evaluating fine sediment concentrations and loads

A. Proposal Submission

Proposals must be received by
October 27, 2010 at 4:30 p.m.

- Proposals must be complete and follow the formatting requirements set forth in this RFP.
- The proposal must clearly state the primary subtheme addressed. Proposals will be evaluated in the context of the primary subtheme identified, although proposals can address more than one subtheme.

PROPOSALS THAT DO NOT FOLLOW THESE GUIDELINES WILL NOT BE SUBMITTED FOR PEER REVIEW AND WILL NOT BE CONSIDERED FOR FUNDING.

You can apply via the www.grants.gov website OR you can submit an electronic (PDF) file containing all required documents via e-mail or on a compact disk mailed to:

Jonathan Long
Tahoe SNPLMA Science Program
Coordinator
Pacific Southwest Research Station
Tahoe Environmental Research Center,
3rd Floor
291 Country Club Drive
Incline Village, NV 89451
(775) 881-7560 x. 7482
Email: JWLONG@FS.FED.US

An email confirmation of submission will be sent to the primary author within one week of receipt.

Any questions should be directed to Jonathan Long at the above address.

Important Reminders

- 1) **Funding for these projects is not guaranteed, and awards will be subject to the availability and authorization of SNPLMA funding and final approval of the science subthemes by the Secretary of Interior**
- 2) **Proposals must be submitted in electronic format!**
 - Proposals can be submitted via e-mail or CD in PDF (Portable Document Format). You can create a PDF document using Adobe Acrobat software or using free, open source software such as PDF Creator Portable Document File (PDF)!
 - Proposals submitted via e-mail should be no larger than 2 MB. If your total package is larger than 2 MB, you can submit the proposal by mail on a CD. **Proposals that do not meet these guidelines will not be considered.**
 - Proposals can also be submitted through the www.grants.gov website. To use this route, you must complete several additional steps including submitting a SF-424 form (see Section E of this RFP).
- 3) **Review guidance on engagement with management agencies and review of products (pages 4-5)**
- 4) **Review policies on budgets, indirect costs, permitting, and funding instruments (pages 13-14)**
- 5) **Note new requirement for summary of current and pending support for key investigators (page 13)**

B. Background and Expectations for Proposals

Purpose and Needs

The Pacific Southwest Research Station, USDA Forest Service (PSW) is seeking proposals as part of the Tahoe Science Program funded by the Southern Nevada Public Lands Management Act (SNPLMA). The purpose of the Tahoe SNPLMA Science Program is to provide high quality science to effectively meet environmental goals in the Tahoe Basin, as mandated in the **Lake Tahoe Restoration Act of 2000**. The commitment to the maintenance and restoration of Lake Tahoe for future generations has been put into action through a multi-agency initiative known as the Environmental Improvement Program (EIP). Launched in conjunction with the 1997 Lake Tahoe Presidential Forum, the EIP provides a strategy to help achieve the environmental goals for the Lake Tahoe basin. The strategy builds on the capital improvement approaches that have been underway within the region for over two decades. This strategy is designed to accomplish, maintain or exceed multiple environmental goals and develop a more integrated, proactive approach to environmental management based on a partnership among federal, state and local government, and private landowners. The environmental goals of the Lake Tahoe Region are defined using thresholds, which are standards established to protect the natural environment and to maintain public health and safety within the region. The nine threshold categories are: 1) water quality, 2) wildlife, 3) soil conservation, 4) scenic resources, 5) air quality, 6) recreation, 7) vegetation, 8) noise, and 9) fisheries. For more information about the Lake Tahoe EIP and associated thresholds please visit <http://www.trpa.org/default.aspx?tabindex=10&tabid=227>

Scientific research has played an important role in the management and restoration of the Lake Tahoe Basin by contributing information to the development of environmental thresholds, identifying trends in threshold attainment, and informing policy decisions. **The Lake Tahoe Restoration Act** calls for the best available science to prioritize and evaluate efforts to meet those environmental thresholds. Therefore, research projects funded through this program need to help answer the most pressing management questions facing land managers and regulatory agencies in the Lake Tahoe basin and to promote more effective environmental improvement projects. The program has been designed to ensure that scientific research is applicable to agency needs.

Pressing science information needs are currently described in the Science Plan for the Tahoe Basin (available at http://www.tahoescience.org/tsc_products/Products.aspx). Guided by this plan, the Tahoe Science Consortium (TSC), State, Federal, and Local government representatives have collaboratively chosen three major science themes and seven subthemes in response to needs expressed by agency officials within the basin. Project proponents should consult the Science Plan to ensure that their proposed research directly addresses needs that are current and specific to the Tahoe Basin.

A Science Update Report documenting ongoing science efforts is available at the TSC website (www.tahoescience.org) and the PSW Tahoe Science website (<http://www.fs.fed.us/psw/partnerships/tahoescience/>). The report summarizes ongoing science projects and current interests of management agencies in relation to the Round 11 subthemes. It also lists recent relevant publications and contact information for agency representatives who can

identify current science priorities for management agencies within the basin. Note that a SNPLMA Round 10 capital project will collect and make available high-resolution Light Detection and Ranging (LiDAR) and multi-spectral imagery covering the entire Lake Tahoe Basin. Post-processed datasets from this effort should be available by early 2011 for use in research projects. Investigators are encouraged to consider how their research could utilize these datasets.

Expectations for All Proposals

Produce meaningful results within set timeframes: Proposal budgets should be capable of supporting the project for its entire duration. If a proposed project spans more than one year, funding for all years should be requested in the initial proposal. Proposed projects should extend no more than 3 years and have an expected start date no earlier than June 2011 (the actual start date is subject to change). All projects must be capable of producing meaningful scientific results given the funding provided. Follow-up projects will have to compete for additional funding in subsequent rounds.

Explain relationships between the proposed research and relevant research, monitoring, and environmental improvement efforts. Proponents should review the Tahoe Science Plan (<http://www.treesearch.fs.fed.us/pubs/35152>) and the PSW Tahoe SNPLMA Science Program website (<http://www.fs.fed.us/psw/partnerships/tahoescience>), including the Science Update Report and related documents to make sure that they have considered previous and current research projects. Investigators are encouraged to identify current projects or pending grant proposals to clarify any linkages or overlap among projects, as well as plans to resolve any overlap.

Proposals should leverage existing datasets, models, model elements, and other efforts to the extent possible. Existing data can be analyzed and synthesized to further understand environmental processes, conditions and trends; in particular, these analyses should aim to extract possibly unknown, yet critical, information from existing data sets. Proposals seeking to build new models or refine existing ones should explain how they expand upon or are distinct from relevant models, monitoring, or other research projects that have been or are being developed. Proponents should explain how their results could be used to evaluate environmental improvement efforts or advance management strategies and policies in the Tahoe basin.

Engage agency and other stakeholder representatives: Proposals should include provisions to ensure that relevant stakeholders in the Lake Tahoe basin will be engaged early and throughout the project. Proponents are encouraged to contact agency representatives during the preparation of their proposals (several agency representatives are identified in the Science Update Report). **Do not include recommendation letters within the proposal. However, proponents should discuss how the proposal was designed to respond to agency needs, and how products will be delivered to help agencies improve their restoration efforts.** Proposals should explain how and when necessary permits and landowner access permissions will be obtained. Details about permitting and landowner permissions are available in the “Guidance for Researchers” document available at <http://www.fs.fed.us/psw/partnerships/tahoescience>.

Facilitate reporting to managers and the public: PSW expects to work with funded investigators to share their findings with managers, other researchers, and the public in the Lake

Tahoe basin. Successful applicants will be expected to provide information regarding their projects to facilitate understanding of their objectives and progress. Each funded project will be featured on the PSW website including the proposal, summary, photos, and update reports. Applicants can identify and request redaction of portions of their proposal that contain confidential or proprietary information which they do not want to have published.

Review of data and publications. A goal of the Tahoe Science Program is to ensure the technical quality and relevancy of scientific products. Accordingly, we encourage all proposals to include plans for technical peer review and agency review of work products. Peer-review expectations may be met by delivering final products that include articles for publication in peer-review journals. Where appropriate, we anticipate releasing draft products to agencies and the public for review and comment. Therefore, allow in your schedule at least 3 months between delivery of draft products and finalization of products based on review comments prior to close-out.

Proposals should also incorporate a data management plan and an appropriate timetable and budget for publishing the data when the project is completed. Researchers are encouraged to use publicly accessible platforms, such as the Tahoe Integrated Information Management System (TIIMS, www.tiims.org), for housing and disseminating data and findings.

Proposals should consider these expectations in their deliverables, budgets, and timetables. The PSW Tahoe Science webpage has added a “Guidelines for Researchers” section that provides more details about permitting, landowner permissions, reporting, and financial management for funded projects. All individuals preparing proposals for this RFP should review these guidelines.

C. Science Themes and Funding Allocations

PSW is requesting that interested researchers submit proposals for funding within the four science theme areas listed below. The order of subthemes within the themes does not reflect priorities. A total of \$3.75 million has been identified for science activities in this round of funding, although a portion of that funding has been reserved for the Tahoe Science Consortium. Each theme has a target level of funding indicated below. A small portion of each theme’s target funding level will be reserved to cover PSW support costs for the entire program. Funding levels for each theme may vary somewhat from targeted levels depending on the proposals received and the amount requested by theme.

Forest Health: (Target of \$850,000)

Subtheme 1a: Integrating the effects of forest management into the Lake Tahoe TMDL

Management/Policy Need: Parallel efforts to date have collected field data and developed models for (1) effects of forest and fire management on nutrient loads in surface runoff and soil leachate in the Tahoe Basin uplands, and (2) watershed loading of sediments and nutrients to Lake Tahoe based on land use type. One model (NuCycling submodel for LANDIS-II), supported by field observations and experiments, predicts nitrogen and phosphorus leachate concentrations given

forest and fuel management scenarios, but does not predict impacts to Lake Tahoe water clarity. The other model (Lake Tahoe Watershed Model - LSPC) provides input to the Lake Tahoe clarity model, but does not explicitly account for alternative forest and fuel management scenarios. Agency managers require a decision support tool for evaluating the effects of alternative forest management scenarios on nutrient and sediment loading at the watershed and basin-wide scales. Managers need to be able to link model based outputs of forest management actions to the Lake Tahoe Total Maximum Daily Load (TMDL) Management System, including a comprehensive monitoring approach to validate the linkage and resulting estimates.

Proposed research should lead to increased understanding and quantification of how forest management practices (e.g., mechanical treatment, hand treatment, burning, or a combination of these activities) influence nutrient and sediment loading to Lake Tahoe and its tributaries. Research should address the question, “How do alternative forest management practices compare with regard to their short/long-term and cumulative effects on pollutant loading to tributaries and groundwater, and ultimately lake water quality?” Research proposals should address one or more of the following approaches, although proposals that integrate across these approaches are encouraged: (1) analyze, review and synthesize existing field data and incorporate results into the current models used at Lake Tahoe to simulate watershed processes (model parameterization). Where uncertainty exists, develop improved localized field data sets for incorporation into models; (2) develop modeling approaches to integrate and quantify nutrient and sediment outputs from models of vegetation dynamics in response to forest management practices; (3) develop decision support tools for evaluation of alternative upland forest management scenarios with regard to short/long-term and cumulative effects on Lake Tahoe water quality; and (4) develop a comprehensive monitoring approach to validate and calibrate model estimates.

Subtheme 1b: Impact of climate change on ecological communities and evaluation of adaptation strategies

Management/Policy Need:

Significant changes in climate, recreational use, and air pollution are expected to affect the Sierra Nevada in coming decades. Management agencies want to understand how ecological communities within the Lake Tahoe basin, including forest communities, alpine communities, subalpine wetlands and other sensitive communities, will respond to these changing conditions over the next few decades. Current science emphasizes that adaptation strategies should be site-specific. Adaptation strategies could include thinning of forests to increase tolerance to drought and resistance to wildfire or insects, planting species or genotypes that may be more resilient to changing climate, genetic conservation of species, preservation of refugial habitats (including wetlands and riparian areas), assisted migration of species to suitable habitat, and development of wildlife corridors to facilitate migration. Such actions could be taken in anticipation of future changes or opportunistically following disturbances such as wildfires.

Proposed research projects should conduct new research and/or synthesize previous research to: (1) establish the potential range of key climate conditions relevant to ecological processes and biological communities in the Tahoe basin; (2) identify which ecological processes and biological communities in the Tahoe Basin are most vulnerable to the effects of climate change; (3) evaluate the effects of Basin-specific adaptation strategies and treatments to conserve

particular ecological processes and biological communities; and/or (4) guide the temporal and spatial design of forest treatments to avoid unacceptable ecological impacts while promoting long-term desired conditions (particularly in the Jeffrey pine, mixed-conifer, and lodgepole forest community types).

Watershed, Water Quality, and Habitat Restoration: (Target of \$1,050,000)

Subtheme 2a: Understanding the impacts of aquatic invasive species

Management/Policy Need: The prevention of new introductions and the control of established invasive species is a high priority for Tahoe basin land management and regulatory agencies. Agencies have a need for ongoing quantitative information to manage established species and minimize their impacts. Information related to prevention is required to assess risks from individual species and to track environmental conditions that may facilitate new invasions. Information related to control of invasive species is needed to assess the effectiveness and potential environmental effects of various control strategies. Long-term status and trend monitoring of priority invasive species in near shore habitats and streams in the Tahoe basin and their environmental effects is needed for strategic planning efforts and assessment of impacts to environmental thresholds.

Synthesis and review and/or conventional research should be conducted in collaboration with agency representatives and other research teams to ensure products will meet agency information and evaluation needs. Proposals are requested to: (1) Synthesize existing data and develop new strategies to prepare a regional and sub-regional monitoring plan for priority aquatic invasive species (AIS). The monitoring plan should assess the long-term status and trends of established AIS, aid the early detection of new invasions, and provide insight into the effectiveness of control and prevention strategies in Lake Tahoe's near shore environment, tributary streams, and other lakes of the region. (2) Determine the effectiveness of various control strategies for priority species, such as treatment of satellite populations vs. source populations, re-colonization rates, and the effects of control measures on near shore water quality and aesthetic indicators (biological, chemical, and physical). (3) Develop a predictive model to assess the risk of introduction of priority invasive species based on life history, habitat requirements, current and predicted environmental conditions of the region, and vectors, such as motorized boats, non-motorized watercraft (e.g., kayaks, canoes, or paddle boards), aquatic accessories (e.g., beach toys or power boat toys), and boating appurtenances (e.g., anchors, lines, or fenders).

Subtheme 2b: Quantifying the benefits of urban stormwater management

Management/Policy Need: Research associated with the Lake Tahoe total maximum daily load (TMDL) indicates that stormwater from urban land uses is the largest contributor and presents the greatest opportunity to reduce fine sediment particle (< 16 µm) and total phosphorous loads to streams and Lake Tahoe. However, pollutant loading and reduction estimates are based upon limited information, particularly with respect to fine sediment particle size class distribution. Improved characterization of urban stormwater is needed for the purposes of load reduction modeling, BMP design and TMDL crediting. A better understanding of the factors and processes related to the generation, mobilization, transport and fate of pollutants is needed. Furthermore, a better understanding of innovative treatment and control/recovery mechanisms to reduce fine sediment particles is needed to inform feasibility and cost-effectiveness evaluations and refine

implementation plans and strategies. Roadways are a land use of primary concern, as these have the greatest pollutant yield potential. There is a need to evaluate roadway operations and maintenance practices and optimize them to ensure cost effective fine sediment particle load reductions.

Research proposals should address one or more of the following. (1) Source characterization: What are the factors controlling particle size distribution and turbidity of urban stormwater? How do these factors vary geographically, seasonally, and over the hydrograph? How does impervious area connectivity and hydrologic routing affect pollutant concentrations and loadings? What is the correlation between suspended sediment size classes and phosphorous (total and dissolved) concentrations? (2) Improving existing tools: How can existing tools and methods to estimate, track and report urban stormwater load reductions be improved? (3) Pollutant control/treatment: What is the effectiveness of controls to reduce pollutant concentrations and loadings? What are the key BMP design features that influence load reductions and what are the associated ranges? What are the optimal O&M practices in terms of cost and effectiveness and under various pollutant loading scenarios? How should BMPs be designed to maximize pollutant removal? How does BMP effectiveness vary over time? Research on innovative control strategies (e.g., pump and infiltrate) is especially encouraged. Research should examine the full range of particle size classes (total, < 63 μ m, < 16 μ m), and express suspended sediment measurements in terms of both mass and particle numbers.

Subtheme 2c: Quantifying the effects of actions to reduce sediment loads using Stream Environment Zones (SEZs)

Management/Policy Need: Management and regulatory agencies need tools and methodologies to quantify the direct effects of stream environment zone (SEZ) restoration projects in achieving pollutant load reductions targets for the Lake Tahoe Total Maximum Daily Load (TMDL). Quantifications of benefits and impacts are important in demonstrating the fulfillment of basin-wide planning and environmental improvement efforts such as the Lake Tahoe TMDL and the Environmental Improvement Program. Specifically, estimates of the direct effects of SEZ restoration projects to achieve TMDL reduction goals are needed. Development of a protocol similar to the Lake Clarity Crediting Program is also needed for tracking and reporting purposes.

Research proposals should aim to develop methods that quantify the direct effects (both benefits and impacts) of SEZ restoration projects to reduce pollutant loads relative to the Lake Tahoe TMDL targets. Research projects should build upon existing datasets, methodologies, and models to the extent feasible and appropriate. Research proposals should address the following: (1) Development of tools and methodologies to quantify the direct effects of SEZ restoration projects in achieving pollutant load reductions targets for the Lake Tahoe TMDL. (2) Identify the capacity of SEZ and stream restoration activities to treat polluted urban stormwater runoff. (3) Identify the origin (i.e., anthropogenic or natural) and quantify the volume of stormwater that directly and indirectly drains into streams. (4) Identify the sources and anthropogenic origin of fine sediment and nutrients that are carried in the stream load and deposited on the floodplain. Research may focus on a particular site, but efforts are encouraged to develop and test methodologies for application at appropriately broad spatial and temporal scales.

Air Quality: (Target of \$850,000)

Subtheme 3a: Secondary pollutant formation and the impacts of TMDL-related primary and secondary atmospheric pollutants

Management/Policy Need: Secondary pollutants are not directly emitted from sources but are instead formed by chemical reactions in the atmosphere. Examples include ammonium sulfate and ammonium nitrate, which are major contributors to visibility degradation in the Tahoe basin and ozone concentrations, which now exceed air quality standards. Due to the secondary nature of these pollutants, the development of effective control strategies requires detailed knowledge of the chemical and physical processes leading to their formation. A related need is to model the transport and deposition of atmospheric pollutants into Lake Tahoe considered important in the Lake Tahoe Total Maximum Daily Load (TMDL): particles, nitrogen, and phosphorus.

Proposals under this subtheme should yield results that inform issues related to the processes leading to gaseous and particulate secondary pollutants in the Lake Tahoe basin, lead to the development of an air quality model, estimate primary pollutant carrying capacities, or increase our understanding of TMDL pollutant transport and deposition. Potential modeling and measurement studies must relate to: (1) the development and validation of an air quality model to: (i) predict secondary pollutant formation, and as feasible, (ii) estimate the transport and deposition of TMDL-related primary and secondary pollutants to the lake; (2) conducting focused studies to quantify the precursor sources and pathways leading to the formation of these secondary species; (3) the development of "carrying capacity" estimates for the primary and secondary pollutant precursors (i.e., hydrocarbons, nitrous oxides, ammonia, etc.), which can be used by agencies to develop acceptable level of emissions (i.e., carrying capacities) to help ensure the Tahoe Basin meets the most stringent pollution standards. Research to develop carrying capacities also should include an assessment of how much of each pollutant needs to be removed in order to attain and maintain standards. Research proposals for the development of TMDL pollutant transport and deposition estimates also should include the development of protocols to estimate, track, and report on the effectiveness of atmospheric pollutant load reduction actions.

Subtheme 3b: Assessing the impacts of fire on air quality

Management/Policy Need: Emissions from burning impact human health, ambient air quality, atmospheric visibility, and lake water quality. Information available to managers for predicting and mitigating these impacts is inadequate to quantify tradeoffs among various alternatives. The Tahoe Fire Commission found that there was "a lack of comprehensive air quality and meteorological information within the Lake Tahoe Basin to analyze air quality conditions to optimize burn windows for prescribed fire activities," and also that "low emission fuel reduction techniques are part of the necessary tools needed to minimize health-based air quality issues and visibility impacts when reducing the fuel load." Therefore, information is needed to increase our understanding of the effects of alternative fuel treatments, wildfires, and residential wood burning on air quality and pollutant deposition; and the development of best management practices to reduce these impacts.

Research should address one or more of the following issues: (1) evaluating local and regional

impacts on air quality and/or particle deposition of various alternatives in the basin for reducing forest fuels (e.g., underburning, broadcast burning, pile burning, thinning, mastication, removing biomass for burning in the basin, and removing biomass out-of-basin), considering short-term impacts and long-term effects given the likelihood of wildfires; (2) evaluating the impacts of residential wood burning to air quality and pollutant deposition; and (3) evaluating the ability of alternative BMPs or control measures to mitigate the air quality impacts of various practices.

Integrating Science: (Target of \$650,000)

Subtheme 4a: Understanding current and future resource conditions through analysis of remote sensing data

Management/Policy Need: The Round 10 Lake Tahoe SNPLMA capital program included funding to acquire high-resolution LiDAR data and multispectral imagery for the Tahoe basin. Analyses of these datasets and images are needed to develop information that agencies can use in the future planning of capital projects, to characterize current natural resource conditions, and to provide a baseline for comparison of future conditions resulting from the ongoing implementation of forest management and habitat restoration projects. Proposed research that fuses/integrates high-resolution LiDAR and multispectral imagery to further our understanding of land use patterns, and current and future natural resource conditions and management options is encouraged.

Research proposals are requested to (1) provide a spatially explicit determination of current forest structural classes across topographic features; (2) model a range of forest structure restoration strategies that include a range of tree density reductions and creation of openings based on (a) a range of opening sizes, (b) frequency distributions of opening sizes on the landscape, (c) rate of application of openings, e.g., number of openings by size per year, and (d) differences between intensity versus extent of openings. Climate change factors and model parameters could be included in forecasting possible forest density and structural restoration. (3) Analyze datasets to document the location and extent of hard and soft impervious cover; (4) develop derivative products to identify catastrophic fire risk, extent and distribution of defensible space in the urban intermix and Wildland Urban Interface, or hydrologic networks for application to TMDL project planning, floodplain management, or characterization of stream geomorphology; and (5) develop spatial models and maps of habitat suitability for special status plant and wildlife species or communities of concern

Subtheme 4b: Identifying environmental indicators and development of approaches for monitoring and evaluation

Management/Policy Need: Land management and regulatory agencies need to evaluate whether their actions are effective at meeting environmental goals. Credible evaluations require meaningful indicators, appropriate standards, and monitoring plans to evaluate the status and trends of environmental indicators relative to established standards, as well as tools and protocols for consistent and comprehensive data analysis and reporting.

Synthesis and review and/or conventional research proposals should address all of the following: (1) Synthesize and review previous and ongoing research efforts need to identify scientifically-

supported environmental indicators for a specific topic area of agency interest. (2) Prepare a monitoring and evaluation plan that can be implemented to measure the identified indicators and report on long-term status and trends of an environmental threshold area considering basin-wide needs, regulatory/programmatic requirements, statistical reliability, and agency financial constraints. (3) As appropriate, conduct pilot testing of field, analysis, data management and reporting protocols and procedures included in new or existing monitoring plans to support refinements that maximize the utility of these protocols and procedures to agencies. And (4) complete analyses to assess how the proposed new indicators compare to existing relevant indicators. Projects proposed under this subtheme should to the extent possible extract valuable information from existing datasets and provide data in accessible and useful formats to other researchers and managers seeking to evaluate changes in environmental thresholds. Researchers should plan to work collaboratively with agency representatives and other research teams to ensure the products will meet agency information and evaluation needs. Any environmental threshold area could be the focus of research proposed under this subtheme.

Subtheme 4c: Development of robust methods for evaluating fine sediment concentrations and loads

Management/Policy Need: The control of fine sediment particles is a high priority for achieving the Lake Tahoe TMDL clarity challenge. Reliable, low-cost methods are needed for evaluating fine sediment concentrations on a regional basis and for improving estimates of fine particle loading from various sources.

The measurement and assessment of fine particle concentrations and loads is required for effective water quality management in the Tahoe Basin. Low-cost methods for quantifying fine sediment concentrations must be developed that are reliable, repeatable, and applicable on a regional basis for monitoring the benefits from implementation of water quality improvement projects. Additional analyses should evaluate the extent to which data produced by proposed methods are dependent upon site conditions or other characteristics. Direct consultation with the Regional Stormwater Monitoring Program development staff is required to ensure that methods are complete and standardized. This research also should examine the relations between fine sediment particle numbers and other important water quality characteristics, such as turbidity, total suspended solids, and phosphorus loading. Research should build on past monitoring data, methods and studies conducted in the Tahoe basin.

Note that this project has been identified as a “directed action” focusing on synthesis of results from previous research that may be supplemented with additional investigations. Accordingly, the project will need to be implemented through a cooperative agreement to ensure coordination with relevant ongoing SNPLMA research projects.

D. Proposal Format and Content Requirements

The proposal must specify methodologies, deliverables, and strategies for interacting with management agencies in sufficient detail to allow an informed reader to assess the proposal's validity in addressing the science subthemes. The title of each proposal received will be published. Each proposal narrative should begin with a 1 paragraph abstract explaining the scope of the project. Applicants should identify portions of their proposal that contain confidential or

proprietary information that they do not want made public. Applicants are advised to use the proposal template, which is available at the grants.gov website.

The required format for all proposals is described in the table below. Project proponents should strictly follow these requirements in developing their proposal. Deviations from the required format may exclude your proposal from further consideration.

Required Format: All pages must have a **minimum of 10 point font size and 1” margins.**

Item and Content	Length/format
I. Title page	1 page
a. Project Title (the title of each proposal received will be published)	
b. Primary theme & sub-theme targeted by the proposal (choose only 1 primary subtheme , although proposals may address other subthemes)	
c. Principal Investigator(s) and Institution(s): name and institution (to which the primary award or any subcontracts will be made), address, phone, fax, and email. The first PI listed should be from the institution that will receive the award.	
d. Collaborators and their institutional affiliations: include any agency personnel who will be directly involved in the project	
e. Grants contact person: name, phone, fax, and email	
f. Total funding requested	
g. Total cost share (value of financial and in-kind contributions)	
II. Proposal narrative	This section has a maximum of 7 pages, single-spaced (longer proposals will not be reviewed)
a. Project abstract (1 paragraph summary)	
b. Justification statement: explain the relationship between the proposal and the subtheme(s)	
c. Concise background and problem statement	
d. Goals, objectives, and hypotheses to be tested	
e. Approach, methodology and location of research	
f. Relationship of the research to previous and current relevant research, monitoring, and/or environmental improvement efforts	
g. Strategy for engaging with managers and obtaining permits	
h. Description of deliverables/products and plan for how data and products will be reviewed and made available to end users	
III. Schedule of major milestones/deliverables in a table with estimated start and end dates (note that progress reports are required each quarter)	1 page
IV. Literature cited	Up to 2 pages
V. Figures (optional) for locations, schematics, sample outputs, etc. (Figures do not count toward page limits unless they are embedded in the narrative).	Up to 6 figures
VI. Budget (Requested and contributed funds)	Provide overall budget
a. Personnel: salaries/wages and time allocations for PI(s), associates,	

Item and Content	Length/format
students, technicians, etc.	with cost breakdowns for each project year, detailed budgets for all subawards or contracts, and narrative justification as needed to explain all project costs.
b. Fringe Benefits	
c. Travel (domestic and international travel must be listed separately)	
d. Equipment (purchase of nonexpendable equipment above \$5,000 is discouraged; leasing can be considered for equipment over \$5,000)	
e. Supplies (provide itemized list)	
f. Contractual	
h. Other	
i. Total Direct Costs	
j. Indirect Costs (Facilities and Administration, see page 11. Indirect costs must be shown as a separate line item.	
k. Total Budget Requested and Contributed	
VII. Abbreviated CV(s) for investigator(s) (summarizing qualifications that are most relevant to the research proposal); include CVs for all investigators receiving at least 10% of the total personnel costs.	
VIII. Summaries of Current and Pending Support for investigators; include forms for all investigators receiving at least 10% of the total personnel costs)	Use standard form included in application template

Quarterly Reporting. To comply with the requirements of the SNPLMA program, all funded projects are required to submit updates on a **quarterly basis, by the 1st of July, October, January, and April.** The October 1 progress report must provide a summary of accomplishments during the previous year. Proposals should account for these reports in their budgets and timelines.

Budgets and Indirect Costs (Facilities and Administrative Costs). Budgets **must** conform to the format of Standard Form 424 (see http://www.grants.gov/agencies/aapproved_standard_forms.jsp). **Detailed budgets must also be included for any subcontracts.** The budget categories on the SF-424 form must be used; for example, costs associated with personnel, including overhead, must be separated among salary/wages, fringe benefits, and indirect costs. The budget should display time allocations for key personnel for whom funding is requested. We discourage requests for purchases of equipment, which defined as non-expendable, tangible personal property with a unit cost of \$5,000 or more and has a useful life of more than one year. Tangible property that does not meet the definition of Equipment may be included in Supplies.

PSW intends to provide for as much on-the-ground science as possible with the limited amount of dollars available. Accordingly, applicants are encouraged to minimize indirect costs to the extent possible. All awardees and subawardees seeking reimbursement of indirect costs will be required to ensure that their budgets comply with a current indirect cost rate determination issued by the cognizant audit agency (i.e., Health and Human Services). **However, note that some**

institutions may be restricted from being reimbursed for indirect costs under cooperative agreements, as explained in the following section. Copies of the indirect cost rate determinations will have to be provided prior to approval of the award agreement. For entities that do not have such determinations (e.g., for-profit companies), their budgets must include details of proposed facilities and administrative or indirect costs, which must be reasonable (no more than 49% as an absolute maximum rate of modified total direct costs), allocable, and allowable. No profit or fee will be provided to a for-profit organization. Such entities will be also required to submit a written description of their policy for indirect costs (Facilities and Administrative Costs) and documentation of historical actual indirect cost rates, certified by an accountant, with their award application.

To determine allocable and allowable costs, consult the appropriate guidelines:

OMB Circular A-122, Cost Principles for Non-Profit Organizations

OMB Circular No. A-102 - Grants and Cooperative Agreements with State and Local Governments

OMB Circular No. A-21 -- Cost Principles for Educational Institutions

FAR Part 31—Contract Cost Principles and Procedures

Funding Instruments. PSW may use grants or cooperative agreements to fund selected projects, depending on policies and interests of the Tahoe SNPLMA Science Program and PSW. Forest Service policy requires use of a Cooperative Agreement for assistance awards that substantially involve Forest Service personnel after the award has been made, or if the proposed research requires coordination with other projects sponsored by the Forest Service. Under the terms of a Cooperative Agreement, cooperators have to contribute a cost share amounting to a minimum of 20% total project costs; in addition, **State Cooperative institutions cannot be reimbursed for tuition remission and indirect costs.** All cooperators can meet cost share by contributing direct cost, indirect cost, or a combination of both. Applicants who cannot meet these requirements may still apply, but they are advised that cost-effectiveness of proposals will be considered as part of the review process. In addition, PSW reserves the right to negotiate all budget elements and to refuse proposals if they are not in the best interest of the Tahoe SNPLMA Science Program administered by PSW.

Permits and Permissions. Where necessary or anticipated, applicants should provide documentation to demonstrate that they have or will be obtaining state and federal regulatory permits, and private-or public-landowner written approval to meet the needs of the proposal. More information about permitting and landowner permission requirements is available on the “Guidelines for Researchers” section of the PSW Tahoe Science website.

Proposal Submission. In all cases, the affiliation of the principal investigator(s) must match the institution through which project funding will be received. University researchers are advised to submit their proposals through their university’s sponsored projects office. Researchers should

conform to the submission policies of their host institutions particularly with regard to obtaining institutional endorsements and requirements for original signed signature pages.

E. Option for Applying through Grants.gov

Requirements for Applying through Grants.gov Website. Applicants may file an electronic application at the www.grants.gov Website. If so, you must complete the steps below. Anyone who is awarded funding will eventually have to complete these steps (see Section G: Award Process); however, *you do not have to complete these steps now* if you apply directly through e-mail or mail.

- furnish a DUNS number obtained by contacting Dun and Bradstreet at 1-866-705-5711. A DUNS number will be provided quickly by telephone at no charge. A DUNS number can also be obtained on-line at www.dnb.com
- register in the Central Contractor Registry (CCR), by going to www.ccr.gov and following the instructions provided on line, or by calling the CCR Assistance Center at 1-888-227-2423
- submit an SF-424 (Application for Federal Assistance) package
- furnish a tax identification number
- designate a financial institution or an authorized payment agent through which a federal payment may be made in accordance with US Treasury Regulations, Money and Finance at 31 CFR 208

Instructions for Applying through Grants.gov website. Grants.gov contains full instructions on all required passwords, credentialing, and software. Follow the instructions at Grants.gov for registering and submitting an electronic application. If a system problem or technical difficulty occurs with an electronic application, please use the customer support resources available at the Grants.gov website.

First time Grants.gov users should go to the “Get Started” tab on the Grants.gov site and carefully read and follow the steps listed. These steps need to be initiated early in the application process to avoid delays in submitting your application online. Registering with the Central Contractor Registry (CCR), will take some time to complete, so keep that in mind when beginning the application process. In order to register with the CCR, your organization will need a Data Universal Numbering System (DUNS) number. A DUNS number is a unique nine-character identification number provided by the commercial company, Dun and Bradstreet (D&B). To investigate if your organization already has a DUNS number or to obtain a DUNS number, contact Dun and Bradstreet at 1-866-705-5711. Be sure to complete the Marketing Partner ID (MPIN) and Electronic Business Primary Point of Contact fields during the CCR registration process. These are mandatory fields that are required when submitting grant applications through Grants.gov. Information about registering with CCR was published in the Federal Register on January 17, 2006 (see 71 FR 2549).

The Grants.gov Website includes a blank application package. To access the opportunity to compete for funding under this RFP, search for one or more of the following attributes:

Opportunity Number: USDA-FS-PSW-TAHOE-2010

Opportunity Title: Tahoe Research Supported by SNPLMA 2010.
Catalog of Federal Domestic Assistance (CFDA): 10.652 (Forestry Research).

F. Review Process

A full description of the process that will be used to evaluate the proposals, including criteria to determine technical quality and relevancy, is available at the PSW website (www.fs.fed.us/psw/partnerships/tahoescience) and at the Tahoe Science Consortium website (http://www.tahoescience.org/peer_review/Default.aspx). A brief description of the major steps in the review process is provided below.

Compliance with RFP: One or more representative(s) from the Peer Review Committee will work with PSW Tahoe SNPLMA Science Program representatives to examine the submitted proposals to ensure they fulfill all requirements stated in the RFP. Only proposals fulfilling all RFP requirements will be distributed for external peer review.

Peer Review: Accepted proposals will be distributed to at least three independent scientists (not affiliated with the TSC or the project proponents) who will evaluate technical quality. **Note that you have an option of identifying reviewers who you do not wish to review your proposal.** If you wish to exercise that option, please contact the TSC Program Coordinator (Jill Falman, jcfalman@ucdavis.edu, (775) 881-7566) within 5 business days of submitting your proposal. Do NOT include that information with your proposal.

Relevancy Review: Members of the Tahoe Science Agency Coordination Committee who represent land management and regulatory agencies will assess relevancy.

Synthesis: The Peer Review Committee will synthesize results of the technical reviews and agency reviews to create a list of proposals recommended to the PSW for funding. PSW will review the suite of recommended proposals to determine if it concurs with recommendations of the Peer Review Committee. Upon concurrence, PSW will then forward the package of recommended projects to the Tahoe Regional Executive Committee (TREX) and to the Bureau of Land Management for final approval and release of funds.

Notification: We anticipate notifying principal investigators about decisions regarding possible funding of their proposals by April 2010, although the schedule is contingent upon approval by TREX and the BLM. Anonymous peer review comments and relevancy review results will be distributed to the Principal Investigators of all proposals. Some projects may be identified as alternates to receive support should funds become available during the negotiation of awards.

G. Award Process

The PSW reserves the right to negotiate scopes of work, budget amounts and deliverables with proponents based upon feedback from the peer review process and to comply with Forest Service policies. Projects may be required to modify their proposed indirect cost rates and/or demonstrate cost share contributions.

Project Start Dates: Projects should expect to begin no earlier than June 2011, although the actual start date could be delayed. Until the U.S. Department of Interior, Bureau of Land Management sends PSW notification that funding is approved and available, PSW cannot make awards. Project charges cannot be incurred prior to the award.

Project Execution. It is the responsibility of the project proponent to coordinate with appropriate agency representatives or partners and secure any permits, agreements, or approvals necessary prior to initiating research. If, for example, the research is proposed to be conducted on agency or private lands, the project proponent must secure all applicable approvals from the land manager/owner. If the research requires use of data collected by an agency, then the project proponent must secure approval to use this data. This prerequisite must be satisfied before receiving funding.

Project Award Requirements. Upon execution of a federal award, the recipient/cooperator will be requested to:

- furnish a DUNS number obtained by contacting Dun and Bradstreet at 1-866-705-5711. A DUNS number will be provided quickly by telephone at no charge. A DUNS number can also be obtained on-line at www.dnb.com
- register in the Central Contractor Registry (CCR), by going to www.ccr.gov and following the instructions provided on line, or by calling the CCR Assistance Center at 1-888-227-2423
- submit an SF-424 (Application for Federal Assistance) package
- furnish their tax identification number
- designate a financial institution or an authorized payment agent through which a federal payment may be made in accordance with US Treasury Regulations, Money and Finance at 31 CFR 208

Authorization of Awards. Funding for these projects is not guaranteed and is subject to the availability and authorization of funds through the SNPLMA program, as well as final approval of the SNPLMA Round 11 science subthemes by the Secretary of Interior. PSW reserves the right to partially fund proposals/applications by funding discrete activities, portions, or phases of proposed projects. If PSW decides to partially fund a proposal/application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the proposal/application, or portion thereof, was evaluated and selected for award, and that maintains the integrity of the competition and selection process. PSW reserves the right to make additional awards under this announcement (after the original award selections are made) if additional funding becomes available. Any additional selections for awards will be made no later than 6 months after the original selection decisions. The additional selections must be made in accordance with the terms of this announcement and PSW policy.