Nez Perce Tribe

Department of Fisheries Resource Management

Administration • Enforcement • Habitat/Watershed • Harvest • Production • Research • Resident Fish

WATERSHED DIVISION

P.O. Box 365 • Lapwai, Idaho 83540

Phone: (208) 843-7144 • Fax: (208) 843-9192

Project #2010-068-00
Protect and Restore the Crooked and American River Watersheds

Response to December 9, 2010 ISRP Comments

General Comments / Response

In the Project Documents and Reports section an "American and Crooked River ISRP comment/response" link is given but would not open.

It is unfortunate that the link given did not work properly, as the original comments/response would have been extremely useful for this review. Please try the instructions below for access to the ftp site containing the original comments and a map for the Maines Estate Land Parcel.

1. Open Windows Explorer (not to be confused with Internet Explorer) under the Start menu – Accessories
2. Paste this link into the address bar at the top of the window ftp://ftp.nezperce.org/Public/NPTribe/ISRP/
3. Click on the applicable icons in the ISRP Folder (there are 3 associated with this project, two maps and the original ISRP comments/responses)

The component to complete the proposed Ecosystem Analysis at the Watershed Scale (EAWS) for the American River watershed meets scientific review criteria. All other proposed work is not supportable at this time unless it is more fully detailed and justified.

While we acknowledge how valuable of a tool an EAWS is, several other assessments have been completed that have outlined general as well as specific project recommendations. The South Fork Clearwater River Landscape Assessment (USDA 1998), broke the subbasin into ecological reporting units (watersheds, i.e. American River Watershed, Crooked River Watershed, etc.). From this assessment came the context of the watershed (historic vs. present condition) as well as some general prioritization of focus areas within the watershed and potential projects (Crooked River Meanders restoration). The second assessment completed was the American and Crooked River Project Environmental Impact Statement (USDA 2005). This is a very site specific analysis that encompassed large portions of the American and Crooked

River watersheds. This EIS was a multi-faceted project that included vegetation treatment as well as watershed restoration projects. The Forest Service has completed most of the restoration in conjunction with the vegetation management, however, there are important restoration projects that still remain. We are proposing to complete those opportunities for the benefit of the aquatic ecosystem.

An EAWS for the American River watershed (as recommended by the South Fork Clearwater Landscape Assessment, USDA 1998) is proposed for the overall project, however, starting on-the-ground implementation is supported by the two completed assessments mentioned above.

1) Provide an overview of the criteria and methods for assessing and prioritizing roads and stream crossings.

Road Assessment

The road inventories completed under this proposal will be an on the ground physical assessment of selected road segments. All available GPS, GIS, and aerial photograph resources will be used to document road segment and stream locations. This assessment is will include road location relative to streams, road lengths, widths, surface conditions, vegetative cover, existing erosion, number and types of stream crossings, and occurrences of road failures. The field data is gathered electronically and spatially referenced for transfer to existing GIS data layers and photos for further analysis. Additional modeling techniques will be employed as conditions warrant to determine sediment contributions and conditions of critical road segments. Sediment modeling programs used on past projects include Water Erosion Prediction Potential (WEPP) and the Geomorphic Road Analysis and Inventory Package (GRAIP, http://www.fs.fed.us/GRAIP). WEPP Road is a process-based, distributed parameter, continuous simulation, erosion prediction modeling tool to evaluate road decommissioning and best management practices (BMP) upgrades. The GRAIP model combines a detailed road inventory with a powerful GIS analysis tool set to predict road sediment production and delivery, mass wasting risk from gullies and landslides, and road hydrologic connectivity.

Road Prioritization

Road decommissioning and improvement projects will be prioritized by the highest risk in our highest value fisheries, based on the species present, potential habitat available, and potential for restoration. The Nez Perce Tribe (NPT) and the NPNF will use an interdisciplinary team to update the Roads Analysis and Transportation Plan in order to determine which roads are candidates for road improvement or decommissioning projects.[1] During road analysis, roads are assessed by each functional group and then integrated into management recommendations for each road segment. The aquatic and wildlife functional groups assess the level of concern each road segment poses to their resource while the cultural, recreation, and transportation functional groups assess the level of need for each road segment. Once each functional group rates the roads/trail

[1] Nez Perce National Forest ROADS ANALYSIS REPORT, March 2006 available at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm91_055105.pdf

system by road segment the individual outcomes are combined to determine a level of concern and need for each road using a Road Analysis Matrix. For example a road segment having a high concern and low need would be recommended for decommissioning, while a road segment with a high concern and high need would be recommended for improvement. Priorities for decommissioning and improvement will then be determined combining the analysis and assessment data with the road need and use data to target those road segments that higher in risk and/or in the higher value watersheds.

Target Road Densities also play a part in transportation planning. The current road density in American River is 2.3 mi/sq.mi., while Crooked River is at 2.0 mi/sq.mi. Several agencies have set recommended limits for road densities on National Forest lands in the Columbia River Basin. NMFS developed a matrix of pathways and indicators and determined a properly functioning watershed condition for road density and locations as less than 2 mi/sq. mi. with no valley bottom roads (NMFS, 1996). The USFS characterizes road density levels of greater than 1.7 mi/sq. mi. as being high. The goal of this project will be to reduce the road density within both watersheds to nearer the 1.7 mi./sq. mi goal objective or lower.

In American River, the 5 miles of road identified for decommissioning in 2010 have undergone all required environmental review and permitting and are ready to proceed once funding is allocated. All roads proposed for decommissioning were analyzed in a roads analysis that was completed as part of the American & Crooked River Project EIS (USDA 2005). The analysis identified roads proposed for decommissioning as not required for future management needs within the EIS project analysis area. These roads were selected for decommissioning primarily because of the resulting benefit to watershed health by returning the landscape to a more natural state (USDA, March 2005). This method is most effective in removing the road as a source of sediment and restoring natural hydrologic function of the watershed (USDA, March 2005).

Passage Barrier Assessment

Field surveys will be used to collect passage and condition information on stream crossings that potentially block passage to target species. Initial course screening will be done based on species presence, miles of habitat upstream, and known passage barriers. Surveys will be conducted using the guidelines of the National Inventory and Assessment Procedure for Identifying Barriers to Aquatic Organism Passage at Road-Stream Crossings (Clarkin et. al. 2003). Data collected with the survey included: crossing shape, crossing dimensions, inlet/outlet configuration, structure stream bed material, stream channel longitudinal profiles, stream channel cross-section(s), and stream bankfull widths. The data collected for the longitudinal profile provides in-formation to calculate: culvert slope, upstream/downstream slopes, residual inlet depth, and outlet drops. A decision matrix based primarily on velocities, jump heights, and substrate conditions will be used to filter (screen) to determine fish passage for adult

and juvenile salmonids. The screen will determine if a structure passed fish (green) or was a barrier to upstream movement (red).[2]

Passage Barrier Prioritization

A NPNF/NPT interdisciplinary team of fish biologists, hydrologists and engineers will complete a prioritization strategy for improvements. Priorities will be based on target fish species and habitat needs (spawning, rearing, or both), potential available habitat, culvert failure risk, partnership opportunities, and available funding. The potential habitat below and above the crossing will be assessed and those with the highest habitat potential are given priority. Stream gradient, habitat quantity & condition, and proximity to other barriers are examples of factors considered. The data is also useful to identify priorities and look for opportunities with ongoing and proposed projects. This assessment will also allow us to address fish passage at a watershed scale and allows more effective use of all available funding for the correction of fish passage barriers.

Culvert replacements for the American and Crooked River Project EIS Analysis were analyzed and prioritized based on the opportunity for replacing culverts for passage of aquatic biota and to allow for higher flows[3] within the project area. For culvert replacements that lie outside the American and Crooked River EIS Project Area the above methodology for analyzing and prioritizing culverts will be employed.

2) Provide details relating to the Maines Estate.

We are proposing to acquire a property (the Maines Estate) that has the most productive spawning and rearing habitat for steelhead and salmon in the American River Watershed, as recognized by the Forest Service, BLM, and Idaho Fish & Game. This private property includes 149 meadow acres, is transected by mainstem American River & Lick Creek, and is under the threat of being subdivided and developed or logged in the near future. The property also lies within an Inventoried Roadless Area (with the exception of the one road that accesses the property) and is surrounded by Forest Service Roadless Area.

Support from the BLM, USFS, local landowners and the NPT for the acquisition of this parcel of private land is high. The following are personal communication with lead staff from the BLM, USFS, and an adjacent land owner:

> ***USFS, Nez Perce National Forest***
> "The Maines Estate land parcel in the American River Watershed of the South Fork Clearwater Subbasin represents unique, extremely valuable aquatic habitat for anadromous fish, including Snake River Steelhead. The opportunity to continue to manage this land parcel with a priority on conservation of this aquatic habitat, in contrast to other potential development scenarios, represents a significant

[2] Assessment of Aquatic Organism Passage at Road/Stream Crossings for the Northern Region of the USDA Forest , March 2008 available at http://www.fs.fed.us/r1/projects/engineering/fish_passage_web.pdf
[3] American and Crooked River Project, FEIS, USDA Forest Service, March 2005, pg175

achievement for conservation and recovery of anadromous fish, including Snake River Steelhead, in the Columbia Basin.

The American River is a high value watershed for anadromous fish in the South Fork Clearwater Subbasin due to it being comprised of predominately a mid-elevation, low relief landform. This landform is characterized by low-gradient stream networks, snow-melt hydrology, and long disturbance intervals. This setting provides easily accessible, ideal habitat for anadromous fish with a very high inherent habitat potential for these species. The Maines Estate land parcel is located in the central part of the American River Watershed, uniquely located where many low-gradient tributaries of the American River come together to create an area of aquatic habitat as productive and valuable to anadromous fish as can be found anywhere in the Columbia River Basin.

The American River Watershed, located near Elk City, Idaho has sustained the usual history of management activities, including a legacy of effects on aquatic habitat associated with the gold rush in this area. Dredge mining in the American River Watershed has significantly impacted many of the streams. However, the Maines Estate, due to the persistence of previous owners, has never been dredge mined. Additionally, due to the location of this land parcel, the steams in the watershed above the property have also not been significantly impacted by mining activities. The result is that the aquatic habitat contained on the Maines Estate is not only uniquely valuable given its physical setting; it is also extremely valuable given its pristine condition. The result can be seen in the concentration of anadromous fish spawning that occurs in the streams on this parcel. Most of the spawning activity of anadromous fish in the American River occurs on the Maines Estate.

Besides the Maines Estate having high inherent aquatic habitat potential and largely undisturbed habitat condition, this land parcel is also very sensitive to disturbance and loss of aquatic habitat value. The meadow and stream banks on this land parcel are comprised of fine-grained soils easily disturbed by human activities. The undercut banks of the streams on the land parcel are both the most valuable and the most vulnerable habitat component for anadromous fish. Alternative management pathways for the Maines Estate land parcel represent a potential huge loss for conservation and recovery of anadromous fish not only in the context of American River and the South Fork Clearwater Subbasin, but within the context of Columbia River Basin as well.

The USDA Forest Service, Nez Perce National Forest, has identified the Maines Estate as a high priority for acquisition for decades, due to the high value of its aquatic habitat. Several acquisition and exchange efforts have been unsuccessful. While the owner of the Maines Estate has been a willing seller, the Agency's processes and prioritization at a national level have prevented this from occurring. The Forest strongly supports the current efforts to acquire this land parcel through the fish and wildlife program of the Bonneville Power Administration, specifically the American River Project. Acquisition of the Maines Estate to provide for continued conservation

of the high value aquatic habitat located on this parcel is the highest priority conservation action that can be taken in the South Fork Clearwater Subbasin for anadromous fish. **- Scott Russell, Ecosystem Staff Officer, Nez Perce / Clearwater National Forest**

Bureau of Land Management

"The Maines Tract of land occurs in the American River watershed in the upper portion of the South Fork Clearwater River subbasin. The tract occurs near the Lick Creek and American River confluence. Acquisition of this tract of land would provide for long term conservation and protection for important and high quality riparian and aquatic habitats. This tract of land straddles a portion of American River and Lick Creek. American River provides designated critical habitat for Endangered Species Act (ESA)-listed steelhead trout and bull trout. The stream also provides aquatic habitat for BLM designated Sensitive species which include westslope cutthroat trout and redband trout, and potential habitat for Pacific lamprey. In summary, acquisition of this tract of land should be a high priority." -**Craig Johnson, Fisheries Biologist Bureau of Land Management, Cottonwood Field Office**

Roger & Janice Inghram, Adjacent property owners

"We strongly support all efforts to protect this property for its ecological value. It contains upper American River and Lick Creek, both valuable habitats for fall Chinook salmon, steelhead and bull trout. The riparian area's protection is vital to the health of the entire South Fork Clearwater River drainage. The land serves as valuable habitat for deer, elk and moose. (We know the area to be valuable elk calving ground.)

Our interest in the "well-being" of the land dates from the mid 1940's when Roger recreated in the area with his family who resided in Elk City. The area was a destination for hunting, hiking, horseback riding, berry picking, fishing and photography from the late 1950's to the present. In 1971 we acquired land from Edmond Manes who owned the property. We built a cabin in 1972 and have worked with various agencies (Forest Service, Rocky Mountain Elk Foundation, The Nature Conservancy, Idaho Fish and Game) over the years to protect the ecological values of the area.

As property owners adjacent to this land, we are eager to be good stewards of the land and promote all efforts to protect the ecological values that are important to us." **– Roger L. and Janice Inghram, adjacent property owners**

The tables below summarize redd & snorkel survey data taken by the IDFG for the past five years (snorkel and redd data has been collected for the past 17 years, we are just providing a summary of the past 5-6 years). The Redd survey summary table demonstrates redds observed within the private property and below while the snorkel survey summary table documents the species that were present during the survey.

American River Spring Chinook Salmon Redd Surveys

2006	Private Property	Below Property
Total Redds	16	13
Section Length	4.98	7.2
Density Redd/Mile	3.21	1.81
2007		
Total Redds	4	9
Section Length	4.98	7.2
Density Redd/Mile	0.80	1.25
2008		
Total Redds	51	70
Section Length	4.98	7.2
Density Redd/Mile	10.24	9.72
2009		
Total Redds	46	47
Section Length	4.98	7.2
Density Redd/Mile	9.24	6.53
2010		
Total Redds	23	50
Section Length	4.98	7.2
Density Redd/Mile	4.62	6.94

Snorkel Surveys – Results from site taken on Maines Estate Property
Site ID#2.65U

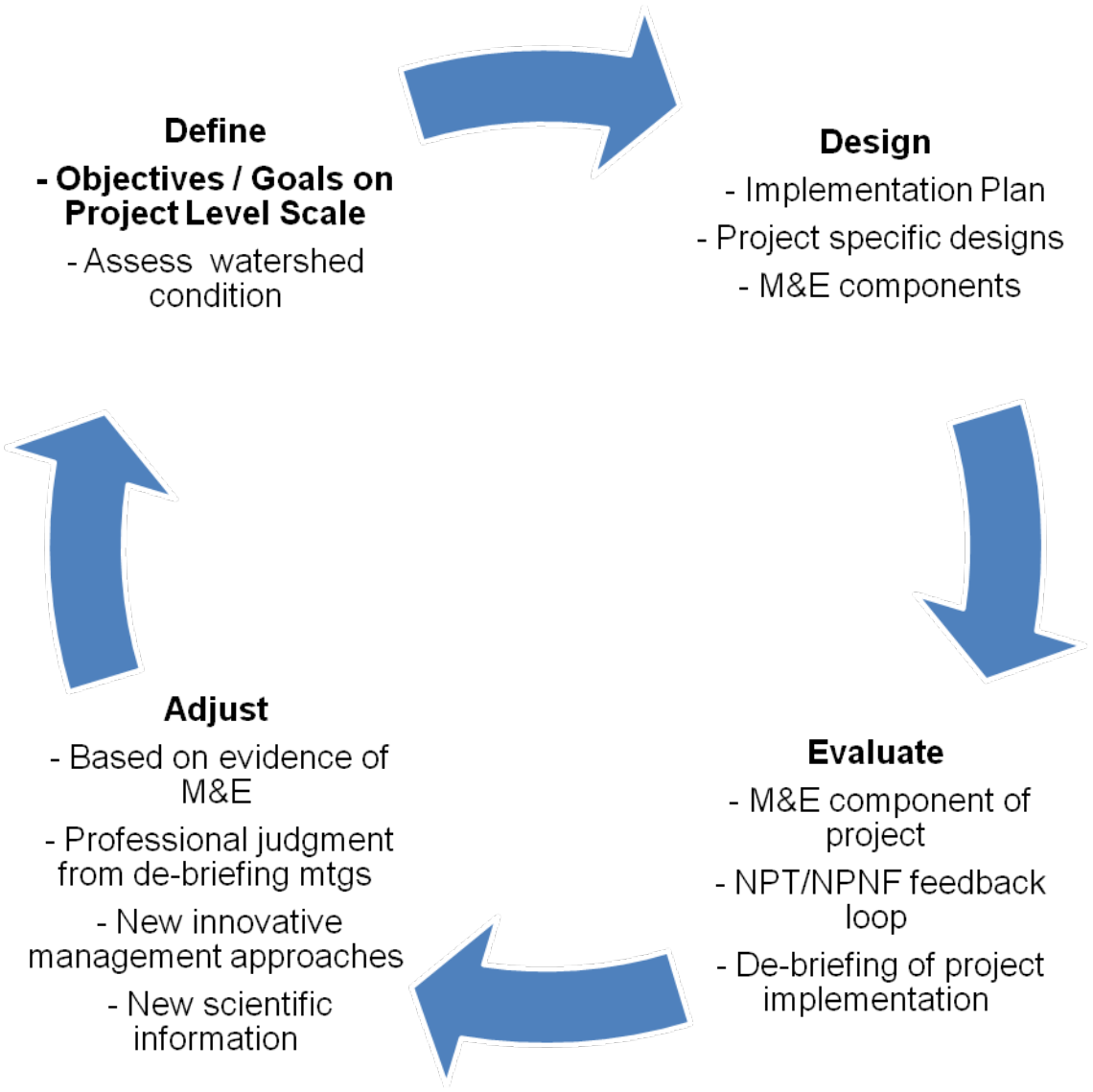
Fish Species	**Total Counted**	**Total Counted**	**Total Counted**	**Total Counted**	**Total Counted**	**Total Counted**
	2010	2009	2008	2007	2006	2005
Chinook Salmon	121	118	No Data	No Data	No Data	26
Steelhead	No Data	No Data	No Data	No Data	No Data	2
Westslope Cutthroat trout	2	5	No Data	No Data	No Data	2

3. Discuss how adaptive management will be implemented.

Results of the American / Crooked habitat project actions will be monitored to ascertain whether they are effective in meeting stated goals and objectives. Based on this evaluation, the work plan and scope of work will be adapted (modified) in a process of continuous learning and refining. Adaptive management will follow a simple repeated framework: Assess, Design,

Implement, Monitor, Evaluate, Adjust, and then repeat again.[4] The adaptive management strategy shown below will be implemented to follow the 2000 Fish and Wildlife Plan's Principle 7 which implies the adoption of passive adaptive management and as restated by the ISRP in it's Retrospective Report 2007 (ISRP 2008-4, April 11, 2008).

NPT Watershed Restoration Adaptive Management Strategy



[4] Adaptive Management: A Spoonful of Rigor Helps Uncertainty Go Down, Submitted to the 16th International Annual Meeting of the Society for Ecological Restoration, Victoria, British Columbia, Canada – August 23rd to 27th, 2004 by Carol Murray and David R. Marmorek available at http://www.essa.com/documents/Murray_Marmorek_adaptive_management_SER_conference.pdf

Objectives and goals for this proposal are centered on addressing the limiting factors, primarily; sedimentation, stream temperature, lack of habitat complexity, and stream connectivity. Initial efforts will include **assessment** (passage barriers and road/trail systems, stream habitat conditions, floodplain & riparian function). Analysis of these assessments will produce priorities which will be then **designed** for implementation. The results of the designs will be implemented on the ground (barrier replacements, road decommissioning, stream & floodplain restoration, and riparian re-vegetation are proposed). A **monitoring** plan for project effectiveness will be instituted to measure the success (or failure) of restoration and how it addresses our limiting factors (see Question 5). Results of the implementation projects will be **evaluated** through analysis of monitoring data and reports both as generated from this project as well as from other ongoing restoration/monitoring efforts in the Upper South Fork Clearwater River. Through our collaborative partnership we will have the opportunity to **adjust** objectives, techniques, and priorities to meet the identified needs.

The NPNF and the Nez Perce Tribe (NPT) have been partnering in a successful watershed restoration program in the basin for more than 10 years. During this time period we have developed a highly effective project management framework that includes all aspects of the adaptive management process described above. As a result of this partnership we will have access to the knowledge of several experienced fisheries biologists, hydrologists, engineers, and others to aid in the assessment, design, evaluation, and adjustment components of our adaptive management strategy. Additionally, the NPNF has been conducting on-the-ground monitoring in the South Fork Clearwater River Basin for several years; their data, as well as the data generated from this proposal, and other agency data (IDFG, BLM), will be used to aid in evaluating the biological response from implementing the projects' actions and goals and helping evolve innovative management approaches.

4. Monitoring

As correctly stated by the reviewers this "…proposal originates from the FCRPS BiOp directive under RPA 35 Table 5 for Snake River Steelhead in the Clearwater River, where a 14% Habitat Quality Improvement is " required" to be achieved by 2018 for the South Fork Clearwater River population.

BPA guidance is to focus habitat projects to completion of on-the-ground improvements that contribute to the FCRPS BiOp habitat targets. While extensive monitoring may be a valuable educational tool and a necessary component of the adaptive management process (see Question 4), this proposal emphasizes on-the-ground implementation. Elements of both 1) Implementation and Compliance and, 2) Project Effectiveness monitoring are proposed for this project.

Implementation and Compliance Monitoring

Implementation and Compliance monitoring will be conducted on all project actions following the framework set up by the Northwest Power and Conservation Council its Monitoring, Evaluation, Research and Reporting (MERR) Plan.[5]

Implementation monitoring will consist of gathering project specific metrics to verify that projects were completed and implemented properly. The information will be reported as stipulated in our contract with the Bonneville Power Administration (BPA) in BPA's PISCES database. Selected metrics will include such items as target species, location, number or crossings, stream miles, acres, and others as defined by the PISCES project management software and by the type of project action.

Compliance monitoring will be conducted as post-monitoring of implemented projects to see if they are still functioning as they were designed or intended. Compliance monitoring is also known as post-implementation monitoring. The study design will vary depending upon the type of project actions following a defined written protocol:

Fish Barrier Replacements - A monitoring plan has been developed to gauge the status of culvert replacements. At each barrier replacement, data is collected upon installation (year 0), one year after installation (year 1), five years later (year 5), and 10 years later (year 10) in order to document changes that are occurring with culvert replacements and removals. Biological and physical habitat parameter data to be collected include; Site Description, Culvert Information, Inlet/Outlet Condition, Photographs, Internal Structures/Substrate, Bank Dimensions, Channel Condition, Longitudinal Profile, and Fish Presence/absence. The data will be analyzed to determine if the crossing structure is functioning to pass aquatic species as it was designed. Information from the analysis will be used to refine and adjust future barrier replacement projects to continue to improve connectivity and access. The full protocol and assessment procedure can be found in "Assessment of Aquatic Organism Passage at Road/Stream Crossings for the Northern Region of the USDA Forest" , March 2008 available at http://www.fs.fed.us/r1/projects/engineering/fish_passage_web.pdf .

Road Decommissioning / Improvement - A monitoring plan has been developed to gauge the status of road improvement and decommissioning. For each decommissioning project, sample sites are randomly selected at a rate of one site per 10 miles of decommissioning. Data is collected at the sample sites upon implementation (year 0), one year after implementation (year 1), two years after implementation (year 2), five years later (year 5), and 10 years later (year 10), in order to document changes that are occurring. Data collected for Road Obliteration Monitoring and Evaluation includes; locating and evaluating new mass failures, recording and evaluating points of surface erosion, evaluating re-vegetation coverage and succession to native plants, measuring stream channel restoration

[5] Draft Columbia River Basin Monitoring, Evaluation, Research and Reporting (MERR) Plan Version: 4 November 2010 available at http://www.nwcouncil.org/library/2010/2010-17.pdf

and adjustment, photographs, and evaluating whether the treatment applied was appropriate for the land type. The data will be analyzed to determine if the decommissioning/improvement is functioning as it was designed. Information from the analysis will be used to refine and adjust future projects to continue to reduce sediment delivery to streams. The full protocol and assessment procedure can be found in "2002 Clearwater National Forest Road Decommissioning Monitoring Program," revised December, 2002. Additional information and results are available at http://www.fs.fed.us/r1/clearwater/ResourceProg/me_03/pdfs/roads_scenic.pdf

Riparian Re-vegetation - Data collection efforts are directed at determining the rate and degree of recovery of the riparian system following restoration. Annually, two circle plot surveys will be conducted for each reach where re-vegetation projects have taken place. Circle plot surveys are conducted by attaching a measuring tape to a permanent marker (existing photo-point or cross-section rebar is recommended) and extending it to create a 15 foot radius, which is then used to describe a circle 30 feet in diameter. Four transects will intersect at 90 degree angles at the center of the circle, dividing it into four equal pie-shaped quadrants. Two of these transects will be oriented towards the water's edge and two will face away. Azimuths will be recorded for each transect to facilitate accurate repetition of surveys. Woody vegetation that falls along the transects will be photographed and inventoried by genus, height, condition rating score, and distance from the center-point. Notes will include any disease, insect damage, browsing, drought stress, or other condition that affects the plants. In the data analysis, the total number of trees and shrubs per reach will be calculated, including an individual tally for each genus. Plant height and condition will be evaluated for each genus to determine which plants achieve faster growth and are more resistant to adverse conditions. Future re-vegetation projects can then be adapted to include higher percentages of the more successful plants, which in turn, should increase the rate of re-vegetation. A full protocol and assessment procedure can be found in "2002 Clearwater National Forest Road Decommissioning Monitoring Program," revised December, 2002. Additional information and results are available in "Monitoring Reach Effectiveness", Nez Perce Tribe, Department of Fisheries Resource Management, Division of Watershed Management, revised February 2005.

Stream Habitat Improvement, channel realignment, floodplain restoration – The following will be reported for stream and floodplain restoration projects: 1. Number and type of habitat structure installed; 2. Length of stream before restoration & length of stream after restoration; 3. Estimated acreage of accessible floodplain before restoration & estimated acreage of accessible floodplain after restoration; 4. Estimated area of spawning habitat created or restored (using stream habitat type surveys of stream reach restored both before and after restoration); and 5. Photo-points of stream and floodplain before and after treatment (azimuth, GPS location, on-the-ground marker). We will also use low-elevation aerial photography to provide a comparison of before vs. after, and then on a 5-10 year schedule (or after a major flood event upon available funds).

Land Acquisition – The number of acres would be recorded and reported as well as completing two documents. The first document will be a Baseline Document that establishes the features and condition of the property at the time of purchase. The Baseline Document includes replicable photo-points and surveys (legal, habitat, timber, etc). The second document will be a Restoration / Conservation Strategy for the property. This will outline any foreseeable restoration projects and/or a conservation strategy for the parcel.

Effectiveness Monitoring

Effectiveness Monitoring will be conducted in order to help fulfill our adaptive management strategy as well as to improve our understanding from our restoration efforts. Monitoring will be done by habitat project type.

Riparian Re-vegetation – Measurements of changes in ground cover over time (0, 1, 2, 5, 10 year schedule). This will be carried out by the method described above in *Riparian Zone Re-vegetation*. Photo-points will also be used for a more visual analysis as well as low elevation aerial photography. Temperature measurements (using method described below) will also accompany the above measurements.

Temperature - Per the AREMP protocol temperature data will be collected hourly from June 1 through September 15. Data will be cross-walked to any other available temperature data from other agencies (USFS, Idaho Fish and Game, Idaho Department of Environmental Quality) and analyzed to detect significant changes in temperatures within the watershed and below implementation sites. This information will be used in the adaptive management process to assess project success/failure and adjustment as needed to achieve desired conditions.

Stream habitat improvement, channel realignment, floodplain reconnection – A Before-After-Control-Impact design will be used to track the before condition versus the after condition of the stream and floodplain restoration. This will be done by surveying the reach for habitat composition (# of pools, riffles, runs, glides, LWD, etc.) as well as estimating the width of floodplain accessible before any restoration is implemented. After implementation of restoration efforts (on a 0, 1, 2, 5, 10 year schedule) the same surveys will be repeated in order to compare before vs. after. Another tool that will be used is low-elevation aerial photography. Flight lines will be taken prior to restoration and then after (on a minimum of 1, 5, 10 year schedule), then a mosaic of the photos can be put together side-by-side for an exact comparison. For specific stream structures photo points will be established and keyed in with an azimuth, GPS location and on-the-ground marker. Photo points will also be done on the above year schedule. Floodplain monitoring will be done by the above aerial photography, as well as monitoring flood events (physical measuring when feasible as well as using local Red River USGS gage station data).

Road Decommissioning / Improvement - Pebble counts and surface fines data will be collected at identified survey reaches annually. The pebble count procedure is designed to quantify streambed substrate without having to collect substrate

samples and take them back to the lab for sieve analysis. The procedure requires taking measurements of substrate at increments along main channel and side channels transects within bankfull constraints. Data will be cross-walked to any other available sediment data from other agencies (USFS, IDFG, IDEQ) and analyzed to detect significant changes in sediment conditions within the watershed and below implementation sites. This information will be used in the adaptive management process to assess project success/failure and adjustment as needed to achieve desired conditions.

Land Acquisition - It is recommended that effectiveness monitoring include measures to help determine the rate at which a site is returning to the desired condition, however, since the proposed land acquisition is for procuring land that is in a relatively pristine condition, monitoring efforts would focus on making sure that the qualities of the property are maintained. This will be done by completing a Baseline Document that documents the current features and condition of the property. The Baseline Document will be updated on a 5-year review. Another tool that may be used (based upon available funding) is aerial photography.

Biological Effectiveness Monitoring

This project is not specifically designed to employ biological effectiveness monitoring, however, there is some opportunity to share data with other agencies that may help fulfill this perspective. Idaho Fish and Game routinely collects biological data (Redd surveys for Spring/Summer Chinook & Steelhead, snorkeling surveys for fish species and abundance) within the project area. We have been working with IDFG to share their data and establish a baseline for projects within the Upper South Fork Clearwater River. It is anticipated that IDFG will continue to collect this data and that we will be able to incorporate it into our monitoring reports.

Status and Trend Monitoring

The NPT DFRM Watershed Division has recently submitted a Habitat Status and Trend monitoring proposal in the current NPPC M&E/Artificial Production Provincial Review under project number 2002-068-00, which was completed in close collaboration with the Integrated Status and Effectiveness Monitoring Program (ISEMP) and the new Columbia Habitat Monitoring Program (CHaMP), which the SF Clearwater is included. The SF Clearwater was chosen due to its large on-going habitat restoration program and the large habitat improvement gap identified in the FCRPS BiOp (14%).

The status and trend monitoring proposed in the CHaMP is a Columbia River basin wide habitat status and trends monitoring program build around a single habitat monitoring protocol, with a program-wide approach to data collection and management. This program will result in systematic habitat status and trends information that will be used to assess basin-wide habitat condition and correlated with biological response indicators to evaluate habitat management strategies. Table 1 of the *Anadromous Salmonids Monitoring Strategy* categorizes implementation of habitat status and trend monitoring in the SF Clearwater as “Highest Priority.”

In addition, we recognize the critical need to habitat status and trend data to facilitate adaptive management of our extensive restoration activities. It is vital that we have the capability to monitor primary factors limiting production of listed salmonids throughout these watersheds and be able to adjust our program accordingly.
