Summary Information

Lassen National Forest

Monitoring effectiveness of watershed improvement measures in Deer, Mill, Antelope and Battle Creeks

Amount sought: $259,152

Duration: 36 months

Lead investigator: Mr. Ken Roby, Lassen National Forest

Short Description

This project would assess the effectiveness of past and ongoing watershed improvement activities in four of the five watersheds on the Lassen National Forest that support anadromous fishes. Data would be collected in the Deer, Mill, Antelope and Battle Creek watersheds. The plan proposes to monitor the effectiveness of implemented practices at site, reach, sub−watershed and watershed scales.

Executive Summary

The proposed monitoring would assess the effectiveness of past and ongoing watershed improvement activities in four of the five watersheds on the Lassen National Forest that support anadromous fishes. Data would be collected in the Deer, Mill, Antelope and Battle Creek watersheds. All four streams are tributary to the Sacramento River between Chico and Redding and drain area from the Sacramento Valley east to mountain ridges. Over the past seven years numerous land owners, watershed conservancies and agencies have collaborated to improve watershed conditions and protect and improve habitats for anadromous fishes. Following watershed analysis and development of watershed management strategies, improvements have been implemented. Private funding, CALFED grants and Forest Service appropriated funds have been used to fund and implement several hundred improvement actions. These actions have focused on the treatment of sources of accelerated sediment delivery, and have emphasized road treatments.

The plan proposes to monitor the effectiveness of implemented practices at site, reach, sub−watershed and watershed scales. At the site scale, evaluations of all road crossing treatments would be made. At a sub−set of these sites, estimates of sediment delivery to channels would be made, and compared to sediment delivery from a like number of untreated

road crossings. Differences above and below channel crossing treatments would be monitored to assess their effectiveness in improving habitat at the site scale. Finally, habitat conditions in selected reaches from sub−watersheds and main stem channels of the watersheds would be monitored to improve baseline information, and provide a basis for assessing overall success of management and restoration activities in protecting and improving conditions in the long term. Results would be shared through public presentations, a field trip and written reports.

In combination, the monitoring will result in improved evaluation of improvement techniques and strategies applicable to ongoing and future actions in these watersheds and other CALFED priority areas.

The plan monitors actions intended to address numerous ERP and CVPIA goals and objectives. These include protection and restoration of habitat for anadromous fishes, and improving and restoring ecosystem processes that maintain those habitats, specifcally sediment regimes and stream channels.

Project Description: Project Goals and Scope of Work

Monitoring Effectiveness of Watershed Improvement Measures in Deer, Mill, Antelope and Battle Creeks

Problem, Goals and Objectives

This proposal would continue and expand monitoring of watershed improvement activities in the Deer, Mill, Antelope and Battle Creek watersheds. This monitoring proposal has several objectives: continue to assess the on-site effectiveness of implemented improvement actions; add at site channel reach scale assessments of project effectiveness; provide additional baseline monitoring of habitat conditions and assess the (assumed) short term impact versus long-term benefits of road decommissioning at channel crossings. The proposal would supplement ongoing monitoring of habitats and spring-run salmon populations in Deer, Mill and Antelope Creeks.

Restoration work in these watersheds was accelerated in 1997 when the Lassen National Forest (LNF) received the first of three CALFED grants. Since that time several hundred actions have been implemented in the four watersheds. Roughly half this work has been funded through CALFED, half through matching funds. A rough summary of these activities is included as Table 1 below.

The first CALFED grant to LNF was used for planning and demonstration of likely restoration actions. It was successfully completed and produced inventories, ratings and prescriptions for improvement actions. Actions focused reducing road related sediment and changes to flow caused by forest roads. Based on this planning, a second CALFED grant was sought and obtained by LNF to fund improvement work. Deer Creek Watershed Conservancy (DCWC) also successfully obtained a CALFED grant to address some of the sites identified on private lands. These grants are ongoing (Forest Service grant ends this calendar year, the DCWC Grant in 2005). The Forest also received a CALFED grant to implement improvement activities in the Antelope Creek Watershed in 2002 to be completed in 2005. LNF collaborated with both the Deer Creek Watershed Conservancy and the Battle Creek Watershed Conservancy on grants approved in 2004. Contracts to facilitate additional work will be completed soon, and additional improvement work will be implemented in 2005 and 2006 at approximately 50 additional sites in each watershed.

Restoration in the project watersheds will not be complete by 2007 but there are several sub-watersheds in the Deer Creek watersheds where restoration will be complete in a practical sense (all identified priority sites will have been treated with existing technologies). This is not the case in numerous other sub-watersheds, particularly those with high percentages of private timberlands. Information gained from the monitoring can be incorporated into work in these watersheds, to work upcoming through CALFED and matching funding in Battle and Deer Creek, as well as other CALFED priority watersheds.

The fundamental question the proposal addresses is the effectiveness of upslope restoration activities (primarily road treatments) in meeting their on site objectives, and in protecting or

improving or fish habitat at the site, sub-watershed and watershed scales. The proposal would expand and extend the time period of existing monitoring efforts to better address four important questions. 1- Are road treatments effective in meeting their on site objectives of reducing erosion and alterations of flow? 2- Do the treatments result in improvement in habitat at the site scale? 3- Does the combination of treatments result in improvement in habitat at the sub-watershed scale? 4- Does the combination of treatments result in any change in habitat at the watershed scale?

Overlaid on these questions is the additional objective of expanding the time frame for looking at site effectiveness, and habitat conditions. Effectiveness of most measures can be concluded only if they are subjected to large flow events. Extending the monitoring period increases the potential for project effectiveness to be gauged against such events.

The monitoring proposal would supplement ongoing LNF monitoring of habitat condition and spring-run salmon populations led by the California Department of Fish and Game in Deer, Mill and Antelope Creeks. Note that LNF has limited ongoing habitat monitoring in headwater streams of Battle Creek. Battle Creek Conservancy (BCC) recently completed a watershed analysis with extensive in-channel habitat characterization. BCC plans to develop a long-term monitoring plan. LNF will cooperate in that effort, and so has not included additional monitoring of Battle Creek habitat in this proposal.

Table 1 - Summary of road and landing improvement measures. Note that actions in Battle Creek just began in the fall of 2004, and are not included in these tables.

Deer Creek

Year	Road Surface		Road Drainage		Cros sings	DPDs	Closures		Decomms		Land ings	Other*
	sites	miles	sites	miles			sites	miles	sites	miles		
1999	-	-	1	0.3	1	-	1	0.8	3	1.8	1	-
2000	-	-	1	0.1	-	-	1	0.2	-	-	1	1
2001	1	0.3	3	0.3	22	5	5	1.1	7	1.5	3	-
2002	5	5.7	5	0.5	12	11	8	3.3	12	3.6	-	5
2003	3	2.1	6	5.4	9	11	5	2.9	8	2.8	12	2
2004	1	2.2	7	3.4	8	8	0	0	0	0	1	1
Total	10	10.3	23	11.0	52	35	20	8.3	30	10.7	18	9

Mill Creek

Year	Road Surface		Road Drainage		Crossings	DPDs	Closures		Decomms		Other*
	sites	miles	sites	miles			sites	miles	sites	miles	
2000	-	-	1	3.0	10	21	1	0.25	3	1.7	-
2001	4	0.85	4	0.5	3	5	-	-	-	-	-
2002	5	6.25	7	2	34	6	-	-	1	0.3	1
2003	0	0	1	0.5	16	2	0	0	7	3.7	2
2004	1	0.5	4	1.5	6	7	0	0	1	1.6	1
Total	9	7.1	13	6.0	69	41	1	0.25	12	7.3	5

Antelope Creek

Year	Road Surface		Road Drainage		Crossings	DPDs	Closures		Decomms		Landings
	sites	miles	sites	miles			sites	miles	sites	miles	
1998	1	1.5	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	1	0	0	0	0	0	0
2003	1	1.2	1	1.7	2	0	1	0	0	0	0
2004	1	0.2	4	4.5	10	37	1	0.8	12	7.4	0
Total	3	2.9	5	6.2	10	37	1	0.8	12	7.4	0

Justification

Conceptual Model - The basis of this monitoring proposal, and our restoration and improvement work are three conceptual models that were presented in our past CALFED grant applications. These models are supported with site and watershed scale data from several sources. The models depict our understanding of ecosystem processes, restoration ecology and adaptive management. Data to develop our approach comes from published literature relating to watershed-fisheries interactions, and extensive data collection within the subject watersheds.

Two models of ecosystems processes were developed by the team that developed the plan to monitor effectiveness of the Northwest Forest Plan (FEMAT). These models describe the connections and interactions between the physical and biological components of aquatic and watershed systems. The systems include upslope, riparian-floodplain, stream channel and biological components. These components are strongly influenced by basic physical factors, such as climate, topography and geology; natural disturbance regimes (flood, draught, etc.) but are also influenced to some degree by anthropologic disturbance.

The basic thesis of our management of the anadromous watersheds on the Lassen NF, reflected in our improvement program, is that habitat for anadromous fishes is a result of the nature and condition of the watersheds that feed them. There is little uncertainty that these models accurately represent watershed processes. There is uncertainty as to the extent of change that will be realized in fish populations as a result of treating upslope problem areas, and the type, magnitude and distribution of natural disturbance events that might trigger such a response.

Our watershed analysis concluded that the primary changes in watershed processes (outside water diversions and passage issues in Battle Creek) are in the sediment regime. At present chronic sources of considerable magnitude are added to systems where episodic delivery of sediment from extreme flow events historically dominated the sediment regime. Analysis also showed roads to be the primary source of increased sediment, and that channel crossings contributed a high percentage of road generated sediment. Based on our understanding of system processes as reflected by the models, it follows then that treatment of sediment sources should result in a sediment regime more closely resembling the one that existed historically.

The models and our improvement projects reflect our premise that a multi-scale approach to ecosystem restoration is essential. Though important goals are associated with the large spatial

scale (improving and protecting anadromous habitat and strengthening system resiliency), actions to reach those goals (road decommissioning, treatment of sediment sources) are implemented at the site scale. It follows then, that monitoring of this approach must also be multi-scale. Implementation of actions must be measured at the site scale and effectiveness is best measured at this scale. As the spatial scale of analysis increases, cause and effect relationships are more difficult to detect. The primary limitation of our monitoring approach is detecting change at the larger scales, especially considering the natural variation of effects and relatively short monitoring periods.

It also follows that since sediment regime is the process of concern, and that reduction in sediment from chronic sources the goal of improvement actions, sediment should also be the key attribute measured by monitoring efforts.

Our final conceptual element is adaptive management. Many models, of varying complexity have been offered to depict and describe the concept, including that contained in the CALFED EIS/EIR Technical Appendix. Our approach is to monitor practices (and conditions) so that lessons learned can be used to refine strategies, priorities and restoration prescriptions.

Changes in Monitoring Design - Our approach would change if results from year number one showed unanticipated variation in repeat samples. In this case, sampling protocols would be revised.

Previously Funded Monitoring

Relatively small amounts of previous CALFED grants were applied to monitoring. Most habitat, and all fish population monitoring to date has been accomplished through matching Forest Service funds. A component of the ongoing CALFED grant in the Antelope Creek watershed, and a component of the just approved Deer Creek Conservancy grant for Deer Creek are focused on technical transfer of restoration results. The Antelope project will include a field trip and web-based presentation of lessons learned. The upcoming Deer Creek project technical transfer elements are currently being planned; they could make us of data collected by the present proposal.

Ongoing monitoring efforts are at different stages of completion. On-site implementation and effectiveness and post storm monitoring have been completed. They have been used to modify treatment prescriptions. Data from sub-watershed and watershed scale reaches has been collected, but not yet evaluated. The Deer Creek Conservancy Phase III grant (to begin in 2005) also includes provisions for remote video monitoring of channel crossing treatment effectiveness.

There are no regulatory or implementation barriers to completing the ongoing monitoring. The remote video monitoring will run through the winter of 2006-07. The current, in-channel monitoring of habitat conditions will be completed this winter (summary report) except for the final year of macroinvertebrate sampling. This evaluation will be completed when sample analysis is completed by the BLM-FS Aquatic Ecosystems Lab.

Previous project monitoring efforts have shown the efficacy of the on-site evaluations. Results from these evaluations have been successfully incorporated into design and implementation of subsequent restoration activities. Our previous monitoring has surfaced three deficiencies that are addressed by the current proposal- first as mentioned previously; effectiveness of treatments (at all spatial scales) is dependent largely on how they respond to large precipitation and flow events. Our monitoring is limited temporally, so is inadequate in regard to the impact of large flow events. Secondly, we lack in-channel information (habitat) at the site scale. The most likely scale to see changes in channels is close to the site of implementation, and the existing plan did not sample at that scale. The current proposal includes provisions to look at 15 treated sites at this scale. Finally, previously funded monitoring has yielded very valuable information at the site scale but the results are qualitative. The current proposal would expand the on-site monitoring to include quantitative measurement of sediment yields and flow connections at treated and untreated sites.

Approach and Scope of Work

Our proposed approach is to monitor road treatment activities at four different scales to test their effectiveness in meeting site, reach, sub-watershed and watershed restoration objectives. The approach includes monitoring of treatment effectiveness on-site using both qualitative and quantitative means, and at reach, subwatershed and watershed scales using quantitative measures of habitat condition. The proposal compliments ongoing monitoring of fish habitat and spring-run salmon populations in Deer, Mill and Antelope Creeks.

The monitoring approach stems directly from the conceptual model, and the restoration efforts underway based on that model. In short, the model assumes that alteration of upslope watershed processes can result in changes in flow and sediment regimes, and that these changes are translated to changes in hydrologic and channel processes, and ultimately anadromous fish habitat. Therefore, by restoring upslope processes, habitat for anadromous fishes will be protected, if not improved.

Monitoring focuses on the effectiveness of restoration at the site of the actions in reducing chronic sediment from surface erosion and reducing failures of crossings and diversion of flows at crossings. This information will be employed in ongoing and future restoration work in these watersheds, and will be useful to those working on similar issues in other CALFED watersheds.

At the reach scale, the monitoring proposal will assess effectiveness of treatments in improving habitat. Measures of habitat condition will be measured above and below treated crossings, and compared with above and below measurements at an equal number of un-treated crossings.

Measurements of habitat at the sub-watershed and watershed scales are intended primarily to establish a solid baseline against which future conditions can be compared. Given the variability in flow and sediment production due to fluctuations in flow regime, and the amount of untreated area in the watershed, changes in conditions over the time frame of this monitoring proposal are not likely. Some changes may be detected at the sub-watershed scale, however.

Specifics on attributes to be measured, protocols to be employed and data evaluation techniques are summarized in Tables 2 and 3.

At the site scale - all treated crossing sites are evaluated against treatment objectives, of particular interest is how well crossing improvement hold up to large flows. These evaluations are repeated for three years.

At the site scale - Annually at 25 treated crossings and 25 untreated crossings, sediment delivered to the channel is estimated by measuring voids left by rills and gullies that lead to channels or conveyances to channels. Measurements are taken at each site so that estimates of erosion from road surface and cut banks using the WEPP model can be made. 10 sites from year one are randomly selected and repeat sampled in year 2, along with 15 additional pairs. 10 year 1-2 sites are repeat sampled in year 3 along with 15 additional pairs. 55 pairs are sampled over the three year period.

At the site scale - Above measurements of rills and gullies, including those in connected ditches, are also used to assess the volume and length of channel connection as a means to assess effectiveness of treatments in restoring natural drainage patterns.

At the reach scale - Measurements of channel habitat are made above and below 5 pairs of channel crossings from treated and untreated road crossings. 5 additional sites will be sampled in yr 2 and yr 3 (15 pairs total). Attributes measured include a longitudinal profile, residual pool depth, particle counts, pool tail fines and macroinvertebrate community. Hypothesis is that there is a difference above and below sites. Macroinvertebrates are processed at the BLM-FS Aquatic Ecosystems Lab. Both multi-metric and expected vs. observed (RIVPACs) metrics will be used to display benthic community information. Road crossings removed during decommissioning are included in these sample sites.

At the sub-watershed scale - Established reaches are re-sampled to assess change in habitat conditions over time. Hypothesis is that conditions over time will differ. Attributes measured include channel cross-sections, shade, bank stability, residual pool depth, particle counts, pool tail fines and macroinvertebrate community. Included are 6 sub-watersheds in Deer Creek, 1 in Mill Creek and 2 in Antelope Creek. Reaches monitored are 100 to 1000 meters in length. They are located within low-gradient channel segments in sub-watersheds with the greatest density of improvement activities. Measurements are repeated annually.

At the watershed scale - Established reaches are re-sampled to assess change in habitat conditions over time. Hypothesis is that conditions over time will differ. Attributes measured include channel cross-sections, shade, bank stability, residual pool depth, particle counts, pool tail fines and macroinvertebrate community. Included are 4 reaches on Deer Creek, 2 on Mill Creek and 1 on Antelope Creek. Reaches are located in important spawning areas for steelhead and spring-rung Chinook. The reaches are also important holding areas for the spring run. Reaches are approximately 1000 meters in length. Measurements are repeated annually.

At all Scales - A percentage of sites will be re-sampled to assess the variability of sample protocols.

Data - will be summarized and evaluated annually such that necessary changes to protocols or design can be made.

Table 2 - Summary of restoration objectives, performance measures and monitoring indicators.

Scale	Restoration Objective(s)	Project Performance Measures	Monitoring Indicators
Site	Decrease Chronic Sedimentation	Reduction in Sediment Delivery	Visual Observations, photographs, estimates of sediment delivery, measurements of sediment delivery
Site	Decrease Crossing Failures	Reduction in frequency of crossing failures	Post storm evaluation of crossing condition, during storm video surveillance
Site	Decrease Channel Diversion	Reduction in incidents of channel capture by roads	Post storm evaluation of crossing condition, during storm video surveillance
Site	Restore Natural Drainage patterns	Reduction in road-channel connections	Estimates of flow connectivity in conjunction with observations, estimates and measurements of sediment as above
Reach	Improved Habitat Condition	Reduction in in-channel sediment	Surface particle counts, pool tail surface fines, residual pool depths, macroinvertebrate community
Sub-Watershed	Improved Habitat Condition, Improved watershed resilience	Reduction in in-channel sediment	Surface particle counts, pool tail surface fines, residual pool depths, macroinvertebrate community
Watershed	Improved Habitat Condition, Improved watershed resilience	Reduction in in-channel sediment	Surface particle counts, pool tail surface fines, residual pool depths, macroinvertebrate community

Table 3 - Summary of Monitoring Design, analysis, attributes.

Scale	Monitoring Task	Protocol/ Method	Data Collection	Key Attributes	Data Evaluation/ Test Criteria	QA/QC
Site	Post Storm Crossing Evaluations	R5 BMPEP (USFS, 1993)	All crossing projects, plus 50 untreated crossings annually, summer season	Evidence of erosion, failure, flow connection	% of sites meeting objectives	Annual training, repeats at 10% of sites to assess variation
Site	Estimate of Sediment Delivery	Volume measures of rills, gullies, WEPP estimate from surface and banks.	45 pairs of treated and untreated crossings measured during summer. Stratify selection by soil type.	CY of sediment delivered/site/ % of sites with delivery, length of connected	Significant difference (.10) in treated and untreated sites, means test	Annual training, repeats at 10% of sites to assess variation
Site	Estimate of connected flow peaks	Volume as above, flows from rational formula	as above	Volume of connected "channels" per site. Estimate of peak flow by site	Significant difference (.10) in treated and untreated sites, means test	Annual training, repeats at 10% of sites to assess variation
Reach	Comparison of habitat conditions above and below crossings	R5 SCI (USFS 2004), R5 Bio Assessment (USFS 2002), longitudinal profiles (Harrelson, 1994)	5 pair each yr (treatment/no treatment). Summer sampling	surface particle size (% fines, d50), surface fines (%) at pool tails, residual pool depth, macroinvertebrate community indicators (IBI, O/E)	Significant difference (.10) in attributes from above and below sites, means test	Annual training. Repeat sampling at 2 randomly selected sites/yr to assess sample variability
Sub Watershed	Comparison of habitat conditions over time	As above	Annual sampling at reaches from these sub-watersheds: Elam, Cub, Carter, SF Calf, NF Calf, Swamp Rattlesnake, Round Valley, Rocky Gulch, Judd, SF Antelope. Summer sampling		For each reach, significant difference (.10) in attributes at time 2 vs. time 1	Annual training. Repeat sampling at 1 randomly selected site/yr
Watershed	Comparison of habitat conditions over time	LNF Pacfish Monitoring Protocols (USFS 1997)	4 reaches Deer Creek, 2 reaches Mill Creek, 1 reach Antelope Creek. Summer sampling		For each reach, significant difference (.10) in attributes at time 2 vs. time 1	Annual training. Repeat sampling at 1 randomly selected site/yr

Changes from initial monitoring plans: This plan addresses two short comings of our ongoing monitoring plan. First, it attempts to quantify sediment reductions resulting from improvement actions. The initial plan addresses this issue in a qualitative way. Second- the proposal collects data from reaches at the point of implementation. Our existing plan includes sub-watershed and watershed scales that are appropriate for long term changes, but not in determining in-channel (fish habitat) on-site effectiveness. Related is the issue of short term sediment increases from crossing removal resulting from road decommissioning, versus the assumed reduction in sediment delivery in the longer term. The current proposal's design will provide useful information on this issue.

Applicability: The existing proposal will collect information potentially useful in addressing some key management issues in the subject watersheds, and other watersheds throughout the project area. The plan will yield information at the site scale that will be useful in terms of assessing cost effectiveness and relative effectiveness of road improvement measures. The proposal also provides a basis for testing the primary hypothesis of the restoration work- that strategic actions at the site scale will result in protection or improvement to habitat at sub-watershed and watershed scales.

In some sub-watersheds, and for all watershed scale sites, the monitoring provides a solid baseline for assessing the effects of the cumulative result on ongoing (and future) management activities on fish habitat.

Information will be transferred to local area managers by demonstration, oral presentations and in written format. Results will be conveyed to upper level CALFED managers through written reports.

Feasibility

All protocols and procedures included in this proposal are well tested. Most of the protocols have already been employed in the subject watersheds by those responsible for the monitoring effort. The sediment estimates and flow connection were used by Meadowbrook and Associates during the road survey in Deer and Mill Creeks, these methods are well documented in the literature. WEPP models for estimating sediment have not been used in the subject watersheds, but have extensive use elsewhere and are well documented. All sampling will occur in the summer months, when weather will not influence the ability to collect information.

With the exception of a California Dept of Fish and Game Collection Permit (to facilitate macroinvertebrate sampling) no permits will be required. Collection permits are obtained annually. All sampling will be done on lands administered by the Lassen National Forest.

Restoration activities in the subject watersheds are integrated with numerous stakeholders and land owners, coordinated through the efforts of the Battle, Deer and Mill Creek Watershed Conservancies. This monitoring proposal confirms with management strategies developed by each conservancy.

Expected Outcomes and Products

The primary outcome of this monitoring will be a final report that includes all results and discusses findings. The Lassen Forest will invite participation in the project by the Pacific Southwest Experiment Station. If that occurs, then a General Technical Report may be published instead of (or in addition to) a Forest based report. In either case, results will also be made available on line via both Conservancy and Forest Service web-sites (Lassen National Forest and Pacific Southwest Region pages). We are unaware of CALFED based web pages for monitoring results. If one is available, results will be made available there, as well. Additional deliverables are addressed below in Public Outreach.

Data Handling, Storage, and Dissemination

Field data will be collected by trained and qualified employees of the Almanor Ranger District. Collected data will be sample checked for accuracy/consistency and audited prior to input into a database. The database will be designed to store the data, to assist with the analysis and reporting functions, and to plan for ongoing monitoring efforts. The database will reside on the Lassen National Forest mainframe server, which is backed up on a systematic basis.

Monitoring site locations will be geographically referenced on a layer for use with other corporate data contained in the Lassen National Forest Geographic Information System (GIS). Links between the monitoring database and GIS layer will be created and used for analysis and reporting. Geographic locations of monitoring sites will be used to prepare maps for dissemination of monitoring information.

Dissemination of data was discussed above. In addition to the final report, annual summaries will be available as a deliverable and provided if requested by other interested parties.

Public Involvement and Outreach

A primary objective of this monitoring is to display effective road restoration actions to other land managers in these watersheds. To this end, a final effort of this monitoring plan will be to present results via a field review, aimed at local foresters and land managers, but open to all those interested in the topic. Additionally, results will be shared at least one meeting of the Deer Creek Conservancy, Battle Creek Conservancy and the Mill Creek Conservancy, one class at Feather River College, at least one presentation to the Almanor Forest Forum, one presentation at Chester High School, and other local and region forums as practicable.

Work Schedule

The schedule included in the Tasks and Deliverables form accurately displays the scheduling of work. The basic elements are described here.

> Site, reach, sub-watershed and watershed scale monitoring data would be collected each summer for the years 2006, 2007, 2008.

This work is preceded by planning for the year, which would include site identification and selection, and training.

Each year, in the fall, that year's work would be summarized and evaluated. Necessary changes to protocols or design would be made at that time, and incorporated into the plan for the next field season.

Sharing information with interested groups and organizations would occur after the first annual summary. Annual reporting to each watershed conservancy will be scheduled annually following data evaluation.

Monitoring elements are severable from the overall proposal.

Term of Monitoring: Unless an unusual sequence of winters occurs during the sampling period, it is unlikely that the time period covered by the current proposal will be adequate to conclusively answer questions addressed by this monitoring plan. The term of the plan should be adequate to derive conclusive findings on most of the site-scale questions included in the plan. The proviso is that crossing failures are most likely to occur during extreme flow events, and it is unlikely such an event will occur in any three year period.

We also expect that since large events drive the systems, and effectiveness of practices will be manifested during the large events, changes at the sub-watershed, and certainly the watershed scale will occur over a period of decades versus years. This monitoring establishes an improved baseline to assess those changes in the future. Periodic monitoring by the Forest Service in the future is likely, and should address this need.

Applicability to CALFED Bay-Delta Program ERP Goals, the ERP Draft Stage 1 Implementation Plan, and CVPIA Priorities

The proposal addresses the 2004 Solicitation priority of assessing the effectiveness of previously funded restoration projects.

ERP and CVPIA Priorities

The monitoring proposal assesses the effectiveness of restoration actions that are closely aligned with ERP and CVPIA priorities. Connection with 6 of the 7 ERP goals (*in italics*) and 3 CVPIA goals (*also in italics*) are summarized below.

ERP Goals

Recover 19 at-risk native species and contribute to the recovery of 25 additional species - The restoration proposal's primary objective is to provide increased protection and possible improvement to habitat for spring-run Chinook salmon and Steelhead in Antelope, Deer and Mill Creeks.

Rehabilitate natural processes related to hydrology, stream channels, sediment, floodplains and ecosystem water quality - The aim of all the restoration actions is restore natural watershed processes by treating sources of accelerated sediment production and restore natural runoff patterns. The assumption of our conceptual model is that restoring these upslope processes will result in improvements to channels, water quality and sediment and runoff regimes.

Maintain and enhance fish populations critical to commercial, sport and recreational fisheries - As with the first objective above, the assumption is that improving upslope processes will provide added protection for habitat and enable fish populations to be maintained or increased.

Protect and restore functional habitats, including aquatic, upland and riparian, to allow species to thrive - Closely tied to the second objective above, the aim of watershed improvement actions is to improve habitats for aquatic species. A byproduct of these actions is improvement in riparian condition.

Improve and maintain water and sediment quality to better support ecosystem health and allow species to flourish - The primary objectives of the site treatments is to reduce chronic sedimentation and restore natural runoff patterns. Our assumption is that improvements to upslope condition and processes are transmitted to downstream, and will result in reduced sediment and improved water quality. These measures provide increased protection for aquatic species in these habitats.

CVPIA Goals

Protect, restore and enhance fish, wildlife and associated habitats in the Central Valley and Trinity River Basins of California - and *Improve habitat for all stages of anadromous fish by providing flows of suitable quality, quantity and timing and improved physical habitat* - The goal of our restoration actions is protection, restoration and enhancement of habitat for anadromous fish in tributaries to the Sacramento River.

In addition, some of our monitoring sites will occur in the Battle Creek watershed, one of the Chapter 2 listed ecosystems. More importantly, information obtained from the monitoring proposal will be applicable to watershed improvement efforts in other priority watersheds. Finally, the project will monitor habitat of Spring-run salmon and steelhead in the watersheds. Both are “big R” species.

Relationship to Other Ecosystem Restoration Actions, Monitoring Programs, or System Wide Ecosystem Benefits

We are unaware of other CALFED projects that have addressed watershed improvements other than those in the subject watersheds. I t seems likely that in time, watershed management, and especially sediment reduction issues will be addressed in other watersheds important to the protection and improvement of CALFED species and ecosystems of interest. Should that come to pass, then information gathered with this monitoring plan will be extremely valuable.
In the mean time, improvement activities in the subject watersheds will continue. Two CALFED projects are active, and two additional projects will begin in 2005. These supplement additional

work funded by private landowners and the Forest Service that will continue into the foreseeable future. The monitoring program has obvious value to improving those efforts.

Additional Information for Proposals Containing Land Acquisition

Not applicable.

Qualifications

Lassen NF staff listed below all work at the Almanor RD, and collaboratively guide the watershed and fisheries programs. These programs are highly integrated, and have extensive collective experience in both restoration and monitoring. The staff has strong partnerships with additional resources that may participate in different aspects of this proposal. These include scientists at the Pacific Southwest Research Station, and the Pacific Northwest Research Stations. At a minimum monitoring plans and results will be shared with those scientists. Ongoing interaction with representatives of other agencies, the Watershed Conservancies and private landowners within the watershed will take place. Collaboration will continue with the Department of Fish and Game on long term population monitoring of Spring Run Chinook in Deer, Mill and Antelope Creeks.

Current monitoring of restoration activities in the subject watersheds is being accomplished by this staff.

Mike Derrig, District Hydrologist. Mike has 19 years of experience as a professional hydrologist, and has served on the Klamath, Plumas, Lake Tahoe Basin and Lassen National Forests. Mike has a degree in Geology with a minor in Natural Resources from Humboldt State University. He is recognized as a regional expert on road restoration activities and was responsible for extensive planning, design and implementation of watershed restoration projects aimed at improving water quality in the Lake Tahoe Basin. In addition, he has recently completed assignments in Japan and for the Marin Municipal Water District. Mike is a certified contract officers representative and inspector for public works contracts.

Mike will assist in study design and site identification. He will lead the evaluation of on site crossing, sediment and flow data and associated reporting. He will assist in collection of sediment data, and assist in training and oversight of personnel conducting these evaluations. He will assist in preparation of annual and final reports, presentation of findings to interested parties and organization of the field review.

Ken Roby, District Fisheries Biologist. Ken received BS and MS degrees from the University of California, Berkeley. His graduate work focused on use of macroinvertebrate communities to assess effectiveness of streamside protection zones. He helped develop the Pacific Southwest Region's Best Management Practices Evaluation Protocol, Stream Condition Inventory and Stream Bio Assessment Protocols. He serves as a team member with the Herger Feinstein-Quincy Library Group monitoring effort. He is an expert in fish habitat monitoring including

macroinvertebrate assessments. He has over 25 years experience in management of aquatic systems with the Forest Service, Pacific Southwest Experiment Station and the East Bay Regional Park District.

Ken will assist in study design and site identification. He will lead the evaluation of in-channel data, and associated reporting. He will assist in collection of fish habitat data, and provide training and oversight of personnel conducting in-channel data collection. He will assist in preparation of annual and final reports, presentation of findings to interested parties and organization of the field review.

Kurt Sable, Hydrologist. Kurt earned a BS in geology from the University of Nevada, Reno and a Masters degree in geology (fluvial geomorphology and watershed science) from Colorado State University. His master's thesis studied the relationships between watershed and channel characteristics and fine sediment deposition in streams. He has experience in GIS, watershed improvement, and watershed and channel monitoring.

Kurt will be responsible for the sediment evaluation and modeling protocols and data evaluation. He will assist in study design and site identification. He will lead the sediment measurements and be responsible for modeling surface and bank erosion. He will assist in training and oversight of personnel conducting the sediment evaluations. He will assist in preparation of annual and final reports, presentation of findings to interested parties and organization of the field review.

Ryan Foote, Fisheries Biologist. Ryan will receive his BS from Humboldt State University in fisheries in December of 2004. Ryan has worked seasonally on the Lassen National Forest for 6 years and has extensive experience in monitoring fish habitat, fish populations, bioassessment, fish passage assessment and channel morphology.

Ryan will lead the in-channel data collection efforts. He will assist in evaluation and reporting of in-channel data and presentation of findings.

Robin Bryant, District Grants and Agreements Coordinator. Robin has a BS in Forest Management from Humboldt State University and 20 years of experience with the Forest Service, planning and implementing vegetation management projects. Robin will be responsible for planning, budgeting, reporting and documentation, and will serve as the administrative contact for the project. She will be responsible for the final report, organizing the field review, and will assist in presentations of findings.

Cost

Budget - Proposed budget is included in appropriate attachment. Tasks in the proposal are severable. A budget adjustment would be necessary if the site scale monitoring was not fully approved, as travel estimates are based on a single site visit to collect all information for two tasks. Travel cost is contained in the crossing evaluation cost, and not included in the sediment and flow elements.

Cost Sharing - The Lassen National Forest would provide a cost share of approximately $25,000 annually to this project, in the form of ongoing monitoring, and staff administrative support. The Forest also conducts and cooperates in additional monitoring in the subject watersheds (fish population estimates, habitat conditions) not included in this proposal. Additionally, staff would contribute time to project coordination, planning and design, and to reporting of results to partners, agencies and other interested parties (schools, local interest groups, etc.). The Forest would also make contributions to GIS support of the project. Not included in this estimate of cost sharing is the use of supplies and materials on hand, as well as some vehicle rental and mileage costs.

Long-term funding strategy - Certain aspects of the monitoring plan will be conducted by the Forest for the foreseeable future. These include periodic monitoring of habitat conditions in the main stem channels of the three watersheds, and several of the tributaries. The frequency of this monitoring will be less than with the current proposal unless additional funding is acquired. Additionally, all watershed partners will continue to observe the effectiveness of the most prominent restoration measures in the long term. Such observations however, will not be systematically planned and documented unless addition funding is acquired.

Compliance with Standard Terms and Conditions

The Lassen National Forest anticipates no problems in complying with the standard ERP terms and conditions.

Literature Cited

Elliot, W.J. and D.E. Hall 1997. Water Erosion Prediction Project (WEPP) forest applications. General Technical Report INT-GTR-365. Ogden UT:USDA Forest Service Intermountain Research Station.

Harrleson, C.C., Rawlins, C.L. and J.P. Potyondy. Stream Channel Reference Sites: An Illustrated Guide to Field Technique. USDA Forest Service. Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado. RM-245. 61pp.

Meadowbrook Conservation Associates. 1997. Survey of Road-related Sediment sources in the Deer and Mill Creek Watersheds, Tehama County. Final Report. 48 pp (plus appendices).

USDA Forest Service. 1992. Investigating Water Quality in the Pacific Southwest Region. BMPEP- Best Management Practices Evaluation Program: A User's Guide. Pacific Southwest Region. San Francisco. 153 pp.

USDA Forest Service. 1997. PacFish Monitoring Protocols. Lassen National Forest, Almanor RD. 17pp.

USDA Forest Service 2004. Stream Condition Inventory (version 6.0). Pacific Southwest Region. Vallejo, CA. 78 pp (includes bioassessment protocol).

Non-profit Verification

Not applicable

Tasks And Deliverables

Monitoring effectiveness of watershed improvement measures in Deer, Mill, Antelope and Battle Creeks

Task ID	Task Name	Start Month	End Month	Deliverables
1.1	Project Management	1	36	Semiannual and final reports. Periodic invoices
1.2	Project Planning yr 1	1	8	List and map of sample sites for 2006. Training schedule for 2006. Data forms and protocols.
1.3	Crossing evaluations yr 1	9	12	Completed data forms. Photographs of each site
1.4	Sediment and peak discharge estimates at crossings yr 1	9	12	Completed data forms. Photographs of each site
1.5	In-channel measurements-site, subwatershed and watershed scales yr 1	9	12	Completed data forms. Photographs of each site
1.6	data review, summary and analysis yr 1	14	18	Data summaries and initial analysis of data from all monitoring elements: Crossing evaluations, sediment and peak flow estimates and in-channel measurments at site, sub-watershed and watershed scales
2.2	Project planning-yr 2	18	19	List and map of sample sites for 2007. Training schedule for 2007. 2.3Data forms and protocols.
2.3				

	Crossing Evaluations– yr 2	20	24	Completed data forms. Photographs of each site
2.4	Sediment and peak discharge estimates at crossings yr 2	20	24	Completed data forms. Photographs of each site
2.5	In–channel measurements–site, subwatershed and watershed scales	20	24	Completed data forms. Photographs of each site
2.6	data review, summary and analysis yr 2	25	27	Data summaries and initial analysis of data from all monitoring elements: Crossing evaluations, sediment and peak flow estimates and in–channel measurments at site, sub–watershed and watershed scales
3.2	Project planning–yr 3	27	31	List and map of sample sites for 2008. Training schedule for 2008. Data forms and protocols.
3.3	Crossing Evaluations– yr 3	32	34	Completed data forms. Photographs of each site
3.4	Sediment and peak discharge estimates at crossings yr 3	31	34	Completed data forms. Photographs of each site
3.5	In–channel measurements–site, subwatershed and watershed scales yr 3	33	34	Completed data forms. Photographs of each site
4.0	Final Report	34	36	Report summarizing findings, presenting all data, representative photographs, discussion and

				recommendations
4.1	Field Trip	34	34	Agenda for field trip. List of participants.

Comments

If you have comments about budget justification that do not fit elsewhere, enter them here.

Budget Summary

Project Totals

Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
$125,407	$37,723	$13,754	$26,075	$15,450	$0	$0	$5,000	$223,409	$35,743	$259,152

Do you have cost share partners already identified?
Yes.

If yes, list partners and amount contributed by each:

The Lassen NF would contribute about $25,000 to the project. Approximately $12,000 is in the form of annual monitoring of fish populations and habitat in the subject watersheds. Approximately $12,000 would be contributed to project management and coordination and approximately $1,000 in support to GIS and data management.The present monitoring proposal compliments ongoing monitoring.

Do you have potential cost share partners?
Yes.

If yes, list partners and amount contributed by each:

California Dept of Fish and Games leads monitoring of fish populations numbers and water temperature in the subject watersheds. Their expenditures vary annually and are dependent on annual funding.

Are you specifically seeking non−federal cost share funds through this solicitation?
No.

Monitoring effectiveness of watershed improvement measures in Deer, Mill, Antelope and Battle Creeks

Year 1 (Months 1 To 12)

Task	Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
1.1: project management (12 months)	**11256**	**3377**	**600**	**500**	**0**	**0**	**0**	**0**	$15,733	**2517**	$18,250
1.2: Project Planning yr 1 (8 months)	**1793**	**538**	**0**	**0**	**0**	**0**	**0**	**0**	$2,331	**373**	$2,704
1.3: Crossing evaluations yr 1 (4 months)	**4755**	**1427**	**2475**	**1250**	**0**	**0**	**0**	**0**	$9,907	**1585**	$11,492
1.4: Sediment and peak discharge estimates at crossings yr 1 (4 months)	**3170**	**951**	**0**	**1500**	**0**	**0**	**0**	**0**	$5,621	**899**	$6,520
1.5: In−channel measurements− site, subwatershed and watershed scales yr 1 (4 months)	**11520**	**3455**	**1376**	**3250**	**5000**	**0**	**0**	**0**	$24,601	**3936**	$28,537
Totals	**$32,494**	**$9,748**	**$4,451**	**$6,500**	**$5,000**	**$0**	**$0**	**$0**	**$58,193**	**$9,310**	**$67,503**

Year 2 (Months 13 To 24)

Task	Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
1.1: project management (12 months)	**11594**	**3478**	**618**	**515**	**0**	**0**	**0**	**0**	$16,205	**2592**	$18,797
1.6: data review, summary and analysis yr 1 (5 months)	**7830**	**2349**	**0**	**0**	**0**	**0**	**0**	**0**	$10,179	**1629**	$11,808
2.2: Project planning− yr 2 (2 months)	**1847**	**554**	**0**	**0**	**0**	**0**	**0**	**0**	$2,401	**384**	$2,785
2.3: Crossing Evaluations− yr 2 (5 months)	**4898**	**1470**	**2549**	**1287**	**0**	**0**	**0**	**0**	$10,204	**1633**	$11,837
2.4: Sediment and peak discharge estimates at crossings yr 2 (5 months)	**3265**	**980**	**0**	**1545**	**0**	**0**	**0**	**0**	$5,790	**926**	$6,716
2.5: In−channel measurements− site, subwatershed and watershed scales (5 months)	**11866**	**3559**	**1417**	**3338**	**5150**	**0**	**0**	**0**	$25,330	**4053**	$29,383
Totals	**$41,300**	**$12,390**	**$4,584**	**$6,685**	**$5,150**	**$0**	**$0**	**$0**	**$70,109**	**$11,217**	**$81,326**

Year 3 (Months 25 To 36)

Task	Labor	Benefits	Travel	Supplies And Expendables	Services And Consultants	Equipment	Lands And Rights Of Way	Other Direct Costs	Direct Total	Indirect Costs	Total
1.1: project management (12 months)	**11931**	**3581**	**636**	**530**	**0**	**0**	**0**	**0**	$16,678	**2668**	$19,346
2.6: data review, summary and analysis yr 2 (3 months)	**7830**	**2419**	**0**	**0**	**0**	**0**	**0**	**0**	$10,249	**1640**	$11,889
3.2: Project planning− yr 3 (5 months)	**1900**	**570**	**0**	**0**	**0**	**0**	**0**	**0**	$2,470	**395**	$2,865
3.3: Crossing Evaluations− yr 3 (3 months)	**5040**	**1513**	**2624**	**1325**	**0**	**0**	**0**	**0**	$10,502	**1680**	$12,182
3.4: Sediment and peak discharge estimates at crossings yr 3 (4 months)	**3360**	**1008**	**0**	**1590**	**0**	**0**	**0**	**0**	$5,958	**953**	$6,911
3.5: In−channel measurements− site, subwatershed and watershed scales yr 3 (2 months)	**12111**	**3662**	**1459**	**4445**	**5300**	**0**	**0**	**0**	$26,977	**4316**	$31,293
4.0: Final Report (3 months)	**9441**	**2832**	**0**	**5000**	**0**	**0**	**0**	**0**	$17,273	**2764**	$20,037

4.1: Field Trip (1 month)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5000**	$5,000	**800**	$5,800
Totals	**$51,613**	**$15,585**	**$4,719**	**$12,890**	**$5,300**	**$0**	**$0**	**$5,000**	**$95,107**	**$15,216**	**$110,323**

Budget Justification

Monitoring effectiveness of watershed improvement measures in Deer, Mill, Antelope and Battle Creeks

Labor

task 1.1– A rate for a GS–11 employee ($23.45/hr) was used for this estimate. It was assumed 40 hr per month would be necessary for project administration tasks. task 1.2– The GS–11 rate (23.45/hr) and GS–9 (19.38) were used. We assumed 40 hours for each employee would be necessary to identify, locate and map sites, provide training to seasonal employees, and provide sampling protocols, data sheets, etc. task 1.3–Assumed GS 7 (15.85/hr) at 2 hours for each evaluation task 1.4– Assumed GS 7 (15.85) at 4 hrs for each evaluation task 1.5– Assumed GS 11 (23.45/hr) and GS 7 (15.85/hr) for 2 days (16 hr) at each site (reach 10 per yr, subwatershed 8 per year and watershed 7 per year) task 1.6– for annual reports, assumed 24 hr GS 11 and 24 hr GS 9 time for the crossing evaluation data and reporting, 76 hr GS 11 and 76 hr GS 9 time for sediment estimates and modeling, 36 hr GS 11 36 hr GS 9 time for site scale in–channel data, 20 hr GS 11 and 20 hr GS 9 time for sub–watershed reach data and 16 hr GS 11, 16 hr GS9 time for watershed scale data summary, analysis, reporting.Included 80 hrs of GS 9 time for GIS support and database management.

estimates for Task 2.2 and 3.2 are identical to Task 1.2
estimates for Task 2.3 and 3.3 are identical to Task 1.3
estimates for Task 2.4 and 3.4 are identical to Task 1.4
estimates for Task 2.5 and 3.5 are identical to Task 1.5
estimate for Task 2.6 is identical to Task 1.6

Estimate for task 4.0, final report is increased over the annual report: 40 hr GS 11 and 40 hr GS 9 time for crossing evaluations and sediment runoff elements, 40 hr GS 11 and 40 hr GS9 time for at site reach in–channel evaluations; 32 hr GS 11, 32 hr GS9 time for sub–watershed scale in–channel data and 24 hr GS 11 and 24 hr GS 9 time for final evaluation and

reportin of watershed scale in−channel data.Included 80 hrs of GS 9 time for GIS support and database management.

Benefits

A benefit rate of 30% was applied to all hourly costs presented under labor above.

Travel

Task 1.1− Assumed travel costs (mileage) of $50/ month Task 1.3− Assumed 50 miles at .25/miles mileage plus 4 months vehicle rental ($150/mo) Task 1.4− site visit costs included in task 1.3 Task 1.5− assumed 75 mile travel per site, mileage rate of .25/mile plus 4 months vehicle rental @ 150/mo.

Supplies And Expendables

Task 1.2, 2.2, 3.2− Supplies needed are digital camera. Task 1.3, 2.3. 3.3− survey equipment (tranist, rods, tapes, etc.) Task 1.5, 2.5, 3.5− survey equipment and protective equipment (tapes, rods, bottles, boots, etc.)

Services And Consultants

Task 1.5, 2.5, 3.5. Cost of $250/sample for macroinvertebrate sample processing at BLM/Forest Service Aquatic Ecosystems Lab (Utah State University).

Equipment

No purchases of equipment greater than $1000 for any single item are anticipated

Lands And Rights Of Way

none

Other Direct Costs

Task 4.1 is the field reveiw/visit. We hope to contract with a consultant or agency to organize this event. We have not made this contact, and show this cost as an other direct cost

Indirect Costs/Overhead

A overhead rate of 16 percent was applied to direct costs. This is the standard rate applied to all grants and external fund received by the Forest. Note that is goes to general overhead, and is not used in direct support or administration of the funded project.

Comments

All estimates for year one were increased by 3% in year 2 and 6% in year 2 to account for inflation.

Environmental Compliance

Monitoring effectiveness of watershed improvement measures in Deer, Mill, Antelope and Battle Creeks

CEQA Compliance

Which type of CEQA documentation do you anticipate?
X none
− negative declaration or mitigated negative declaration
− EIR
− categorical exemption

If you are using a categorical exemption, choose all of the applicable classes below.
− Class 1. Operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. The types of "existing facilities" itemized above are not intended to be all−inclusive of the types of projects which might fall within Class 1. The key consideration is whether the project involves negligible or no expansion of an existing use.
− Class 2. Replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced.
− Class 3. Construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. The numbers of structures described in this section are the maximum allowable on any legal parcel, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.
− Class 4. Minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.
− Class 6. Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies. These may be strictly for information

gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.
– Class 11. Construction, or placement of minor structures accessory to (appurtenant to) existing commercial, industrial, or institutional facilities, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

Identify the lead agency.

Is the CEQA environmental impact assessment complete?

If the CEQA environmental impact assessment process is complete, provide the following information about the resulting document.

Document Name
State Clearinghouse Number

If the CEQA environmental impact assessment process is not complete, describe the plan for completing draft and/or final CEQA documents.

NEPA Compliance

Which type of NEPA documentation do you anticipate?
X none
– environmental assessment/FONSI
– EIS
– categorical exclusion

Identify the lead agency or agencies.

Lassen National Forest

If the NEPA environmental impact assessment process is complete, provide the name of the resulting document.

If the NEPA environmental impact assessment process is not complete, describe the plan for completing draft and/or final NEPA documents.

Successful applicants must tier their project's permitting from the CALFED Record of Decision and attachments providing programmatic guidance on complying with the state and federal endangered species acts, the Coastal Zone Management Act, and sections 404 and 401 of the Clean Water Act.

Please indicate what permits or other approvals may be required for the activities contained in your proposal and also which have already been obtained. Please check all that apply. If a permit is *not* required, leave both Required? and Obtained? check boxes blank.

Local Permits And Approvals	Required?	Obtained?	Permit Number (If Applicable)
conditional Use Permit	–	–	
variance	–	–	
Subdivision Map Act	–	–	
grading Permit	–	–	
general Plan Amendment	–	–	
specific Plan Approval	–	–	
rezone	–	–	
Williamson Act Contract Cancellation	–	–	
other	–	–	

State Permits And Approvals	Required?	Obtained?	Permit Number (If Applicable)
scientific Collecting Permit	X	–	
CESA Compliance: 2081	–	–	
CESA Complance: NCCP	–	–	
1602	–	–	
CWA 401 Certification	–	–	
Bay Conservation And Development Commission Permit	–	–	
reclamation Board Approval	–	–	
Delta Protection Commission Notification	–	–	

state Lands Commission Lease Or Permit	**–**	**–**	
action Specific Implementation Plan	**–**	**–**	
other	**–**	**–**	

Federal Permits And Approvals	**Required?**	**Obtained?**	**Permit Number (If Applicable)**
ESA Compliance Section 7 Consultation	**–**	**–**	
ESA Compliance Section 10 Permit	**–**	**–**	
Rivers And Harbors Act	**–**	**–**	
CWA 404	**–**	**–**	
other	**–**	**–**	

Permission To Access Property	**Required?**	**Obtained?**	**Permit Number (If Applicable)**
permission To Access City, County Or Other Local Agency Land Agency Name	**–**	**–**	
permission To Access State Land Agency Name	**–**	**–**	
permission To Access Federal Land Agency Name **Lassen National Forest**	**X**	**X**	
permission To Access Private Land Landowner Name	**–**	**–**	

If you have comments about any of these questions, enter them here.

All monitoring activities will take place on public lands managed by the Lassen NF. NEPA, ESA consultation, etc. was conducted for restoration activities that this proposal would monitor. No NEPA or consultation required for these monitoring activities.

Land Use

Monitoring effectiveness of watershed improvement measures in Deer, Mill, Antelope and Battle Creeks

Does the project involve land acquisition, either in fee or through easements, to secure sites for monitoring?
X No.
– Yes.

How many acres will be acquired by fee?

How many acres will be acquired by easement?

Describe the entity or organization that will manage the property and provide operations and maintenance services.

Is there an existing plan describing how the land and water will be managed?
– No.
– Yes.

Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?
X No.
– Yes.

Describe briefly the provisions made to secure this access.

Do the actions in the proposal involve physical changes in the current land use?
X No.
– Yes.

Describe the current zoning, including the zoning designation and the principal permitted uses permitted in the zone.

Describe the general plan land use element designation, including the purpose and uses allowed in the designation.

Describe relevant provisions in other general plan elements affecting the site, if any.

Is the land mapped as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance under the California Department of Conservation's Farmland Mapping and Monitoring Program?
X No.
– Yes.

Land Designation	Acres	Currently In Production?
Prime Farmland		–
Farmland Of Statewide Importance		–
Unique Farmland		–
Farmland Of Local Importance		–

Is the land affected by the project currently in an agricultural preserve established under the Williamson Act?
X No.
– Yes.

Is the land affected by the project currently under a Williamson Act contract?
– No.
– Yes.

Why is the land use proposed consistent with the contract's terms?

Describe any additional comments you have about the projects land use.

Monitoring sites would be located on public lands managed by the Lassen National Forest. Access across mixed ownership lands has been obtained via cooperative road use agreements, easements and rights of way.