

**ROUND 12 CAPITAL PROJECT NOMINATION FORM
LAKE TAHOE FEDERAL SHARE EIP CAPITAL PROJECTS
APPENDIX K**

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|---|--|---|-----------------------|
| Project Name: | Phase 6 – Preventing Aquatic Invasive Species Proliferation in Lake Tahoe Using Prevention, Early Detection and Rapid Response and Control and Eradication | EIP Number: <i>(Required)</i> | 339 |
| Federal Agency Sponsor: <i>(Required)</i> | U.S Fish and Wildlife Service | Contact: | Steve Chilton |
| Threshold: | Fisheries, Water Quality | Phone Number: | (775) 589-5265 |
| Threshold Standard: | Lake Habitat, Littorial | Email: | steve_chilton@fws.gov |
| FUNDING REQUESTED IN THIS ROUND: | | \$ 3,339,567 | |

Federal Share EIP Consideration

Select “yes” or “no” for each question. If you have a “yes” response, briefly describe. **Projects must meet one or more of these 5 items.**

1. Does the project involve federal land? Yes No
 If yes, is the federal land involved important to successful implementation of the project?

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2. Is this project identified in the EIP? If yes, please ensure the EIP number is identified in the above project information box. If no, provide a description of the project’s contribution to the EIP program. Yes No

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3. Does the project involve the conservation of a federal or regional threatened, rare, endangered, or special interest species? If yes, identify. Yes No

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| Control of AIS will facilitate the recovery of Lahonton Cutthroat Trout by restoring habitats and removing invasive competitors. |
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4. Does the project involve an identified federal interest such as the detection and eradication of non-native invasive species (aquatic or terrestrial)? If yes, identify. Yes No

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| Eurasian watermilfoil, curlyleaf pondweed, largemouth bass (<i>Micropterus salmoides</i>), bluegill (<i>Lepomis macrochirus</i>), Asian clam, quagga and zebra mussels, New Zealand mudsnails, and spiny Waterflea (<i>Bythotrephes longimanus</i>). Bullfrog (<i>Rana catesbeiana</i>) is also present in the Region. |
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5. Does the project develop knowledge and/or information to develop future capital projects in the EIP? (such projects that fulfill this function would include technical assistance, data management, and/or resource inventories) Yes No

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Check all Capital Focus Area(s) that apply (as defined in the Federal Vision):

- 1. **Watershed and Habitat Improvement**
- 2. **Forest Health**
- 3. **Air Quality and Transportation**
- 4. **Recreation and Scenic**

Check all that apply (must meet a minimum of one category):

- 1. **Continued emphasis on forest ecosystem health/fuels reduction projects considering the LTBMU Stewardship Fireshed Assessment and Lake Tahoe Basin Multi-Jurisdictional Fuels Reduction and Wildfire Prevention Strategy.**
- 2. **Continued implementation and/or completion of projects approved in Rounds 5 through 11 which implement the EIP. Project proposal should clearly describe the phase/product being produced along with the consequence of not completing the project phase proposed for Round 12.**

List Previously Approved Rounds and funding(provide project titles):

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| \$450,000 in Round 8, \$500,000 in Round 9, \$985,000 in Round 10 and \$3,221,000 in Round 11. |
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- 3. **Project is consistent with and contributes toward TMDL pollutant reductions within the four source categories (atmospheric, urban & groundwater, forested uplands, and stream channel). NOTE: If “yes”, then please respond to questions in the Accomplishments section of the nomination proposal.**
- 4. **Control of aquatic invasive species and prevention and/or detection of new aquatic invasive species.**

Project Nomination Proposal Outline

Project Summary (a brief summary which clearly describes the proposed project –maximum 200 words)

- Summarize ONLY the Round 12 project (also summarize scaling of funding to be described in more detail in the “Project Description” section below).

The proposed project continues the strategic design developed for the SNPLMA Round 11 proposal, including utilizing the Tahoe Region AIS Management Plan as the foundation. The Lake Tahoe Region AIS Management Plan identifies a set of goals that are the primary project areas of the proposal. These goals are Early Detection and Rapid Response, Prevention, Control/Eradiation and Public Education. Early detection and rapid response will be accomplished through rigorous monitoring followed by the ability to respond to a new detection efficiently and aggressively. This includes conducting plankton tows for quagga and zebra mussel veligers at ten locations twice a month from April until November, updating the Lake Tahoe Basin Interagency Dreissenid Mussel Rapid Response Plan, conducting yearly rapid response drills and outfitting a response team. Prevention will continue the successful watercraft inspection and decontamination program at on-highway locations in addition to the installation of a seal connecting the trailer to the watercraft at all launch ramps as they exit Lake Tahoe. This is conducted in close collaboration with the AIS Outreach Committee composed of public information officers from all involved agencies. Control and eradication has made leaps in the knowledge and technology of AIS control during previous SNPLMA Rounds. This information will now be strategically applied to production oriented approaches. Public education and outreach activities are a consistent component of each project area and are overseen by the AIS Outreach Committee.

Project Description

Introduction

- Provide project background which explains the situation and state the problem and how it will be addressed.

Note: Focus needs to be the project in Round 12 not a history of an ongoing project or program.

Project Background:

The FWS and our partners identified AIS as a substantial threat to the economic and environmental health of Lake Tahoe and began taking steps to address the threat four years ago. At risk is a substantial investment by private, local, state and federal interests in this diverse and unique ecosystem. Lake Tahoe is designated an Outstanding National Resource Water (ONRW) under the Clean Water Act (CWA Section 106) due to its extraordinary clarity. Substantial changes to the Lake Tahoe Region’s economy, pristine water quality, aesthetic value, and recreational pursuits are occurring, partly due to the harmful impacts of non-native aquatic plants, fish, invertebrates, and other invaders. These non-native aquatic organisms are considered ‘invasive’ (or *aquatic invasive species* [AIS] in water when they threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent upon such waters. AIS are commonly spread by activities such as boating, fishing, hatchery releases, and aquarium dumping. The Lake Tahoe Region is not only threatened by new introductions of AIS to Lake Tahoe from other waterbodies, but also the expansion of existing populations within the Lake. Lake Tahoe also harbors invasive plants and invertebrates such as the Asian clam that are not found in other lakes within the Tahoe Basin. These threats to Lake Tahoe and other lakes within the Lake Tahoe Basin are amplified by the effects of climate change.

At least 20 non-native species are established in the Lake Tahoe Region, including aquatic plants, fishes, invertebrates, and an amphibian. As examples, Eurasian watermilfoil (*Myriophyllum spicatum*; an aquatic plant) has been spreading around Lake Tahoe over the last 15-20 years, and curlyleaf pondweed (*Potamogeton crispus*; another aquatic plant) has begun to out-compete and expand dramatically over the last three years. Curlyleaf is more invasive and difficult to control. Beds of Asian clams (*Corbicula fluminea*) are larger and more common than previously known, and populations of warm water fishes such as largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*) have expanded their range beyond the Tahoe Keys area and into other areas along the nearshore and marinas. Moreover, global climate change has resulted in warmer water temperatures, likely facilitating the establishment of non-native plants in the nearshore environment and providing increased spawning areas for warm water fishes that compete with desirable species.

The potential economic impact to the Lake Tahoe Region caused by new AIS introductions such as quagga or zebra mussels (*Dreissena bugensis* and *D. polymorpha*, respectively) or expanding invasive aquatic plant populations would be substantial. The combined economic impacts to recreation value, tourism spending, property values, and increased boat/pier maintenance, when evaluated over a 50 year period, is estimated at \$417.5 million (present value), with an average annual equivalent value of \$22.4 million per year. The largest estimated impacts would be to property values and lost tourism spending, each accounting for 38% of the total estimated AIS damages. Spending on prevention and early eradication produces a higher benefit to cost ratio than post-infestation control programs such that maximum benefits are realized through early and preemptive action.

The AIS effort at Lake Tahoe has expanded substantially in the few, short years since the threat was recognized. In an unprecedented example of cooperation and action, the effort has many substantive accomplishments to its credit and plans for many more. Examples of these accomplishments include:

- Development of the Lake Tahoe Region Aquatic Invasive Species Management Plan and adoption of the Plan by the national Aquatic Nuisance Species Task Force
- Formation of the Lake Tahoe AIS Working Group (LTAISWG)\
- Formation of the Lake Tahoe AIS Coordination Committee (LTAISCC)
- Development and implementation of a Watercraft Inspection Program at Lake Tahoe
- Requirement that all launch ramps are locked unless there is an AIS inspector present
- Deployment of portable watercraft decontamination stations
- Installation of a semi-permanent decontamination station
- Training and certification of more than 100 Watercraft Inspectors
- Hiring an AIS Coordinator through the U.S. Fish and Wildlife Service (USFWS)
- Increased monitoring for invasive aquatic plants, invertebrates, and warm water fishes
- Use of diver-operated suction and benthic barriers to control invasive aquatic plants
- Large scale invasive plant controls instituted in Emerald Bay
- Commercial scale techniques developed for the control of Asian clams
- Measurement of warm water fish behavior and diets in and around the Tahoe Keys

- Increased education and outreach activities
- Quagga mussel survivability studies conducted by UNR/UCD

The Lake Tahoe AIS Coordination Committee (LTAISCC), in conjunction with the Lake Tahoe AIS Working Group (LTAISWG), using the LTAIS Management Plan as a basis, has set forth the three goals for Round 12 (Prevention, Early Detection and Rapid Response and Control and Eradication) and prioritized projects under each. The criteria used by the LTAISCC and the LTAISWG to prioritize projects was:

- Benefit of Action
- Certainty
- Feasibility (Organizational/ Technical Capacity)
- Risk of action
- Previous Investment
- Designated project funding – agency earmarks
- Stakeholder and agency concern and interest in the project

- Describe what Round 12 is specifically funding; list the number of years the requested funding will cover; briefly describe how this project links into previous projects/rounds (identify and describe other round projects and funding received). Show scaling of project (reduced funding request and associated reduction in accomplishments).

***NOTE:** Focus should be on finishing current/phased projects. If project is new in Round 12, clearly identify if the project is for planning or implementation and how it will be completed with Round 12 funds. Identify if other funds will be needed to complete the project. Please identify total non-SNPLMA funds that are being contributed/dedicated to the proposed Round 12 project and the source of those funds.*

Round 12 Project Proposal:

The proposal utilizes established goals identified in the nationally recognized Lake Tahoe Region AIS Management Plan and prioritized individual projects within each goal.

Each project was scored utilizing the above criteria, scores were added up and projects were placed within the appropriate priority range of high, medium and low. The high priority project needs identified during this process totaled \$6,352,000. This Round 12 proposal requests \$3,339,567 for those highest priority projects. Members of the LTAISCC and others are also seeking additional funding from other local, state and federal sources.

The table on the following page illustrates the high priority projects identified by the LTAISCC, total funding needed, the Round 12 request per project, and the agency tasked with implementing the project. Other funding sources are being pursued to offset any future scaling effect on these projects.

Early Detection and Rapid Response

| Project Type | Project | Round 12 SNPLMA Request | Implementing Agency |
|----------------------------|------------------------------------|-------------------------|---------------------|
| Early detection Monitoring | Early Detection Monitoring | 111,541 | TRPA |
| Rapid Response Plan | Rapid Response Plan Implementation | 56,774 | USFWS |

Prevention

| Project Type | Project | Round 12 SNPLMA Request | Implementing Agency |
|-----------------------|-------------------------------|-------------------------|---------------------|
| Watercraft Inspection | Watercraft Inspection Program | 946,099 | TRPA/TRCD |

| | | | |
|-----------------------|---|---------|-------|
| Watercraft Inspection | Effectiveness study and Planning for Entry Point Stations | 222,415 | USFWS |
|-----------------------|---|---------|-------|

Control and Eradication

| Project Type | Project | Round 12 SNPLMA Request | Implementing Agency |
|--------------|--|-------------------------|---------------------|
| Weed Removal | Removal of weeds from nearshore Lake Tahoe | 1,001,536 | TRCD |
| Weed Removal | Removal of weeds from Tahoe Keys | 600,788 | TRCD |
| Asian Clams | Lake-Wide Asian Clam Removal | 400,414 | TRCD |

Total of All Projects: \$3,339,567

It is expected that the funds requested for control and eradication would be spent over 2 years. Early detection/rapid response and prevention funds will be spent in one year. Additional funds from the States of California and Nevada, private individuals and other federal agencies will also be applied to this program.

Applications will be made to other sources for 2012 as their application cycles open. Anticipated applications include, Bureau of Reclamation, California Water Pollution Clean-Up and Abatement accounts, Nevada License Plate funds and federal FY 2012 appropriations. Inspection fees collected by TRPA are anticipated to be approximately \$300,000. If additional funds are approved and/or obtained from these sources, SNPLMA Round 12 needs will be reduced by that amount.

Should any alternate funding be acquired that funds the Watercraft Inspection or Early Detection Monitoring tasks that are part of this project, those funds that are then duplicative would be allocated to fund the tasks related to Control and Eradication, or the watercraft inspection regional upgrade study tasks.

If detection is made of a new non-native species, Round 12 funds may be diverted to a rapid response to control the new invader. Any rapid response would be in collaboration with the LTAIS Coordination Committee and would follow the procedures outlined in the Lake Tahoe Basin Dreissenid Mussel Rapid Response Plan.

Prevention - \$1,168,514

Preventing the introduction of AIS to new waterbodies is most desirable and, fortunately, far more cost efficient compared to control efforts. Conversely, the likelihood of eradicating AIS is dramatically reduced once the population(s) is widely established.

Prevention also involves understanding the biology of the target invasive and from that information, strategically placing resources to the best advantage. Quagga mussels have been shown to be highly adaptive and tolerant of water environments foreign to them. Recent research using Tahoe water suggests adult quagga mussel can survive and may be able to reproduce in Lake Tahoe.

Prevention measures will be used to address AIS not yet present as well as to diminish

harmful impacts by reducing further spread. Prevention measures that will be conducted include activities such as inspection, quarantine and decontamination of watercraft, enforcement of legal authority, and continuing to incorporate the private sector into the program. Inspection and decontamination of recreational equipment such as watercraft (including boats, rafts, kayaks, and float tubes), fishing gear, clothing, waders, rope, cooling tanks and live wells prevents the spread of many AIS such as dreissenid mussels, aquatic plants, and other unwanted pests.

During 2010 the AIS inspection program moved the primary inspection and decontamination process away from launch facilities on Lake Tahoe to four on-highway stations that intercepted five of the seven major highways entering the region. The inspection and decontamination stations were open 7 days a week, and these efforts will be continued with Round 12 funding (2 years). There are two benefits to this change in the inspection program. The first benefit is quality control. Having inspections occur at 16 private and public launch facilities makes quality control of the inspection process difficult. By having inspections that will continue to be performed at 5 locations by Tahoe RCD personnel (this does not include Echo or Fallen Leaf lakes) the quality of inspection and data collection for effectiveness monitoring improved greatly. The second benefit to the program was that by co-locating the high pressure/high temperature decontamination equipment with the inspections, we will be able to continue to do a complete bilge flush on all vessels not completely cleaned, drained and dry and a full decontamination on all high risk watercraft without congesting launch-ramp operations.

The prevention program and inspections will continue to be supported by a number of Basin partners. Enforcement of AIS prevention measures available in the Basin include TRPA's Governing Board amended Code of Ordinances requiring that watercraft launch facilities be closed unless there is a qualified watercraft inspector present and conducting inspections. Violations can result in penalties starting at \$5,000. The California Fish and Game Code § 2301 allows California Department of Fish and Game (CDFG) designated staff (or other authorized state authorities) to inspect conveyances (e.g. watercraft) suspected of harboring dreissenid mussels, require decontamination, and even impound or quarantine the conveyance. The Nevada Department of Wildlife has similar regulations including prohibited species lists and quarantine provisions.

The request for \$946,099 from Round 12 SNPLMA will cover only part of the total annual AIS inspection costs. The balance of the program costs will be made up in part by Tahoe Regional Planning Agency Inspection Fees. Other funding sources are being pursued as well.

Early Detection and Rapid Response - \$168,315

Following prevention, early detection, containment and control/eradication of new AIS introductions are the second most cost-effective measures to reduce the impacts from AIS. This will be accomplished through rigorous monitoring followed by the ability to respond efficiently and aggressively. Effective responses to new or newly spreading AIS require adequate resources, personnel and procedures in place. Round 12 will utilize the information gained from the exercises to guide the development of a response team, fully equipped and trained to respond to new AIS pest infestations. Potential storing and staging facilities will be identified and various containment and control options will be evaluated. Response will be facilitated by a collaborative effort between numerous agencies, NGO's, researchers, and other stakeholders. An Aquatic Invasive Species Early Detection Plan for Zebra and Quagga

Mussel Veliger Monitoring was developed in 2010 and implemented in May of 2010. This will continue through the Round 12 cycle.

Control and Eradication – \$2,002,738

Invasive weeds have been detected in numerous locations in Lake Tahoe. The continued spread of Eurasian watermilfoil and curlyleaf pondweed create severe economic and ecological impacts to Lake Tahoe, both from source and satellite populations. Presence of invasive plants provide habitat for undesirable warm-water fish and impede restoration of native fish populations. Round 12 funding will continue the strategy of identification, control and monitoring of priority sites. The emphasis will be on eliminating source populations and/or satellite populations. The primary source population is in the Tahoe Keys Lagoons. Round 12 will continue implementation of the study plan (“Evaluation of Methods for Aquatic Invasive Species Management in the Tahoe Keys” by Dr. Lars Anderson, USDA-ARS) developed through Round 9. This included a cost and task analysis of needed control measures for aquatic invasive weeds to determine the cost of the herbicide-based control strategy. Review and possible approval of herbicide use in the Tahoe Keys is on track for 2011 and Round 12 funding will be utilized to both continue implementation of the Plan and to implement a management strategy of herbicide application if said application is approved by the California Water Quality Control Board. (The California Water Quality Control Board, Lahontan Region (Lahontan Water Board) is working to adopt procedures for allowing project proposals to come before the Board for review and discretionary authorization of pesticide use. The Lake Tahoe Invasive Species Coordination Committee has been working with the Lahontan Water Board so the proposal for use of herbicides to control invasive weeds in the Tahoe Keys lagoon areas is eligible for review and can be considered for discretionary Board authorization under the forthcoming procedures.)

Asian Clams

During 2010, implementation of a large scale use of benthic barriers to control Asian clams was completed in Marla Bay in Nevada and offshore of Lakeside Marina in California. Divers placed one-half acre of rubber barrier material on the lake bottom at each of these locations and measured dissolved oxygen and other constituents for four months. When the barriers were removed, mortality of Asian clams was nearly 100%. Round 12 will fund the continuing project to control Asian clam populations in Lake Tahoe on a large-scale basis. It is anticipated that research will provide a basis for commercial application of the benthic barrier technique on a large, year-round scale.

Funding Background:

SNPLMA AIS funding began in Round 8 (\$450,000) with four projects within the AIS Program and continued with Rounds 9 (\$500,000), 10 (\$985,000) and 11 (\$3,221,000).

Any scaling down of this proposal should be in concert with the following priority list of Round 12 AIS projects.

Round 12 Proposal Project Priorities

- Prevention
- Early Detection/Rapid Response
- Invasive Weeds
- Asian Clam

Alternative Scaled-Back AIS Project Request

Early Detection and Rapid Response

| Project Type | Project | Round 12 SNPLMA Request | Scaled-Back |
|----------------------------|------------------------------------|-------------------------|-------------|
| Early detection Monitoring | Early Detection Monitoring | 111,541 | 111,541 |
| Rapid Response Plan | Rapid Response Plan Implementation | 56,774 | 56,774 |

Prevention

| Project Type | Project | Round 12 SNPLMA Request | Scaled-Back |
|-----------------------|---|-------------------------|-------------|
| Watercraft Inspection | Watercraft Inspection Program | 946,099 | 946,099 |
| Watercraft Inspection | Effectiveness study and Planning for Entry Point Stations | 222,415 | 150,000 |

Control and Eradication

| Project Type | Project | Round 12 SNPLMA Request | Scaled-Back |
|--------------|--|-------------------------|-------------|
| Weed Removal | Removal of weeds from nearshore Lake Tahoe | 1,001,536 | 800,000 |
| Weed Removal | Removal of weeds from Tahoe Keys | 600,788 | 500,000 |
| Asian Clams | Lake-Wide Asian Clam Removal | 400,414 | 300,000 |

Total for Full Round 12 Request: \$3,339,567

Total of Scaled-Back Request: \$2,864,414

- Describe the “readiness” of this project to move forward (urgency, capacity, capability, environmental documentation, interagency agreements, etc).

Lake Tahoe is at risk of being invaded by non-native species every day. The prevention, detection, rapid response and control programs instituted at Lake Tahoe have demonstrated that it is possible to provide a high level of certainty that new invasions will not occur and existing invasive species will be controlled and eradicated if possible. The Lake Tahoe AIS Coordination Committee (LTAISCC) has increased its capacity to meet the financial accountability, infrastructure and personnel needs of this nomination and will continue to increase capacity as these programs mature. The Lake Tahoe Region Aquatic Invasive Species Management Plan (Plan) provides direction for fiscal responsibility and identifies the Tahoe Regional Planning Agency (TRPA) as the primary fiscal agent for activities described in the Plan. This nomination is consistent with the goals identified in the Plan. Environmental documentation has progressed on a project basis and all requirements of NEPA and CEQA have been addressed to date. Additional documentation may be required as projects go forward. The FWS currently has contracts with the Tahoe Resource Conservation District and the TRPA for implementation of SNPLMA projects and beginning with SNPLMA Round 11 began utilizing the financial infrastructure and experience with federal contracts of the TRPA. In addition, the FWS is chair of the LTAISCC that is comprised of federal and state agencies as well as representatives of the science community and is a policy level group that meets once a month to direct and coordinate AIS activities.

- Describe partnerships for this project. (if applicable, project should identify and describe committed/secured partner funding and/or other partner contributions and how it is integrated into the project).

The Lake Tahoe AIS program has many partnerships including those previously identified with the LTAISCC. The Lake Tahoe AIS Working Group advises the LTAISCC and is the group that is involved on a daily basis with implementing the LTAISMP and is comprised of federal, state, local, NGO's and members of the science community. The AIS program has received funding in the past from the Bureau of Reclamation (Reclamation), US Army Corps of Engineers (USACOE), states of California and Nevada, public utility districts, non-profits and private individuals. During the term of Round 12 only private funding sources (fees) are available at this time. SNPLMA Round 12, as the final round of the Lake Tahoe SNPLMA will be the funding bridge to future funding through the reauthorization and appropriation of the Lake Tahoe Restoration Act if it is authorized by Congress. As additional funding is requested and secured, it will be consistent with the goals of the LTAISMP.

Note: The form requests information about project goals, objectives, accomplishments, and questions the program is designed to answer across several different sections. These issues are closely linked and your individual responses should provide a cohesive description.

Goal – Purpose and Need (“larger” statement of future expected outcome – usually not measurable)

The goals of the program are articulated in the Lake Tahoe Region Aquatic Invasive Species Management Plan.

- Prevent new introductions of AIS to the Lake Tahoe Region
- Limit the spread of existing AIS populations in the Lake Tahoe Region, by employing strategies that minimize threats to native species, and extirpate existing AIS populations when possible

- Abate harmful ecological, economic, social and public health impacts resulting from AIS

Objectives (specific measurable statements of action – Round 12 only - which when completed will move towards achieving the goal)

Note: Objectives will form the basis for the milestones/deliverables to be identified in Appendix B-8

- Describe how fulfilling objectives will contribute to the achievement of one or more environmental thresholds (air quality, water quality, soil conservation, vegetation, fisheries, wildlife, scenic, noise, recreation). Provide measures if applicable. For example: acres treated, miles of stream restored for each objective.

The presence of AIS in Lake Tahoe negatively affects the Recreation, Fisheries and Water Quality Thresholds. The prevention, early detection, rapid response and control of new and existing AIS will positively affect the achievement of these Thresholds.

The objectives of the Lake Tahoe AIS program as part of this nomination are as follows:

Prevention- The objective is to inspect all trailered watercraft that launch into the waters of the Lake Tahoe region that have last launched into other waters and to inspect as many car-top watercraft as feasible. Keeping new aquatic invasive species such as quagga and zebra mussels out of Lake Tahoe will further the achievement of the Recreation, Fisheries and Water Quality thresholds. Preventing the spread between waterbodies will also enhance achievement of those thresholds. The establishment of new AIS will negatively affect the water quality of the littoral zone, habitat for native fish and the recreational experience of the public. The target is to inspect 12,000 trailered watercraft.

Early detection – The objective is to implement the early detection monitoring protocol to detect any infestations of invasive invertebrates such as quagga/zebra mussel. Identifying new infestations such as quagga and zebra mussels early will improve the ability to remove the infestation and contribute to the achievement of the Recreation, Fisheries and Water Quality Thresholds.

Rapid Response – The objective is to develop rapid response capability. The Lake Tahoe Basin Interagency Dreissenid Mussel Rapid Response Plan has been written and effectiveness exercises will be led by Dr. Lars Anderson of USDA ARS. Responding rapidly, including eradication, to a new detection will facilitate in achieving the Recreation, Fisheries and Water Quality Thresholds.

Control – The objective is to reduce the acres of the Lake Tahoe region infested by Asian Clams and aquatic weeds. The objective for Asian clams is at least two acres and for aquatic weeds, at least 15 acres. Reducing the infestations of these invasives will contribute to the achievement of the Recreation, Fisheries and Water Quality Thresholds. The removal of

aquatic weeds and Asian clams will contribute to achieving water quality thresholds in the littoral zone of Lake Tahoe as well as contributing to lake fish habitat, Lahontan cutthroat trout thresholds and the recreational experience of the public.

These objectives reflect what can be accomplished given the full nomination request. Should a reduced amount of funding be awarded the objectives would also need to be reduced (refer to scaling in previous section).

All projects will be conducted in close collaboration with the AIS Outreach Committee composed of public information officers from all involved agencies. A yearly accomplishments report will be produced and communicated to the public and agencies through the Outreach Committee. Public education and outreach activities are a consistent component of each project area and are overseen by the AIS Outreach Committee.

- Describe the estimated environmental risks from unintended consequences of the proposed project (if applicable).

While the majority of the projects contained in this nomination are not likely to produce adverse impacts, the removal of Asian clams is likely to result in the removal of a portion of the native benthic community. This would be a short term impact that would be outweighed by the long term benefit to the native community from the removal of the clams.

Accomplishments

- Describe the anticipated project accomplishments (i.e. products or identifiable environmental benefits being produced or implemented under this project), and how the project results/accomplishments will be communicated and made available to the public.

Note: Differentiate between direct and/or primary project effects and secondary and/or overall watershed effects.

Prevention- The anticipated accomplishment is to inspect all trailered watercraft that launch into the waters of the Lake Tahoe region that have last launched into other waters and to inspect as many car-top watercraft as feasible. The target is to inspect 12,000 trailered watercraft.

Early detection – The anticipated accomplishment is to implement the early detection monitoring protocol to detect any infestations of invasive invertebrates such as quagga/zebra mussel at eight locations in Lake Tahoe, Fallen Leaf Lake and Echo Lake monthly from April until November of each year.

Rapid Response –The Lake Tahoe Basin Interagency Dreissenid Mussel Rapid Response Plan has been written and effectiveness exercises will be lead by Dr. Lars Anderson of USDA ARS in 2011. Dr. Anderson will lead the design of exercises, assess alternative detection, containment and eradication techniques and evaluate the results. Effective responses to new or newly spreading AIS require adequate resources, personnel and procedures in place. Specifically, Round 12 will utilize the information gained from the exercises to guide the development of a response team, fully equipped and trained to respond to new AIS pest infestations. Potential storing and staging facilities will be identified and

various containment and control options will be evaluated. Specifically, the accomplishment will be to train and equip a three person AIS rapid response team.

Control – The anticipated accomplishment is to reduce the acres of the Lake Tahoe region infested by Asian Clams and aquatic weeds. The objective for Asian clams is at least two acres and for aquatic weeds, at least 15 acres.

These anticipated accomplishments reflect what can be accomplished given the full nomination request. Should a reduced amount of funding be awarded the objectives would also need to be reduced.

All projects will be conducted in close collaboration with the AIS Outreach Committee composed of public information officers from all involved agencies. A yearly accomplishments report will be produced and communicated to the public and agencies through the Outreach Committee. Public education and outreach activities are a consistent component of each project area and are overseen by the AIS Outreach Committee.

- If you checked “yes” for the project being consistent with and contributing to TMDL pollutant reductions, please consider and integrate the following in the project description:

a) Describe whether, and how, the project demonstrates advanced, alternative, or innovative practices.

b) If project includes project level monitoring, describe ability of proposed monitoring strategy to contribute to the state of TMDL knowledge. Also describe if purpose of the capital project is to conduct data collection and/or analysis related to Lake Tahoe clarity.

c) Describe treatment approach for reducing pollutants and/or measures to address connectivity between pollutant sources and Lake Tahoe or its tributaries. Identify target pollutants, and, to the degree feasible, provide quantitative estimates of project effectiveness at reducing pollutant loads (and/or a commitment to provide post-project estimates).

d) If appropriate, describe whether, and how, the project can be combined or coordinated with other TMDL implementation projects.

Monitoring

- Describe the project monitoring that will be implemented as part of this project including:
 - List the questions the monitoring program is designed to answer.

Is the watercraft inspection program effective?

Monitoring of the watercraft inspection program was incorporated into the program in 2010 and will be continued into 2012. A third party was contracted to bring watercraft through the inspection process at various inspection stations and the inspections were documented and analyzed. Modifications to the inspection process were made as necessary. These blind tests will continue through 2012.

Are there Quagga or Zebra mussels in Lake Tahoe?

Early detection monitoring for quagga/zebra mussels will continue with funding through Round 12. Early detection monitoring is needed to rapidly respond to any invasion of these species so that measures can be taken to address that invasion and limit impacts.

Are the control measures for invasive weeds and Asian clams effective?

Before and after monitoring transects will be documented for all weed and clam control projects in addition to studies of recolonization of weeds and clams after control projects have been completed.

- Describe any coordination with, or input from, the science community on monitoring and adaptive management that has occurred on the development of this nomination and what changes (if any) to the project were made as a result of this input.

The Lake Tahoe AIS program includes input from the science community in all aspects of project planning, including project level effectiveness and status and trend monitoring. While the AIS program to date has not adopted a formal adaptive management system, we have and continue to use the Plan, Do, Check, Act approach for refining future actions. The best example of this is the interaction between the agencies and the science community to address Asian clam removal. Staff from agencies and research community worked hand in hand in planning and carrying out many pilot projects to determine the most effective methods for removal of Asian clams from Lake Tahoe. In addition the science community was actively involved in the prioritization process for determining the scope and content of this nomination. This is the level of coordination between agencies and the science community that the Lake Tahoe AIS program has continued in the development of this nomination, and will continue in its implementation.

- Describe the methods and strategies (i.e. monitoring, research, or both) that will be used to verify whether the project goals and objectives have been met? (*Note: A detailed monitoring plan and/or research plan is not required, however, enough detail must be provided to allow someone that is unfamiliar with the project to understand and evaluate the proposed methods and strategies.*)

The effectiveness monitoring for the vessel inspection program will be conducted using a blind test of inspector effectiveness at locating AIS on vessels that pass through the inspection station. To accomplish this task, vessels will be sent through an inspection that are known to have AIS analogs present. The number of these

vessels that are allowed to pass through without detecting the AIS analog will be determined as a measure of effectiveness.

The effectiveness of the early detection monitoring protocol will be determined through an analysis of similar monitoring programs for other water bodies that have proven to be effective.

The effectiveness monitoring for aquatic weed removal projects will consist of pre-treatment surveys to quantify the weeds present using metrics such as percent cover and/or biomass. Post-treatment surveys will then be conducted using the same metrics immediately after treatment, and revisits conducted at the end of the season and the following season to assess long term effectiveness.

Similar methods will be used will be used for other control and eradication efforts for invertebrates. The metrics will vary by the taxa to be removed but all projects will look at short term and long term effectiveness. Monitoring to determine recolonization rates will be conducted post project.

- Describe whether the monitoring or research associated with this project fits into or is part of a larger monitoring or research program.

The effectiveness monitoring that will be conducted for control and eradication projects will be incorporated into larger Lake Tahoe EIP status and trend monitoring effort that seeks to track the current status of AIS in the Lake Tahoe region.

- Describe how information from the monitoring and/or research will be used to improve the continued performance of the proposed project or future similar projects.

As part of the process of Plan, Do, Check, Act, the results of the effectiveness monitoring on inspection and control treatments will be used to adjust the methods used to increase the effectiveness of future inspections/treatments or to inform the need for future research. For example, should we learn that the current methods for treating aquatic weeds are ineffective in some areas of the lake we would look to alternative methods to achieve removal of the weeds from that area.

Attachments

- If applicable, include 8 ½ X 11 map depicting the project

Appendix B-8

**LAKE TAHOE RESTORATION PROJECTS
ESTIMATED NECESSARY EXPENSES & KEY MILESTONE DATES**

| | | | |
|-------------------|--|---------|--------------------------------|
| Project Name: | Phase 6 – Preventing Aquatic Invasive Species Proliferation in Lake Tahoe Using Prevention, Early Detection and Rapid Response and Control and Eradication | Agency: | U.S. Fish and Wildlife Service |
| Prepared by: | Steve Chilton | Phone: | 775-589-5265 |
| SNPLMA Project #: | | EIP #: | 339 |

Identify estimated costs of eligible reimbursement expenses:

| | | |
|--|--------------|---------|
| 1. Planning, Environmental Assessment and Research Costs (specialist surveys, reports, monitoring, data collection, analysis, NEPA, etc.) | \$ _____ | _____ % |
| 2. FWS Consultation – Endangered Species Act | \$ 5,000 | .15 % |
| 3. Direct Labor (Payroll) to Perform the Project | \$ _____ | _____ % |
| 4. Project Equipment (tools, software, specialized equipment, etc.) | \$ _____ | _____ % |
| 5. Travel (including per diem where official travel status required to carry out project, such as serve as COR, experts to review reports, etc.) | \$ 6,000 | .17 % |
| 6. Official Vehicle Use (pro rata cost for use of Official Vehicles when required to carry out project) | \$ 6,000 | .17 % |
| 7. Cost of Contracts, Grants and/or Agreements to Perform the Project | \$ 3,000,000 | 89.9 % |
| 8. Other Direct and Contracted Labor: Agency payroll for the Contracting Officer to do project procurement, COR, Project Inspector, Sec. 106 Consultation if required, NEPA Lead, Project Manager, Project Supervisor, and subject experts to review contracted surveys, designs/drawings, plans, reports, etc.; Also covered is the cost to contract for a Project Manager and/or Project Supervisor if contracted separately from other project contract(s) | \$ _____ | _____ % |
| 9. Other Necessary Expenses (see Appendix B-11): Indirect costs associated with implementing a project, such as support services, budget tracking etc. | \$ 322,567 | 9.6 % |
| TOTAL: | \$ 3,339,567 | 100 % |

Estimated Key Milestone Dates:

| Milestones/Deliverables: | Date: |
|---|-------------------|
| 1)Prevention- Planning and inspection of all trailered watercraft that launch into the waters of the Lake Tahoe region that have last launched into other waters and to interdict as many car-top watercraft as feasible. | 1/2012 to 12/2014 |
| 2)Early detection – Implement the early detection monitoring protocol to detect any infestations of invasive invertebrates such as quagga/zebra | 1/2012 to 12/2014 |

| | |
|---|-------------------|
| mussel.) | |
| 3)Rapid Response – Implement the Lake Tahoe AIS Rapid Response Plan | 1/2012 to 12/2014 |
| 4)Control – Reduce the acres of the Lake Tahoe region infested by Asian Clams, aquatic weeds, and warm water invasive fish. . | 1/2012 to 12/2014 |
| Final Completion Date: 6/2015 | |

COMMENTS: