Peshastin Forest Service Road System Improvement

12th Round Funding Cycle

June 30, 2011

Request from Tributary Committee:	**$0**
Request from SRFB:	**$265,000**
Total Request:	**$265,000**
Other Contributions/Match (Secured):	$100,000
TOTAL Project Budget:	$365,000

Proposal Checklist/Table of Contents

Project Title: **Peshastin Forest Service Road System Improvement**

Summary of Project Changes

- The proposed project has not changed substantially, however some proposed treatments have changed. The total number of roads proposed for stormproofing was miscalculated and should have been 30 miles instead of 28 miles. Also, we have substituted 10 miles of decommissioning for the 10 miles of storage (now 20 miles of proposed decommissioning total) to simplify the proposal and create a project with the maximum benefit for aquatic habitat. In addition, information has been provided in the final proposal to address reviewer comments.

Responses to SRFB Comments:

- Please show that the erosion at that particular site has a direct impact to salmon.

A summary of all available sediment data has been provided.

- Please provide as much detail on the proposed treatment sites and treatment designs as may currently be available.

See Figures 1-6 and Tables 2 & 3 for proposed treatment sites. Attachment C defines the different treatments and methods that will be used.

- Please identify which roads will be addressed under Phase 1 and Phase 2.

See Tables 2-4 as well as Figures 1-6. All roads proposed for decommissioning will be addressed in Phase I and all proposed stormproofing will be addressed in Phase II.

- It is unclear if the $20,000 allocated for community outreach and education would be eligible for SRFB funding.

This effort was incorrectly described in the pre-proposal. It should have been described as NEPA support. CCNRD will assist USFS with stakeholder coordination and NEPA meetings. The cost for this task has been reduced in the final proposal because NEPA is being started in summer 2011.

- Why was the Peshastin basin, a Category 2 watershed, chosen for this treatment? Are there particular geologic factors or other circumstances in the Peshastin basin that make the roads there more susceptible to erosion and sediment delivery?

See Section 2B and 2D in the final proposal.

Responses to RTT Comments:

- Was distance from stream incorporated into road selection?

Yes, see the aquatic habitat risk summary in Attachment D and a 200' stream-buffer was added to Figures 1-6 so that we were able evaluate which road segments were near streams. Roads within this buffer and that had been identified as having high aquatic risk in the MRA (which included proximity to the floodplain) were selected for proposed SRFB funding.

- Need to clarify the definition of the road treatments, for example, what does decommission mean in this proposal?

See Attachment C.

- USFS developed a road model that you may want to run (WATSED). It will help us estimate the biological benefits if we know how much sediment input will be reduced by each treatment (or treated area). What is the current percent fine sediment? It would be good to have USFS fine sediment data in the final proposal.

There wasn't sufficient time between pre- and final proposal to run new sediment transport models, however, the final application does include additional information about sediment data; see Section 2B.

- Although the presentation began to add more specificity in response to questions during the field tour, it would be helpful if you could include specific creeks and the planned treatments for each.

See Tables 2 & 3 and Figures 1-6.

- What assurances are there that the USFS won't go back in and re-open the roads?

See the explanation in Section 3C of the final proposal.

- Link the benefits of the upper watershed road work to the lower watershed where most anadromous fish are. Some of the planned treatments in the lower watershed could be less effective with the current high sediment inputs coming from the upper watershed.

The focus of road work is in the Upper Peshastin. See Section 2C and 2D in the final proposal for the requested information.

- In addition to identifying specific projects and treatments, the Forest Service Needs to include how and what they are planning for monitoring.

See Section 3C of the final proposal for a description of the monitoring that is planned.

Peshastin Forest Service Road System Improvement

1. Project Overview

A. Provide a brief summary of the project:

The objective of the Peshastin Forest Service Road System Improvement project is to reduce road-related impacts to aquatic habitat in the Peshastin sub-watershed. Roads impact stream habitat quality by constricting the floodplain width, introducing fish passage barriers, altering stream hydrology (increasing flashy hydroperiods), and increasing sediment loading.

The Peshastin Road Improvement project is targeted at USFS roads throughout the Peshastin watershed. Specifically, road treatments are proposed to reduce sediment input to streams and improve fish passage in the Upper (Tronson, Scotty, Ruby, and Shaser) and Lower (Camas, Hansel, and Mill) Peshastin subwatersheds as well as the mainstem of Peshastin Creek; there are no roads in the Ingalls Creek subbasin.

Peshastin Creek is a tributary to the Wenatchee River, entering the Wenatchee downstream of the town of Peshastin at about River Mile 20. The latitude and longitude is from approximately 120°25' W to 120°30' W and 47°35' N to 47°15' N. The mainstem of Peshastin Creek is identified as a Category 2 watershed and road work is identified as a priority action for Peshastin Creek in the Implementation Schedule for the Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan (UCSRB 2007, schedule updated 2009). Road system improvements would primarily benefit all life stages of steelhead but also listed bull trout and spring Chinook. Road system improvements in tributaries to Peshastin Creek are targeted at addressing limiting habitat diversity and quality in the tributaries and in the mainstem of Peshastin Creek.

The Peshastin watershed contains 287 miles of roads and road densities are greater than 2.4 mi/sq. mi. Road densities >1.7 mi/sq. mi. result in negative impacts to fish (Quigley and Arbelbide 1997). Almost 60% of the existing Peshastin road system is at a moderate to high risk to aquatic habitat based on floodplain interaction, erosion potential, and road/stream connectivity (USFS 2010).

This application is seeking funding to eliminate the highest road-related risks to salmon and salmon habitat in the Peshastin watershed. This includes 30 miles of road storm-proofing and 20 miles of road decommissioning. The USFS Legacy Roads Program will also fund 30 miles of road decommissioning. In total, this project results in a 35% reduction in road-related aquatic risk and a 70% reduction in road density in the Peshastin watershed.

B. Has any part of this project been previously reviewed or funded by the SRFB?

No

2. Salmon Recovery Context

A. Describe the fish resources present at the site and targeted by SRFB funding.

See Table 1 in Attachment G. Peshastin Creek supports several listed and unlisted salmonid species including listed spring Chinook, steelhead, and bull trout as well as redband and cutthroat trout. Road system improvements would primarily benefit all life stages of steelhead but also listed bull trout and spring Chinook. Steelhead are the most widespread in the subbasin and are known or presumed users of the mainstem of Peshastin Creek and all other tributaries in the watershed that are accessible. Fish surveys this summer are planned to help verify steelhead presence in some of the unsurveyed areas of the watershed. A resident bull trout population occurs in Ingalls Creek and migratory bull trout have been found to occur in the mainstem of Peshastin Creek, Ingalls Creek, and Etienne Creek as well. Spring Chinook occur in low numbers in mainstem Peshastin Creek, lower Ingalls Creek, Hansel Creek, and Ruby Creek.

The current population trend for Upper Columbia spring Chinook and steelhead remains at high risk for viable salmonid parameters such as abundance, productivity, and diversity measures (UCRTT and Terraqua 2010). NOAA Fisheries is currently reviewing the status of the populations but that data is not available yet.

B. Describe the nature, source, and extent of the problem that the project will address. Include a detailed description of site conditions and other current and historic factors important to understanding the need for this project.

"The USFS is generally able to maintain 20% or less of it's road system each year. The lack of maintenance leads to accelerated sedimentation into rivers, blocking fish passage, and overall decline of fish and wildlife health. In 2007, US Congress created the Legacy Roads and Trails Remediation Initiative to decommission and repair roads that impact water quality and endangered fish habitat. Congress dedicated $179 million over three years for planning, maintenance, and road improvements, however, it's estimated that the true cost for the road improvements needed is $93 million/year over 20 years." Summarized from The Wilderness Society 2007 (Attachment A).

In 2010, USFS completed a Minimum Roads Analysis (MRA) in the Peshastin watershed (Attachment B). This watershed was the first MRA completed by the Wenatchee River Ranger District because it contains over 20% of the roads in the District and is a high priority for restoration and salmon recovery.

The MRA concluded that the Peshastin watershed contains 287 miles of roads. In the Upper watershed, road densities are greater than 2.97 mi/sq. mile with 554 stream crossings. In the Lower Peshastin watershed, road densities are greater than 2.4 mi/sq. mile with over 171 road crossings. Road densities >1.7 mi/sq. mi. result in negative impacts to fish (Quigley and Arbelbide 1997). All USFS roads in the Peshastin watershed are maintenance level 1 and 2 (on a

scale of 1-5) which means that they already have the most limited level of ongoing maintenance. Due to budget constraints, maintenance does not occur on any of these roads. Thus, you cannot reduce the current level of maintenance requirements to save annual costs. The only road improvements that can be made in this watershed to reduce the annual cost and improve environmental conditions are road closure, road storage, road de-commissioning, and road stormproofing. Definitions, photos, and methods for each of these road treatments are included as Attachment C. The MRA identified five alternatives ranging from 32 to 212 miles of road de-commissioning throughout the watershed. The District is currently in the NEPA scoping process to de-commission 50 miles of roads throughout the watershed. Part of implementing this road decomissioning will be funded through the Legacy Roads Program, however, there are insufficient funds to complete the amount of work needed to reduce the risk to water quality and fish habitat in the Peshastin watershed.

As part of the MRA, USFS evaluated risk of the road system to aquatic habitat (Attachment D). The following parameters were fed into the NetMap modeling system to develop aquatic risk ratings for each road: road density, stream crossing density/count, road proximity to streams, road surface erosion potential, and road/stream connectivity. The analysis found that 19% of Peshastin roads are in floodplains (165 miles). More than 75% of roads have a moderate to high erosion potential (226 miles) and the majority (82% or 247 miles) of the road system was interconnected with the stream network (based on drainage area). The analysis concluded that when road segments had more than two of these risks associated with it then it was a high risk to aquatic habitat and fish. This totaled >75% of the road system (based on mileage) (USFS 2010). These road segments are impacting habitat attributes such as channel and floodplain structure, water quality, riparian condition, hydrology, and bank and slope stability.

The USFS Peshastin Watershed Assessment (USFS 1999) provides additional information about the road system on drainage networks and sedimentation. It found that 40% of road miles were within 300' of streams, with the Upper Peshastin area having the greatest road densities in this 300' stream buffer. In terms of the effects of close proximity of roads to streams this high percentage of roads in stream buffers led to a large increase in the potential for an increase in drainage network due to roads. This is particularly true in the Upper Peshastin area with a total potential increase of 64-70 percent. The study found that average peak flows and stream responses are likely altered by the road system.

The Peshastin watershed is highly susceptible to road-related sedimentation and road failure. Predominate landtypes are dip slope/scarp slope complexes. These complex types have high surface erosion hazards, high sediment delivery hazards, and high surface runoff hazards. The hazards are high in part because of inherent erodibility of the Chumstick Formation sediments, bedding orientation, and the incised nature of channels in this landscape. A high percentage of the the watershed exhibits hazards such as road failures, landslides, surface erosion, and runoff hazards. Failure-related landtypes make up for between 9-25 percent of the total subwatershed landtypes (USFS 1999).

USFS has done some sediment monitoring and assessment in the Peshastin watershed. The Watershed Assessment (USFS 1999) concluded that most sites in the Upper Peshastin subwatershed were embedded. It found that Peshastin Creek from Allen Creek to Tronson

Creek was embedded. It also showed that all 24 sites sampled in Peshastin Creek between Tronsen and Scotty Creeks were embedded. In Tronson Creek, 70% of sites were embedded and in Scotty Creek 40% of sites were embedded. Core samples were taken in 1993 by the USFS and found 33 percent fines in Lower Peshastin Creek near the mouth, 28 percent fines in Upper Peshastin Creek below Shaser Creek and 32 percent fines in Tronson Creek (USFS 2009). The USFS standard for percent fines based on the Northwest Forest Plan is <20 percent. Addional sediment monitoring will be conducted this summer in Upper Peshastin, Scotty, Tronsen, and Shaser Creek to establish baseline conditions prior to road decommissioning. Sediment monitoring sites will be established to track conditions over time.

C. Discuss how this project fits within your regional recovery plan or local lead entity strategy to restore or protect salmonid habitat in the watershed (i.e., does the project address a priority action, occur in a priority area, or target priority fish species?).

In Peshastin Creek, the cumulative effects of past timber harvest in tributaries on sediment delivery and water quality are not fully understood, but are of concern (UCSRB 2008). The sediment sampling completed by USFS (USFS 1999; USFS 2009) and MRA (USFS 2010) have evaluated sediment conditions and the impacts of roads on aquatic habitat and determined which roads will have the most biological benefit resulting from stormproofing and de-commissioning.

Road system improvements on USFS land is listed in the Implementation Plan as a Wenatchee watershed wide programmatic action (WW-3040) to reduce sediment inputs to streams (WWPU 2009). Specifically, in Peshastin Creek action number PC-1440 (WWPU 2009) identifies road obliteration, road stream crossing improvements, and sediment control as a priority action for sediment reduction to address habitat diversity and quantity. The Implementation Plan specifies an assessment for road channel structure that focuses on National Forest land in tributaries above Ingalls Creek. This plan has been completed with the recent MRA. Reducing sediment inputs in tributaries to Peshastin Creek will reduce sediment loading in the mainstem. Since lower Peshastin Creek is primarily a transport reach, reducing sediment inputs in Upper Peshastin tributaries may result in more habitat benefits for salmon and steelhead (compared to Lower Peshastin tributaries). The Wenatchee was the only sub-basin in the Upper Columbia where a programmatic approach to roads was a potential priority action recommended in the recovery plan (RTT comments in WWPU 2009).

Peshastin Creek supports several listed and unlisted salmonid species including listed spring Chinook, steelhead, and bull trout as well as redband and cutthroat trout. Road system improvements would primarily benefit all life stages of steelhead but also listed bull trout and spring Chinook. T hese species occur in Peshastin Creek and utilize existing fish habitat for spawning, rearing, and migration. Several habitat conditions and associated limiting factors have been identified in Peshastin Creek which are influenced by road-related effects. These include flow and hydrologic function, water quality, pool depth and frequency, riparian condition, floodplain connectivity, and embeddedness (UCRTT 2008; Andonaegui 2001). Improving and/or removing road structure and condition will lead to improved hydrology and

floodplain connectivity, improved fish passage, reduced aggradation and therefore improved flow and water quality, increased pool depth and frequency, improved and more stable riparian forest, and improved substrate condition for spawning and rearing.

D. Describe the consequences of not conducting this project at this time. Consider the current level and imminence of risk to habitat in your discussion.

The benefits to fish resulting from this project are described in the text above. In addition, the watershed is currently listed on the Clean Water Act 303d list for temperature and instream flow and past habitat assessments have found impaired fine sediment (USFS 1999; USFS 2009). Another reason to implement this project now is because USFS has completed the MRA and they have some limited funding to conduct NEPA and implement road de-commissioning. There are multiple cost benefits and efficiencies in conducting the public outreach efforts and construction in the same timeframe as the USFS funded road improvements occurring in the watershed. Finally, reducing sediment loads in the tributaries to Peshastin Creek should be completed prior to or at least in conjunction with instream habitat enhancement projects in the mainstem. Yakama Nation completed the Reach Assessment for Peshastin Creek in 2010 and they are currently designing projects to implement in the mainstem. Ideally, upstream sediment and hydraulic transport issues would be addressed prior to levee removals and side channel re-connection projects in the mainstem to minimize the potential for accretion of sediment in newly created habitat areas.

In addition, the funds allocated by congress for maintainace are inadequate to care for the current road system and these funds can be re-allocated. Legacy Roads funding can be used for any road maintenance that improves water quality and in some cases the USFS funds allocated initially for decommissioning end up being used for backlogged maintenance and/or responding to emergency road failures. For example, the recent slides in Icicle Creek have used some of the funding that was originally allocated to road system improvements in the Peshastin watershed. Thus, it will take external funding sources to complete these road system improvements necessary to improve fish habitat. There is inadequate funding to implement the 50 miles of decommisoning covered in the current NEPA planning effort and inadequate funding to complete funding or implementation of the remaining recommendations in the MRA. The funds that are available from the USFS are going toward completing MRAs in the remaining subwatersheds in the Wenatchee River. Given the current funding available for roads within the USFS it is highly unlikely that the level of road improvements or decommissiong needed to reduce aquatic risks in Peshastin would be addressed within the next 20 years without outside funding assistance.

3. Project Design

A. Provide a detailed description of the project size, scope, design, and how it will address the problem described in Section 2B. Describe specific restoration methods and design elements you plan to employ.

The larger roads effort funded by the USFS will occur across the entire Peshastin watershed in all 10 catchments (Figure 1-6, Attachment F). The decommsioning and stormproofing funded by

SRFB funds will be used for improvements in the road systems in Ruby, Camas, Shaser, Upper Peshastin, Scotty, and Tronson Creek watersheds. Work will be primarily in the Upper Peshastin subbasin where roads are most likely to impact salmon and steelhead habitat and were sediment impacts are greatest. Tables 2 and 3 (Attachment G) outlines which roads will be stormproofed and decommissioned as part of this SRFB funded proposal.

In total, the Peshastin Road Improvement Project will decommission 50 miles and stormproof and improve 30 miles of roads in the Peshastin Creek watershed. The phase seeking funding in this proposal is stormproofing 30 miles and decommissioning 20 miles of road stormproofing. Table 4 (Attachment G) provides a timeline for each project phase.

The methods and definitions for road closure, storage, de-commissioning, and stormproofing are provided in Attachment C.

B. If restoration will occur in phases, explain individual sequencing steps, and which of these steps is included in this application.

Table 4 outlines the project phases, timeline, and funding sources to decommission 50 miles, and stormproof and improve 30 miles of roads in the Peshastin Creek watershed.

C. Describe the long-term stewardship and maintenance obligations for the project or acquired land. For acquisition and combination projects, identify any planned use of the property, including upland areas.

USFS will conduct additional sediment monitoring to assess the benefits of road de-commissioning and stormproofing. This monitoring will begin in the summer of 2011 in Upper Peshastin, Tronson, Scotty, and Shaser Creeks. In 2012 three long-term sediment monitoring sites will be established in Peshastin Creek below Tronson, Scotty, and Shaser Creek. These sites will be monitored as part of the annual district-wide sediment monitoring effort and will be used to track changes in sediment loading as a result of road system improvements.

USFS has a large legacy road network from historic logging practices. They no longer have sufficient funds to maintain these roads. Thus, the agency has been directed to “right size” it’s road system to decrease impacts to the environment (Attachment A). Unlike road closure, once roads are decommissioned, they have hydrollically disconnected and reforested. Therefore, reclaiming a decommissioned road would require as much planning, engineering design, and construction as building a new road (see definitions in Attachment C). The Northwest Forest Plan (USFS 1994) also has standards that specify no net gain in miles of roads in Key Watersheds such as Peshastin. This means that if new roads need to be built on USFS land, they would have to mitigate by decommissioning an equivalent or greater amount of similar road mileage. In addition, given the limited maintenance for their road network and their committement to salmon recovery, the Wenatchee River Ranger District would not support reopening a decommissioned road that had been closed for salmon recovery unless the management reason was urgent. So while USFS cannot guarantee there will never be new roads built in the Peshastin watershed, the policy is clear that roads decommissioned through this effort

would result in a net gain of fewer roads in the watershed and an overall reduction in aquatic risks from roads.

4. Project Development

A. Explain how the project's cost estimates were determined.

Costs for decommissioning and stormproofing were estimated on a per mile basis from cost estimates of other similar USFS projects. Cost estimates for NEPA, stakeholder outreach, and grant administration are based upon similar previous efforts conducted by USFS and CCNRD.

B. Describe other approaches, opportunities, and design alternatives that were considered to achieve the project's objectives.

As part of the MRA, USFS staff considered a range of alternatives for how many road miles to decommission, close, and stormproof. From these alternatives, the USFS has used the "risk-based" alternative and the NetMap analysis to select the roads that have the highest risk to aquatic habitat. The proposed roads for stormproofing are ones that need to remain open based upon public access and management needs. The roads proposed for decommissioning currently have limited or nonexistent use and negative environmental impacts.

C. Have members of the community, recreational user groups, adjacent landowners, or others been contacted about this project? Describe any concerns about the project raised from these contacts and how those concerns were or will be addressed.

USFS is currently undergoing NEPA scoping for the road decommissioning. A public notice letter has been sent to stakeholders and landowners and a public meeting will be held on July 6th. All public comments raised will be addressed and feedback will be incorporated into project design and implementation. As part of this scoping process the context of the larger-scale road system improvement project, which includes stormproofing and 2012 proposed planning, will be discussed.

D. Include a Partner Contribution Form (Appendix J), when required, from each partner outlining the partner's role and contribution to the project. State agencies are required to have a local partner that is independently eligible to be a project sponsor. A Partner Contribution Form is recommended, but not required, from partners providing third-party match.

USFS has signed a landowner acknowledgement form as an equivalent to a partner contribution form (Attachment E).

E. List all landowner name. Include a signed Landowner Acknowledgement Form from each landowner acknowledging that his or her property is proposed for SRFB funding consideration.

USFS has signed a Landowner Acknowledement form (Attachment E).

F. Describe your experience managing this type of project.

CCNRD will be working with USFS staff to assist with stakeholder coordination, NEPA meetings, coordination with the County commissioners, and notification of the project implementation. CCNRD staff have successfully conducted project related outreach for multiple salmon recovery projects and large scale planning efforts (Shoreline Master Plan, Natural Hazard Mitigation Plan, etc) throughout Chelan County. While this is the first watershed-scale road decommissioning project for the Wenatchee River Ranger District, the District has conducted hundreds of smaller-scale stormproofing and road decommissioning projects throughout the Wenatchee basin. They have adequate resources to complete all work within the proposed time frame.

5. Tasks and Schedule - List and describe the major tasks and time schedule you will use to complete the project.

See Table 4 in Attachment G.

6. Constraints and Uncertainties

USFS has evaluated public use and incorporated recreational road use into the selection process for which roads to stormproof, close, and decommission. However, since NEPA scoping has not been finalized yet, there is a possibility that some public concerns may be raised about the plans to decommission certain proposed roads. To address public concern, there is the potential for a slight adjustment in which roads get decommissioned. If a road is removed from the NEPA planning effort another road or road segment of equal aquatic risk and value to habitat restoration will be substituted for use of SRFB funds. Another way to address these comments would be to adjust the phasing and decommission less controversial roads first leaving more time to work through and address concerns about public use for other areas. Depending on the outcome of the stormproofing planning effort there could be unexpected costs associated with re-routing a road outside the floodplain or improving stream crossings. We have tried to identify and account for all known issues but if these unexpected costs should arise the USFS and CCNRD will seek out internal and external funding sources to complete the proposed work.

7. Detailed project cost estimate.

See Table 5 in Attachment G

References

Andonaegui, C. 2001. Salmon, Steelhead and Bull Trout Habitat Limiting Factors for the Wenatchee Subbasin (WRIA 45) and Portions of WRIA 40 within Chelan County (Squilchuck, Stemilt and Colockum Drainages). Washington State Conservation Commission.

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Attachment A: USFS Legacy Roads Program, The Wilderness Society

A Roadmap to Clean Water

The Legacy Roads and Trails Remediation Initiative

"The National Forest System has a transportation system that is not suited to its modern needs and requires realignment to "right size" the system for the future."

– Former US Forest Service Chief Gail Kimbell, May 2009

"Given the reality of a very large and under-maintained system leading to sediment-laden streams and impacted communities, we are heartened that Secretary Vilsack identified road decommissioning and watershed protection as a major priority."

-US Conference of Mayors, December 2009

An Unmanageable Road System Threatens the Future of our National Forests. Our national forests are the landscapes largely responsible for providing clean water, habitat for wildlife, and unparalleled outdoor educational and recreational opportunities. Along with climate change, arguably the biggest ecological impediment to healthy forests is the massive road system. Leftover from the era of big timber, the road system is convoluted and unmanageable. It is not meeting the growing recreational needs of our nation well, and is leading to a host of environmental problems. Moreover, it is expensive, with backlogged maintenance well over $5 billion and growing every year.

With 375,000 miles of roads in its system, the Forest Service (USFS) is generally able to maintain 20% or less of its road system each year. This leads to accelerated sedimentation into rivers and blockage of fish passages, and overall decline of fish and wildlife health. USFS researchers have clearly shown that less roaded watersheds have higher ecological integrity than more roaded ones.

Americans depend on clean water flowing from our national forests. 66 million people in 3,400 communities rely on the national forests for their drinking water. Many rural communities rely on commercial and recreational fishing industries that hinge on clean water and healthy functioning streams. The costs of the road system on our national forests often fall disproportionately on these communities.

A Tool to Solve the Problem: The Legacy Roads and Trails Remediation Initiative. In late 2007, Congress created the Legacy Roads and Trails Remediation Initiative (LRTI) to provide funding to the Forest Service to decommission unneeded and environmentally problematic roads and trails, and undertake repairs on needed

ones. LRTI funding is specifically tiered toward the impacts of roads and trails on the health and quality of America's rivers and streams, endangered fish, and drinking water.

Congressman Norm Dicks (D-WA) championed the creation of the LRTI, in part to secure funds to help bring national forest roads in Washington State up to minimum state clean water standards. Congressman Dicks was backed by the footwork of the Washington Watershed Restoration Initiative, which includes Wildlands CPR, The Wilderness Society, the Washington Department of Ecology, and about a dozen other conservation groups in Washington State. Although the LRTI was spearheaded from Washington State, it is a national initiative that provides funds to improve watershed health and function in all national forests.

Since creating the LRTI three years ago, Congress has appropriated $179.4 million for this work. For the most part, the USFS has allocated the money to address its shelf stock of priority projects, projecting improvements to more than 120,000 acres of watersheds by decommissioning and performing almost 2,200 miles of system and unauthorized roads and performing the necessary critical maintenance on thousands of miles of roads and trails.

Restoration crew improving water quality and fish habitat on the Olympic National Forest in Washington by removing unneeded Forest Service roads. Photo: Steve Zugschwerdt.

LRTI funding is available for transportation-related projects that focus on improving water quality such as decommissioning and repair work on USFS system roads and trails and non-system routes. The Service should target this money towards obliterating unnecessary roads, trails, and unauthorized routes, performing critical maintenance on important roads and trails, and maintaining culverts all aimed towards improving water quality. With so many excess roads, determining which ones receive maintenance funding can be difficult. Funds can also be used to perform the travel analysis necessary to determine which routes are unneeded, and the required environmental analysis and design work related to specific projects.

Legacy Roads and Trail Remediation Fund Appropriations and Projected Achievements since Inception

Fiscal Year	Funds Appropriated (millions)	Miles of System and Unauthorized Roads Decommissioned	Road Miles Maintained or Improved	Trail Miles Maintained/Improved to Standard	Acres of Watershed Improved
FY 2008	$39.4	868	2,673	1,784	60,831
FY 2009	$50	1,326	2,631	1,386	65,177
FY 2010	$90	-	-	-	-

Forest Service Policy. In 2001, the USFS set forth the long-term objective of creating a fiscally and environmentally sustainable transportation system that meets resource management and recreational needs. At that time, the agency estimated that this might require a reduction of 120,000 to 186,000 miles of roads. To achieve this goal, the USFS promulgated regulations requiring agency officials to identify the minimum road system necessary to carry out forest operations and to identify roads for decommissioning.

A 2003 Wildlands CPR study found that it would cost approximately $93 million per year for about 20 years to implement a national road "right-sizing" plan.[1] That $93 million would provide between 1,209 and 2,697 high-wage, high-skill green jobs in rural communities, making such an appropriation good for the land and surrounding communities.[2]

Wasatch-Cache National Forest, UT. Photo courtesy of Scott Smith.

The Big Picture: Future of Forest Service Roads. The LRTI is the first explicit appropriation towards the USFS's objective to "right-size" the road system. While $179.4 million over three years has resulted in significant on-the-ground improvements to watersheds, transforming the agency's massive road network into an environmentally sound system will take decades of sustained funding. Conservation and recreation partners across the country are committed to working for long-term, sustained funding for road reclamation and remediation for the Forest Service.

At the same time, it is critical that USFS effectively expend LRTI funding. This includes making watershed restoration and right-sizing the road system an agency priority, agency leadership re-orienting job responsibilities accordingly, restructuring programs, and carefully accounting for how the money is spent to track the resulting on-the-ground accomplishments.

The first few years of the LRTI enabled the USFS to address shelf stock projects. As these projects are completed, the Forest Service, in order to effectively utilize the LRTI, needs to develop a strategy to achieve a sustainable transportation system and healthier watersheds in a reasonable timeframe. Specifically, each forest unit should:

- Conduct a comprehensive landscape-scale analysis of all roads to understand the condition of all routes and related effect on forest resources so that LRTI funds can be effectively expended,
- Identify priority watersheds requiring road and trail treatments,
- Identify an ecologically and fiscally sustainable minimum road system that will meet recreational and resource management needs, while also identifying unneeded roads for decommissioning,
- Allocate LRTI funds towards road and trail projects that will protect and improve water quality, and
- Track success stories and accomplishments from allocating LRTI funding and share these with the public and your partners in conservation.

This strategy, coupled with necessary funding under LRTI and the leadership direction to prioritize watershed restoration, will serve as the roadmap to clean water and sustainable transportation systems.

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[1] Ihara, Daniel M., Ph.D., Hackett, Steven C., Ph.D., and Manning, John J., Reinvestment in Jobs, Communities and Forests: The Benefits and Costs of a National Program for Road Removal on U.S. Forest Service Lands, A Preliminary Analysis. 2003. Available online at http://www.wildlandscpr.org/files/NFSRoadRmoval.pdf.

[2] Moseley, Cassandra and Max Nielsen-Pincus, Economic Impact and Job Creation from Forest and Watershed Restoration: A Preliminary Assessment. Briefing Paper #14. Ecosystem Workforce Program. Institute for a Sustainable Environment. University of Oregon. Winter 2009. (between 13-29 jobs would be created or retained and over $2.1 million in total economic activity generated for every $1 million invested on restoration.) The reasonableness of the range presented in Moseley's research is supported by numerous studies, which demonstrate job creation potential between 11 and 21 jobs per million dollars of restoration investment depending on the type of activity.

Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010
Legacy Roads and Trails Remediation Language[3]

The conference agreement provides $90,000,000 for the legacy road and trail remediation program. The Service should follow the direction as described by the House.

Conference Bill Language: The conference agreement includes the House proposed language concerning the availability of funds for decommissioning roads. The conference agreement includes the Senate proposed language limiting funds to decommission any system road until notice and an opportunity for public comment has been provided on each decommissioning project.

House Language

For necessary expenses of the Forest Service, not otherwise provided for, $556,053,000, to remain available until expended, for construction, capital improvement, maintenance and acquisition of buildings and other facilities and infrastructure; and for construction, capital improvement, decommissioning, and maintenance of forest roads and trails by the Forest Service as authorized by 16 U.S.C. 532–538 and 23 U.S.C. 101 and 205:

Provided, That $90,000,000 shall be designated for urgently needed road decommissioning, road and trail repair and maintenance and associated activities, and removal of fish passage barriers, especially in areas where Forest Service roads may be contributing to water quality problems in streams and water bodies which support threatened, endangered or sensitive species or community water sources:

Provided further, That funds provided herein shall be available for the decommissioning of roads, including unauthorized roads not part of the transportation system, which are no longer needed:

Provided further, That no funds shall be expended to decommission any system road until notice and an opportunity for public comment has been provided on each decommissioning project:

Provided further, That the decommissioning of unauthorized roads not part of the official transportation system shall be expedited in response to threats to public safety, water quality, or natural resources:

Legacy Roads and Trail Remediation Fund Allocations by USFS Region (millions)			
USFS Region	**FY08 Allocations**	**FY09 Allocations**	**FY2010 Allocations**
R1 - Northern	$ 4.7	$ 5.9	$12
R2 - Rocky Mountain	$ 3.4	$ 4.5	$4
R3 - Southwestern	$ 3.0	$ 6.3	$7
R4 - Intermountain	$ 3.8	$ 4.9	$10
R5 - California	$ 6.7	$ 8.5	$10
R6 - Pacific Northwest	$ 8.3	$ 9.5	$19.1
R8 - Southern	$ 4.8	$ 6.1	$11.6
R9 – Eastern	$ 4.0	$ 2.2	$10
R10 – Alaska	$ .67	$ .9	$3
Total	**$39.4 million**	**$50 million**	**$90 million**[4]

[3] Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010**,** H. Rep. No. 111-180, p 133-4. (enacted).

[4] The Forest Service took about 3% ($3.3 million) for overhead, so the 2010 totals listed above add up to $86.7 million.

Attachment B: DRAFT Peshastin Minimum Roads Analysis

Upper Peshastin, Lower Peshastin and Ingalls Creek Watershed

The Minimum Roads Analysis (MRA) identifies opportunities to meet current and future management objectives to reduce risks to the (1) public, (2) water and aquatic resources, (3) wildlife habitat. The benefits preserve access for Vegetation Management, Fire, Recreation, Administrative use, Utility access, Communication sites, Cooperator access, Special Uses and Grazing and also work towards right sizing our road system to meet our economic concerns.

Existing Conditions

Currently, the Wenatchee River Ranger District (WRRD) has approximately 1,390 miles of National Forest System Roads (NFSR) with the Peshastin Watershed having approximately 287 miles of the system roads. The breakdown of the existing NFRS by Objective Maintenance Level (ML) is shown in Table 1.

Table 1:

Maintenance Level	Miles in Watershed	Miles on District	Miles in Zone	% of Zone Miles in PMRA
5	0	17	28	0
4	0	20	34	0
3	0	94	165	0
2	170	920	1815	9%
1	117	340	754	15%
Total	287	1391	2796	12%

Analysis Methodology

A MRA Team from the WRRD (including resource specialists in Fisheries/Aquatics, Hydrology, Wildlife, Botany/Weeds, Recreation, Silviculture / Veg. Management and Fire Management reviewed each road in the analysis area. A High, Medium or Low rating (based on the roads' relative Risks or Benefits for the particular resource) was assessed for each road. These ratings were used to determine a proposed maintenance level for each road.

Mapping tools used to develop ratings included:

- GIS maps showing current roads, streams and topography
- Other GIS resource layers (including NRIS sensitive plants, NRIS invasive plants, critical habitat units, potential lynx habitat, etc.)
- NetMap model outputs

Peshastin Minimum Roads Analysis

Alternative Summaries
October 10, 2010

Financial Alternative

This Alternative was developed in an attempt to reach the annual maintenance target of $20,520.00. Unfortunately, this target does not seem attainable in this watershed because for example, this budget would allow for only 32 miles of ML-2 roads.

Under this alternative, the main trunk lines in this watershed and four spurs would be maintained at ML-2 for a cost of $37,379.70; 8.1 miles would be put in ML-1 ($501.60); and 212.3 miles would be decommissioned. **Total annual maintenance cost under this alternative would be $37,881.30.**

Road	ML-1 (mi)	ML-2 (mi)	Notes
7200000		5.0	
7200122	0.8		
7200140		2.8	Camas/Ruby tie
7201000		7.5	
7204000		3.9	
7224000		3.4	
7230000		0.3	
7230211		2.0	Verizon Tower access
7240000		0.8	
7240411		0.7	Tronsen TH access
7300000		11.0	
7300400	4.5		
7300500		2.0	Communication Tower access
7305000		5.4	
7316000		4.1	
7316511	2.8		
7322000		2.4	
7322200		4.4	North Shaser
7324000		6.8	
Total	**8.1**	**62.4**	

Pros:

- Moves toward right-sizing the road system with the maintenance budget.
- Addresses watershed health and aquatic risk.
- Addresses road density for LSR and Griz Recovery Goals.
- Adequate road system for T & E Plant management and noxious weed control.

Cons:

- Reduces ML or decommissions spur roads with cost/share agreements.
- Decommissions some road segments with inactive mining claims.

- Eliminates additional TH development opportunities for Tronsen Ridge Trail, Swauk Pinnacles, and County Line Trail.
- Reduces ML or decommissions spur roads that access future veg management project areas, fuels reduction projects, and fire suppression.

Risk Alternative

This alternative addresses risks to aquatic health and wildlife. Wildlife risks were addressed through road density at the subwatershed scale. While aquatic risk is emphasized in this alternative, wildlife risks are also addressed by reducing road density through recommended decommissioning and long-term storage (ML-1) of roads. Road density calculations were not determined based on this or any of the alternatives.

Where the aquatic analysis identified two or more risks (see Aquatic Analysis methods) the road was recommended for decommissioning, unless two or more needs were identified for the road segment, which often translated into the main trunk roads. Where no risk and no need were identified, the road was recommended for ML-1 long term storage.

Maintaining the following roads as ML-2 will require investment in them now to reduce aquatic risks (modeled and/or inventoried) to the watershed:

Road	ML-2 (mi)	Notes
7200000	5.0	Needs field survey to ground truth aquatic model.
7200140	2.8	2009 Survey ended at watershed boundary (1.34 miles), and concluded road was functional.
7201000	7.5	Notes from 2009 survey: Camas Road (paved) to jct. w/ 7201-215 (2.5 miles) mostly functional, some unstable cut/fill slopes. 215 to 315 spur (1.7 miles) = mostly stable w/ unstable cut/fill slope. 315 to 7201-516 (1.8 mi) = mostly functional w/ rills and ruts on road surface. From jct. 516 to tower, functional w/ rills and ruts on road surface. **Recommend surfacing and drainage improvement.**
7204000	5.5	**Needs field survey** to ground truth aquatic model.
7224000	3.4	Notes from 2009 survey: Mostly functional, eroding ditch, rills and ruts on road surface, stream connectivity. **Reduce erosion/stormproof**.
7230000	0.3	**Needs field survey** to ground truth aquatic model.
7230211	2.0	**Needs field survey** to ground truth aquatic model.
7240000	0.8	2009 survey: Mostly functional. Rills/ruts. This segment was bermed and subsoiled in 2009. **Need to check for culverts**.
7300000	11.0	2009 survey started at 97 ended at watershed boundary near Jct. w/ 7300-500 (3.4 miles). Unstable cutslopes and rilling at MP 0.6, 0.9, 1.2, and 1.8. MP 1.3 blocked culvert and wet area on road. **Recommend surfacing and drainage improvement.**
7300500	2.0	**Needs field survey** to ground truth aquatic model.
7316000	4.1	Property sold to private, easement across NF and NF has easement across pvt. Gate. Mostly functional. Ditch erosion and rills/ruts on road surface. **Recommend surfacing and drainage improvement.**
7322200	4.4	**Needs field survey** to ground truth aquatic model.
7324000	6.8	2009 survey notes: Road rough and not easily passable beyond MP 1.8. Drainage at risk - Ditch filled in, drivable dips not functioning. Beyond MP 1.8, steep road gradient (9-15%) w/ rills/ruts. From top of ridge down to cabin in basin (4 miles) functioning w/ rills/ruts. **Recommend stormproofing, surfacing, drainage improvement.**

Total	**55.5**	

This alternative resulted in an annual maintenance cost of **$38,501.98**; it decommissions 178.4 miles of road and puts into long-term storage 44.5 miles of road.

Pros:

- Moves toward right-sizing the road system with the maintenance budget.
- Addresses watershed health and aquatic risk.
- Addresses Road Density for LSR and Griz Recovery goals.
- Stores more roads (36.4 miles) for future needs than the Financial Alternative.

Cons:

- Reduces ML or decommissions spur roads with cost/share agreements.
- Decommissions some road segments with inactive mining claims.
- Eliminates additional TH development opportunities for Tronsen Ridge Trail, Swauk Pinnacles, and County Line Trail.
- Reduces ML or decommissions spur roads that access future veg management project areas, fuels reduction projects, and fire suppression.
- Requires an investment in upgrading trunk roads to reduce aquatic risks (relocation, storm-proofing, culvert/drainage improvement).

Needs Alternative

Primarily vegetation management needs are reflected in the Alternative Summary Sheet.

There is some uncertainty as to when, where, and how much of a vegetation project will occur in the Peshastin watershed within the next 5 years. With this uncertainty it was difficult for the vegetation management group to define access needs, therefore a very conservative approach to road management was taken.

Existing short-term needs (1-3 years) identified include: Hazardous fuel/Timber Stand Improvement treatments (2005 CE, Lower Peshastin EA, SAI, and KV plan), Camas Seed Orchard Maintenance and Management, Whitebark pine cone collection, Native Seed Cone collection. These were identified as “High Vegetation Needs” and ML-2 was recommended for these road segments.

Mid-term needs identified included: Peshastin Vegetation Management Project Activity in 4-7 years and HF/TSI identified in Lower Peshastin EA but contingent on funding. These were identified as “Moderate Vegetation Needs” and ML-2 and ML-1 were identified for these road segments.

Long-term needs identified included: Peshastin Vegetation Management Project Activity in 7-15 years, and HFI/TSI needs 2018-2025. These were identified as “Low Vegetation Needs” and ML-1 was mostly recommended for these road segments.

There was some discomfort among the vegetation management group in reducing ML in the short and mid-term because there was a sense that the road management costs (re-opening roads) would be shifted to the purchaser and sales would not be financially viable.

Consequently, a short-term and long-term needs alternative was developed, however there is only $5065.80 difference in annual maintenance costs between the two.

Alt 3a - Short-term Needs		Alt 3b - Long-term Needs	
Length (mi)	Cost	Length (mi)	Cost
0	0	0	0
0	0	0	0
0	0	0	0
134.353	86523.332	125.553	80856.132
111.387	6905.994	121.087	7507.394
32.66	0	31.76	0
278.4	$93,429.33	278.4	$88,363.53

Fuels and fire suppression needs mostly mirrored the Financial Alternatives “trunk road” approach, with the addition of nine road segments for planned fuels reduction projects and WUI protection.

Road	**ML-1 (miles)**	**ML-2 (miles)**	**Cost**
7201217		1.7	1094.80
7204181	2.7		167.40
7230000		1.7	1094.80
7300400		4.5	2898.00
7310000	3.4	3.0	2142.80
7310200	3.1		192.20
7316211		4.0	2576.00
7322400		5.3	3413.20
7324800		4.2	2704.80
Total	9.2	24.4	**$16,284.00**

Recreation needs in the Peshastin watershed also mirrored the “trunk road” approach displayed in the Financial Alternative with the addition of seven road segments recommended for ML-2 for dispersed recreation pursuits:

Road	**ML-2 (miles)**	**Cost**	**Notes**
7220000	1.3	837.20	Develop Tronsen TH (2 access points currently exist)
7300400	4.5	2898.00	
7322200	4.4	2833.60	
7322230	5.0	3220.00	Access to County Line non-system trail

7322400	9.2	5928.80	Shaser to Gold Creek Basin
7324500	0.7	450.80	Access to Swauk Pinnacles
7340000	2.2	1416.80	
Total	27.3	**$17,581.20**	

Mining claims – In the Needs Alternative, we did not recommend decommissioning (removing from the system) roads with active or inactive claims because as we understand the mining law, reasonable access is guaranteed and if there was once access to the claim, the thought was that the FS would be financially responsible for providing that access if the claim was to become active again.

The table below displays all roads identified in this analysis that provide access to mining claims. If we reduced ML or decommissioned the ML-2 roads identified below, we could reduce annual maintenance costs on mining roads to $12,938.60 or $13,970.80. If we decommissioned all ML-1 roads an additional savings of $762.60 could be attained. This would reduce the long-term needs alternative cost to ~ $74,863.00.

Road #	Length (mi)	ML	Other Needs Identified	Aquatic Risk	Cost	Opportunities
7204000	8.0	2	H = Fire/Fuels, Veg, Rec, C/S	H (last 4mi)	5152.00	Reduce ML or Decom beyond MP 5.5 ($1455 or $1700 savings)
7204111	1.2	1	L - veg	H	74.40	
7305430	0.3	1	L-veg	H	18.60	
7305440	0.2	1	L-veg	H	12.40	
7305510	2.6	1	L-veg	H	161.20	
7312000	2.0	1	No Access, cut-off by Ruby Slide.	H	124.00	
7312211	1.4	1	No Access, cut-off by Ruby Slide.	H	86.80	
7316211	2.6	2	M = Veg, Fire/Fuels	H	1674.40	Reduce ML = $1513.20 savings Decom = $1674.40 savings
7316511	2.8	1	L-veg	H	173.60	
7320000	*6.0*	*3*	*County Road Jurisdiction*		*0*	
7322000	6.0	2	M= Veg, Fire/Fuels, C/S	H	3864.00	Reduce ML or Decom beyond MP 4.35 = ($960 or $1063 savings)
7322300	0.4	1	L – Veg	H	24.80	
7324000	6.8	2	H = Fire/Fuels, Veg, Rec, C/S	H	4379.20	Main trunk road, no savings opportunity.
7324300	5.0	2	M = Veg, Fire/Fuels, C/S	H	3220.00	Decom beyond MP 4.0 ($644 savings); OR Reduce ML ($2266 savings)
7324400	1.3	2	L = Veg, C/S	H	837.20	Reduce ML = $756.60 savings Decom = $837.20 savings.
7324430	1.4	1	L - veg	H	86.80	
Total					**$19,889.40**	**Savings = $5918.60 - $6950.80**

Needs Summary: Additional IDT would be required to review individual road segments with focus on reducing annual maintenance costs and risks to watershed health from the road system.

Pros:

- Keeps a road network for multiple land management objectives.

Cons:

- The least fiscally responsible alternative.
- Does not address aquatic/wildlife risks. Leaves roads on the system for up to 13 years while future Peshastin vegetation management project is planned and implemented.

Cost-share Alternative

We initially made recommendations for decommissioning (remove from the system) cost-share roads. We did feel strongly that it would be in the FS best interest to decommission cost-share roads (w/ LongFibre) as speculation of their disposal of lands increases. Realizing that we would need approval from the cooperator, an initial contact was made with LongFibre Company which resulted in no interest. Based on this initial contact, we developed an alternative which keeps all cost-share roads w/ LongFibre as they exist under the current agreement (102.6 miles ML-2, 12.1 miles ML-1) for a cost of $66,851.60.

This is an area that needs more work, there are 56.8 miles of ML-2 cost-share roads and 6.8 miles of ML-1 cost-share roads that were determined excess in the Financial Alternative, an annual savings of $37,000 could be realized if we were able to decommission these roads or if reduced to ML-1 a $33,479.20 savings would be realized.

Pros:

- There are no known advantages to the FS.

Cons:

- Not a fiscally responsible alternative.
- Does not address aquatic/wildlife risks. Leaves roads on the system for up to 13 years while future Peshastin vegetation management project is planned and implemented.
- If cost-share agreements are transferred to purchaser in the event of LVF land sales, Forest management and protection in the watershed becomes much more complicated.

Attachment C: Road Treatment Definitions, Photos, and Methods

USFS Wenatchee River Ranger District

Leavenworth, WA

Road Decommissioning

Road decommissioning is defined as: "Activities that result in the stabilization and restoration of unneeded roads to a more natural state." (36 CFR 212.1, Forest Service Manual 7705 – Transportation System [[USDA FS 2003]]).

Decommissioning entails 1)stabilizing and restoring unneeded roads to a more natural state using the methods described below(36 CFR 212.1); 2) re-establishing vegetation and restoring hydrologic and ecological processes interrupted or adversely impacted by the unneeded road; 3) management to block vehicles; 4) removing the road from the Forest Service transportation system database. Decommissioned roads would no longer be maintained. The long-term goal of road decommissioning projects is to reduce or eliminate hydrologic and sediment-related impacts so that instream conditions (i.e. substrate conditions and pool quantity and quality) may improve to natural conditions.

Methods:

The Forest Service Manual identifies five levels of treatments for road decommissioning which can achieve the intent of the definition. These include the following:

1. Block entrance

2. Revegetation and waterbarring

3. Remove fills and culverts

4. Establish drainage and remove unstable road shoulders

5. Full obliteration, recontouring and restoring natural slopes

These five treatments give planners a range of options for stabilizing and restoring unneeded roads. Watershed Analysis (WA), Roads Analysis (RA), and surveys help determine what treatment level or combination of treatments is appropriate. In some situations blocking the entrance may meet restoration objectives. In other situations, restoring hillslope hydrology may require full obliteration recontouring. Local factors such as climate, geology, topography, soil, and road design and construction also factor into the stabilization and restoration objectives.

Decommissioning Photos:

Before and after pictures of decommissioned road (Mt. Hood NF).

Recently decommissioned road (Seattle Public Utilities).

A road being outsloped and returned to its original slope (Clearwater NF).

Before

After

Working to remove a culvert from a road being decommissioned (Oregon Coast).

Recently decommissioned road (Mount Baker-Snoqualamie NF).

Road Stormproofing

The term stormproofing is used to describe a range of treatments and modifications made to permanent roads to accomplish two goals: 1) reduce the vulnerability of roads to failure during large storms, and 2) reduce the level of erosion, sediment delivery, and related environmental harm caused by a road should failure occur. The Forest Service currently lacks a formal definition of stormproofing but the definition used when applied to aquatic restoration is similar to that of decommissioning. It can be defined as activities that result in the stabilization of needed roads to a state in which they hydrologic and sediment-related impacts are minimized so that instream conditions (i.e. substrate conditions and pool quantity and quality) may improve to natural conditions.

Methods:

To stormproof entails structural changes in a road's design and drainage intended to prevent rather than attempt to remedy harm after it has occurred. Stormproofing includes actions ranging from the simple and incremental to more aggressive and complex. Examples include: 1) altering of grading methods to transition roads from insloped to outsloped design, 2) grading drainage relief dips to route sediment-laden runoff away from stream crossings, 3) excavating critical dips and placing relief pipes at crossing fills to prevent down-road diversion of storm runoff in the event a culvert plugs and fails, 4) replacing culverts, bridges, or non-spanning crossing designs to reduce vulnerability of stream crossings to failure and to prevent/alleviate fish passage issues.

Stormproofing involves not just the initial work to improve the road and reduce its risk but the regular inspection and maintenance for the life of the road. This ensures that long term fisheries protection is achieved. Road maintenance activities include inspections and preventive maintenance, such as winterizing. This includes storm inspections, emergency maintenance, and identifying and treating problem culverts.

Stormproofing Photos:

Road before stormproofing (Uinta-Wasatch-Cache NF).

Replacing a fish passage culvert during road stormproofing (Suiattle River, NF, Oregon).

Armored ditch on stormproofed road.

References:

USFS. 2003. Transportation system. Forest Service Manual 7700. Washington, DC: USDA Forest Service.

Attachment D: Peshastin Watershed Minimum Road Analysis – Aquatics Results November 2010, USFS Wenatchee River Ranger District, Leavenworth, WA

NetMap (Earth Systems Institute, www.netmaptools.org) analysis tools were used to generate aquatic risk ratings for roads in the Peshastin watershed. NetMap's tools provide a coarse screening of aquatic risks associated with roads at the watershed scale, field surveys are recommended for more accurate risk assessments.

To begin our analysis we calculated road density and stream crossing density/count at the subwatershed scale. Road density is often used to measure overall watershed condition, and some studies have found that when road densities are between 1.7 and 4.7 miles/square mile, conditions that negatively affect fish are present (Quigley and Arbelbide (1997). The Upper Peshastin subwatershed has a road density of 2.97 mi/sq mi with 554 road/stream crossings, and Lower Peshastin subwatershed has a road density of 2.4 mi/sq mi with 171 road/stream crossings. The number of stream crossings in each subwatershed highlights the potential for road crossing diversion.

We then broke our analysis down to the road segment scale. We ran NetMap analysis tools to highlight: 1) road proximity to streams, 2) road surface erosion potential, and 3) road and stream connectivity.

Road proximity to streams was determined using NetMap's adjustable floodplain mapping tool. NetMap produced a floodplain polygon that we intersected with our roads layer in ArcGIS to identify roads that intersect the floodplain. Roads with greater than 10% of their length in floodplains were reported. **Result:** 19% of Peshastin roads are in floodplains, when you remove Hwy 97 from the calculation than 14% of the remaining road miles are located in floodplains; 55 road segments w/ >10% of road in floodplain.

For road surface erosion potential we used NetMap's Road length x slope squared model. The road gradient and road length (between natural drainage points) are reported. We categorized into High, Medium, and Low potential using Jenks natural breaks in ArcGIS. Only Moderate and High potential road segments were reported for aquatic risk. **Result:** 177 road segments w/ Moderate hazard; 89 road segments w/ High hazard.

To determine road/stream connectivity, we calculated road density at the stream segment scale based on local contributing drainage areas (drainage wings). This analysis tool highlights road and stream connectivity at the channel network scale and is interpreted to display road segments that may be directly linked to the channel network through ditches, ditch relief culverts, and drainage (perennial, intermittent, swales, etc.) crossings. We selected road segments that contribute >1.0 mi/sq mi road density to stream segments using a NetMap product that created polygons of the drainage wings, which we intersected with the road network in ArcGIS. **Result:** 216 Road segments identified.

When two or more of the above conditions were present for a road segment, we determined that the road segment negatively affected aquatic habitat and water quality, in other words Aquatic Risk was attributed to the road segment. **Summary:** 317 Road segments in watershed – 193 of those segments identified as having 2 or more of the above risks.

References: Quigley, T.M. and S.J. Arbelbide, tech. Eds. 1997. *An assessment of ecosystem components in the interior Columbia basin and portions of the Klamath and Great Basins: volume 3.* General Technical Report, PNW-GTR_405. Portland, OR: Pacific Northwest Research Station, USDA Forest Service. P. 1058-1713.

Attachment E: Landowner Acknowledgement Form

Landowner Information

Name of Landowner: US Fores: Service

Landowner Contact Information:

☐ Mr. ☒ Ms. Title: Acting District Ranger - USFS WRRD

First Name: Maureen Last Name: Hanson

Contact Mailing Address: 600 Sherbourne Ave, Leavenworth, WA 98826

Contact E-Mail Address: mhanson efs.fed.us

Property Address or Location:

1. US Forest Service (Landowner or Organization) is the legal owner of property described in this grant application.
2. I am aware that the project is being proposed on my property.
3. If the grant is successfully awarded, I will be contacted and asked to engage in negotiations.
4. My signature does not represent authorization of project implementation.

Maureen Hanson 5.2.11

Landowner Signature Date

Project Sponsor Information

Project Name:Peshastin Minimum Roads Analysis Stormproofing

Project Applicant Contact Information:

☐ Mr. ☒ Ms. Title Natural Resource Specialist

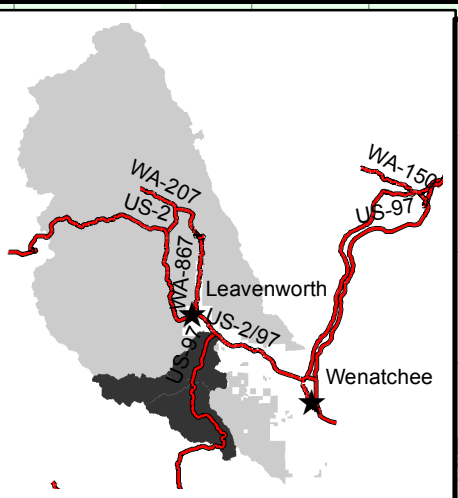
First Name: Jennifer Last Name: Goodridge

Mailing Address:316 Washington Street, Suite 401, Wenatchee, WA 98801

E-Mail Address:Jennifer.goodridge@co.chelan.wa.us

Attachment F: Figures

Peshastin Project Area



R. 16 E. R. 17 E. R. 18 E.

T. 24 N. T. 23 N. T. 22 N. T. 21 N.

Map 1 Map 2 Map 3 Map 4 Map 5

Wenatchee River

Peshastin Creek

US-97

N

Road Treatment

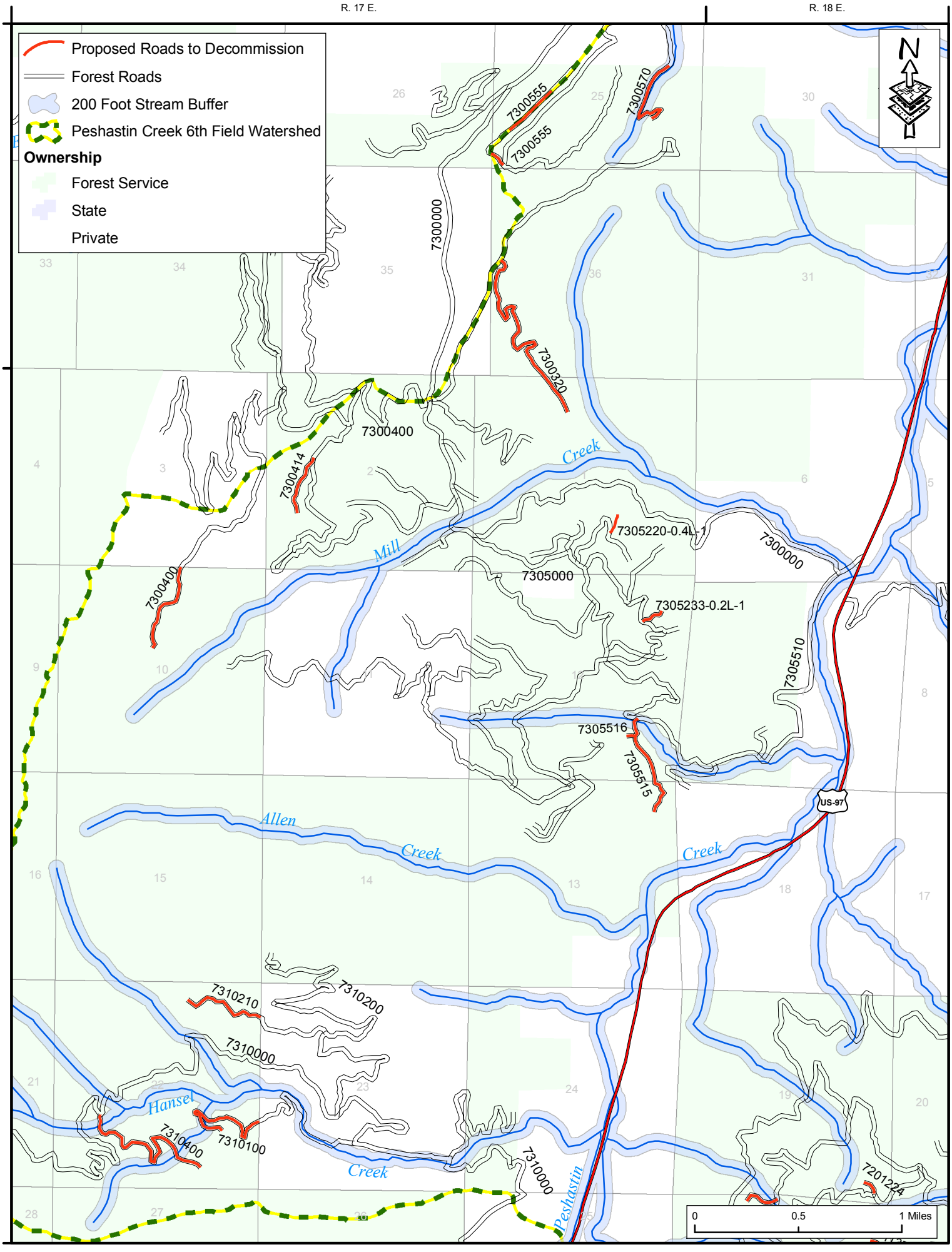
- Proposed Roads to Decommission
- Proposed SRFB Decommissioning
- Proposed SRFB Stormproofing
- Roads

Ownership

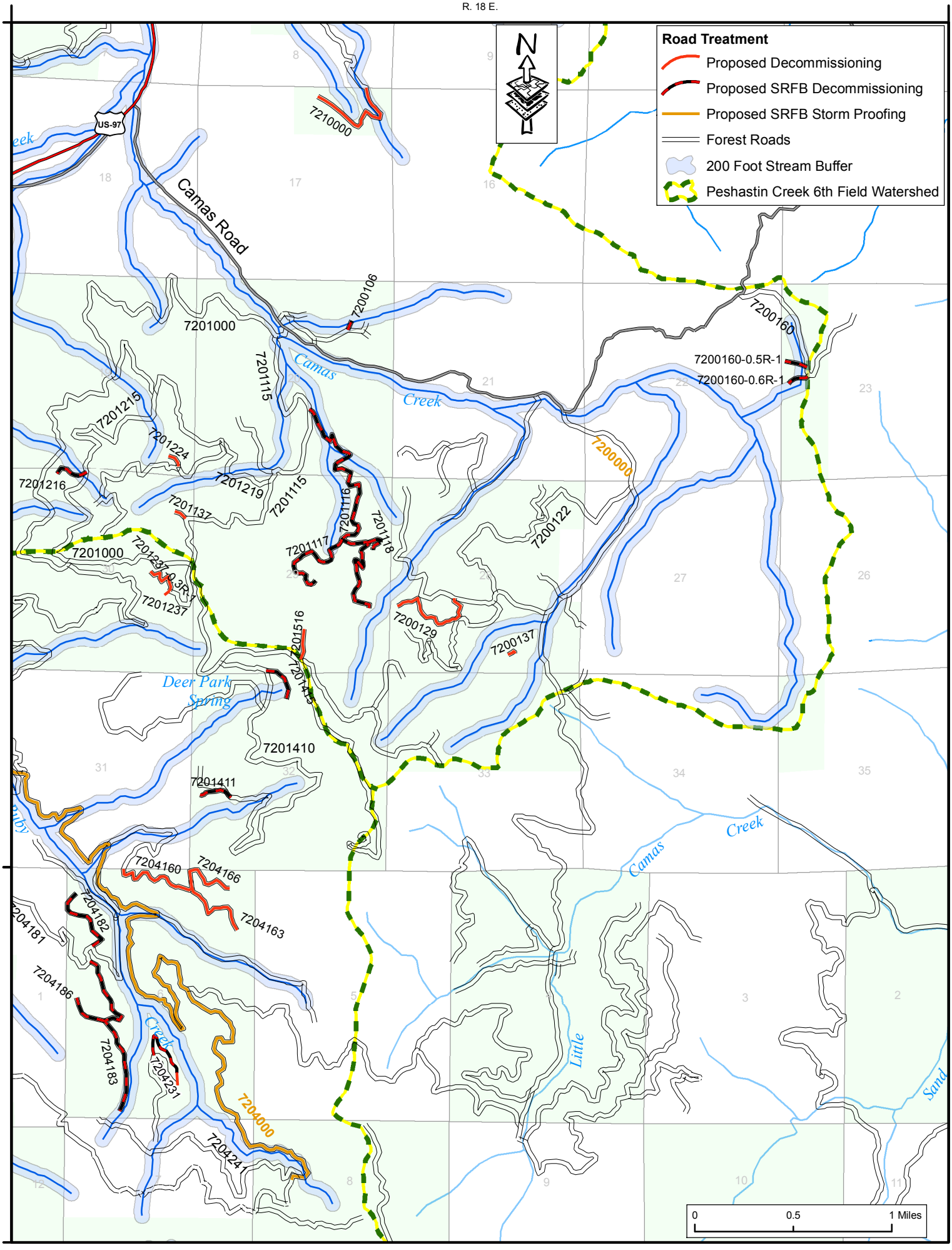
- Forest Service
- State
- Private

0 0.5 1 2 Miles

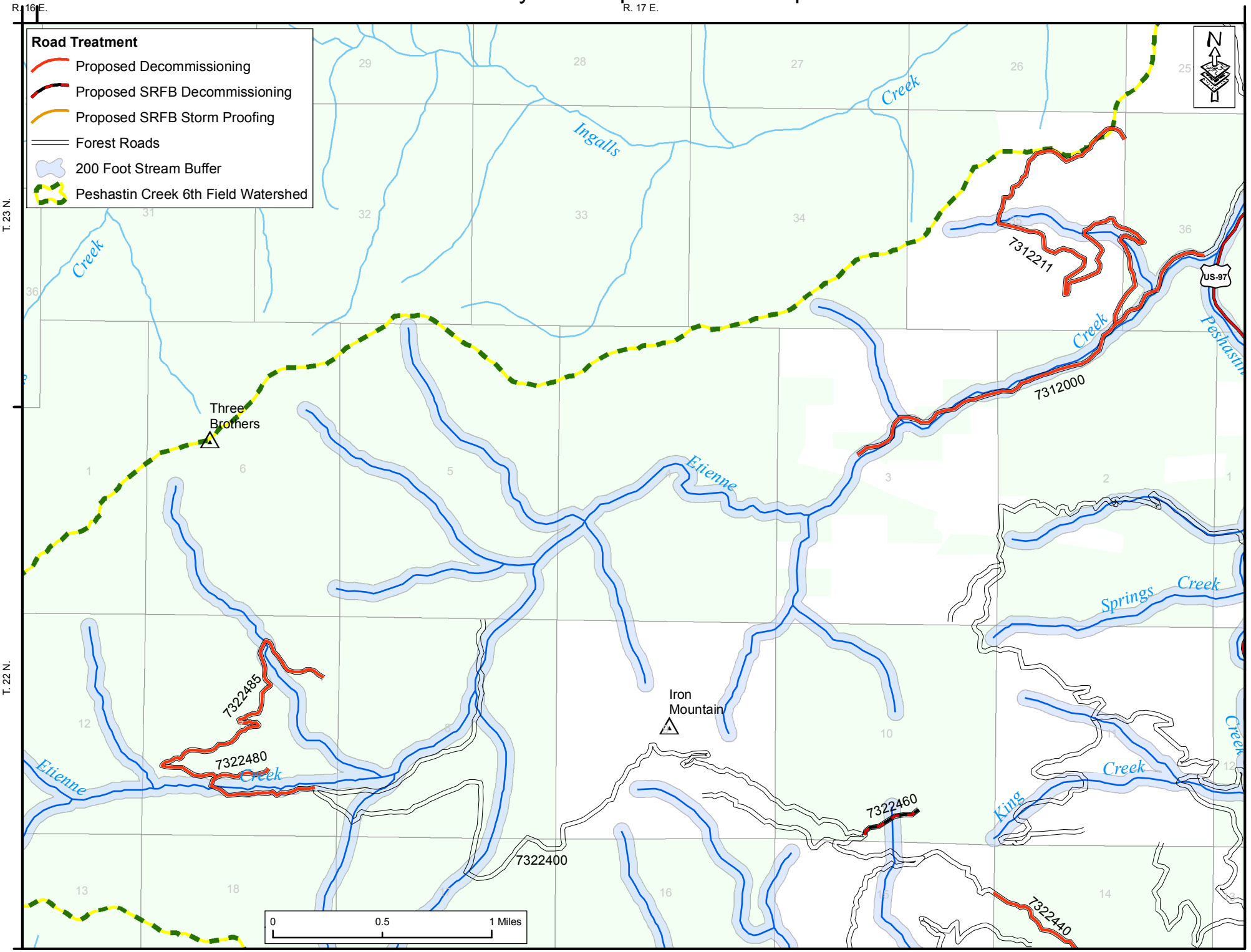
Mill - Hansel Road System Improvement - Map 1 of 5



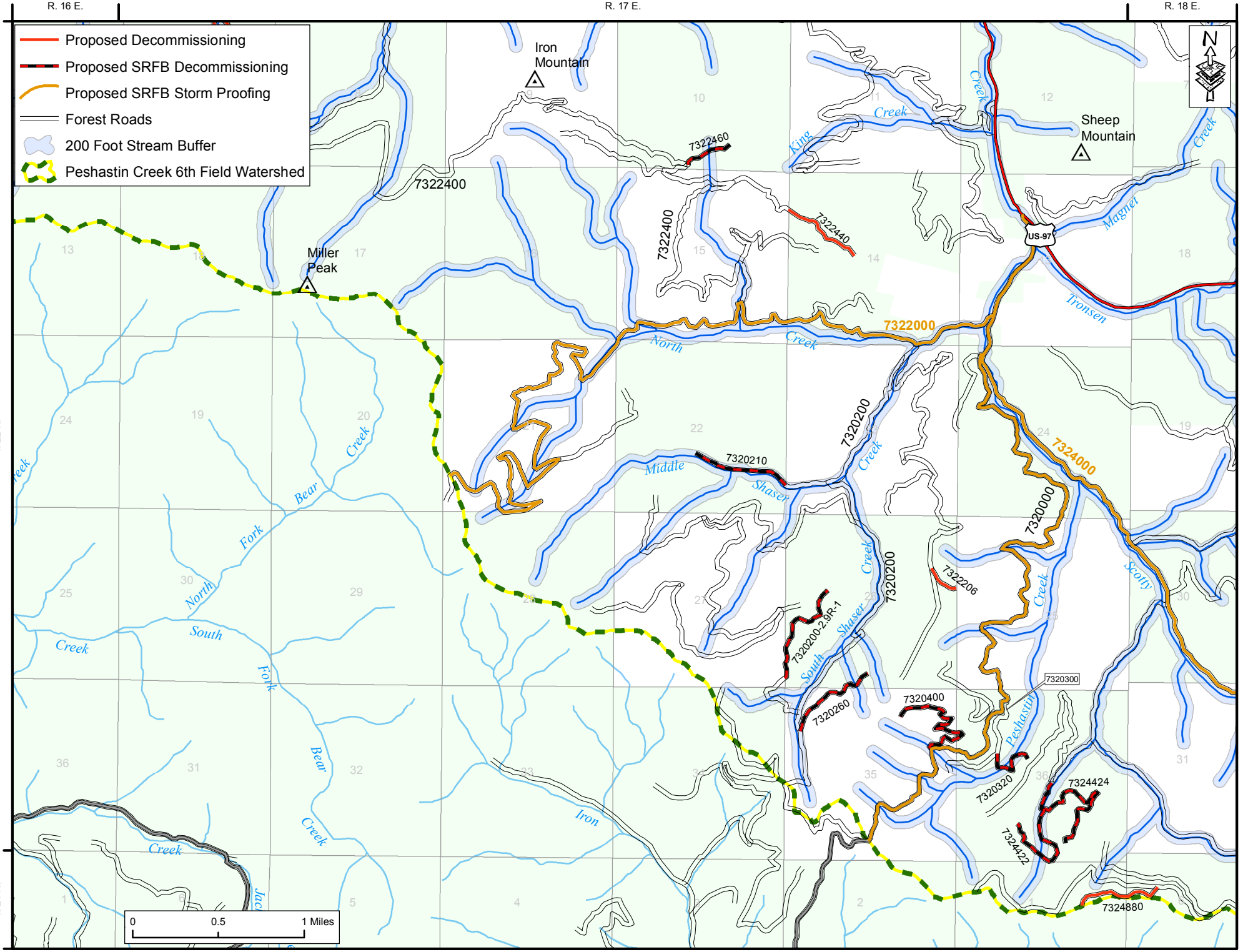
Ruby - Camas Road System Improvement - Map 2 of 5



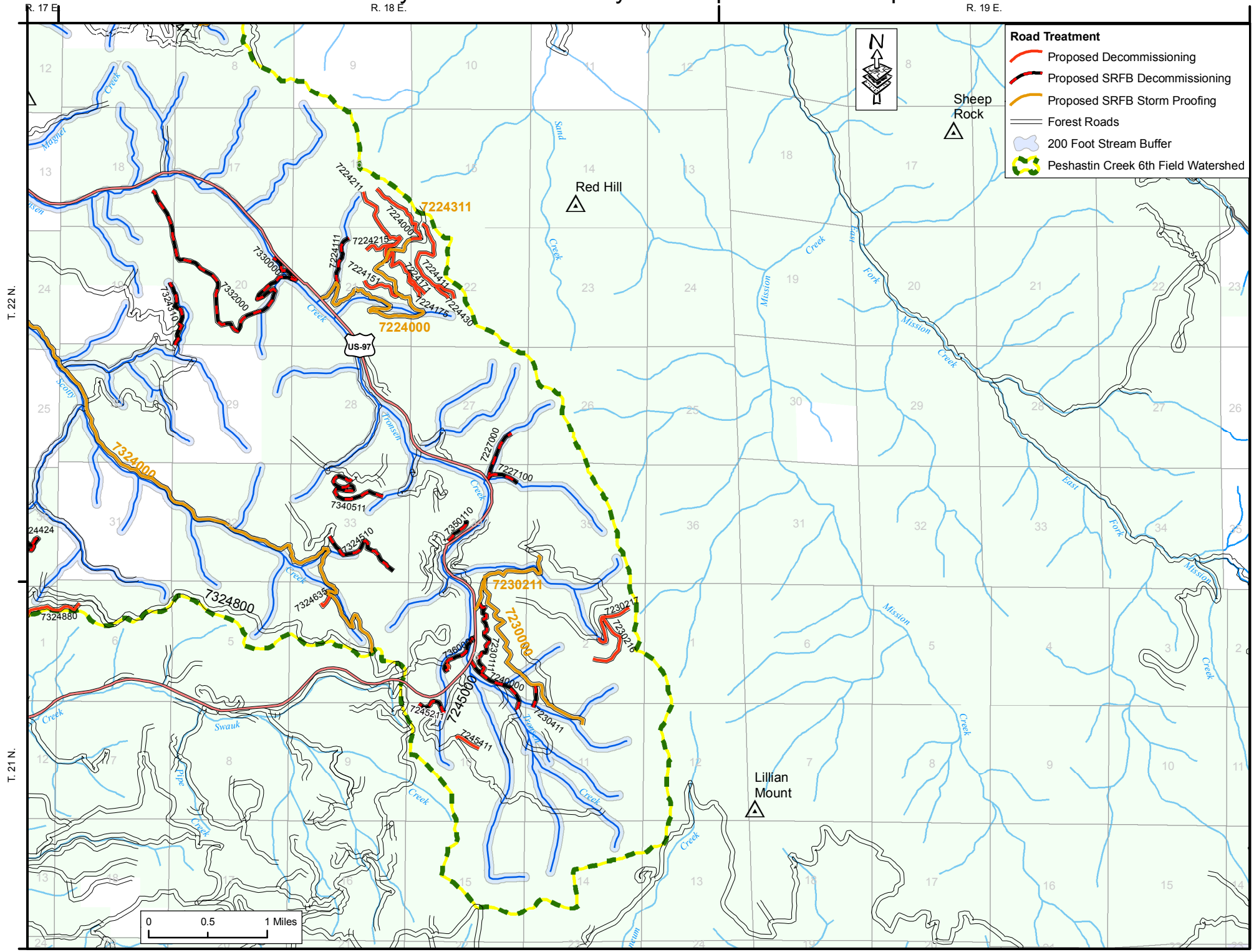
Etienne Road System Improvement - Map 3 of 5



Shaser - Upper Peshastin Road System Improvement - Map 4 of 5



Scotty - Tronsen Road System Improvement - Map 5 of 5



Attachment G: Tables

Table 1. Fish species in the Peshastin Watershed

Creek	Species Present	Life History Present (egg, juvenile, adult)	ESA Coverage (Y/N)	Life History Target (egg, juvenile, adult)
Peshastin Mainstem	Spring Chinook, steelhead, bull trout	Egg, juvenile, adult	Species- Y Critical Habitat- Y	Egg, juvenile, adult
Upper Peshastin Tribs*				
Tronson	Steelhead	Egg, juvenile, adult	Species- Y Critical Habitat- N	Egg, juvenile, adult
Scotty	Steelhead	Egg, juvenile, adult	Species- Y Critical Habitat- N	Egg, juvenile, adult
Ruby	Spring, Chinook, steelhead	Juvenile, adult	Species- Y Critical Habitat- N	Juvenile, adult
Shaser	Steelhead	Juvenile, adult	Species- Y Critical Habitat- N	Juvenile, adult
Etienne	Bull trout, steelhead	Juvenile, adult	Species- Y Critical Habitat- Y	
Lower Peshastin Tribs				
Camas	Steelhead	Juvenile	Species- Y Critical Habitat- N	Juvenile
Hansel	Spring, Chinook, steelhead	Juvenile, adult	Species- Y Critical Habitat- N	
Mill	Steelhead	Juvenile, adult	Species- Y Critical Habitat- Y	

**Fish surveys in the Upper Peshastin Tributaries are planned for summer 2011. The fish species listed in this table are those likely to be present given the habitat conditions in Tronson, Scotty, Ruby, and Shaser creeks.*

Table 2. Roads being decommissioned in the Peshastin Creek watershed.

Road Number	Miles of Decommissioning	Catchment	Aquatic Risk
7224111	0.43	Tronsen	High
7227000	0.46	Tronsen	High
7227100	0.26	Tronsen	High
7230111	0.79	Tronsen	Moderate
7230411	0.20	Tronsen	Moderate
7240000	0.63	Tronsen	Very High
7245211	0.31	Tronsen	High
7330000	0.31	Tronsen	High
7332000	2.72	Tronsen	Very High
7340511	1.05	Tronsen	Moderate-High
7350110	0.25	Tronsen	Moderate
7360000	0.45	Tronsen	Very High
7320210	0.58	Shaser	High
7320260	0.59	Shaser	Moderate
7320200-2.9R-1	0.70	Shaser	Moderate
7322460	0.29	Shaser	High
7320320	0.36	Peshastin	Very High
7320400	0.97	Peshastin	Moderate-High
7324310	1.16	Scotty	High
7324422	0.71	Scotty	High
7324424	1.06	Scotty	Moderate-High
7324510	0.82	Scotty	Very High
7200106	0.05	Camas	Very High
7201116	1.74	Camas	Very High
7201117	0.57	Camas	High
7201118	0.14	Camas	Moderate
7201216	0.18	Camas	High
7200160-0.5R-1	0.12	Camas	High
7200160-0.6R-1	0.11	Camas	High
7201411	0.18	Ruby	Moderate
7201415	0.22	Ruby	Moderate
7204182	0.42	Ruby	Moderate-High
7204183	0.94	Ruby	High
7204186	0.21	Ruby	Moderate
7204231	0.34	Ruby	Moderate
Total	20.32 miles		

Table 3. Roads being stormproofed/improved in the Peshastin Creek watershed.

Road Number	Treatments	Miles of Stormproofing	Catchment	Aquatic Risk
7204000	Culvert replacements, relocation, ditching, recountouring, surfacing	5.50	Ruby	Very High
7224000	Relocation, ditching, recountouring, surfacing	2.75	Tronsen	Very High
7230000	Relocation, ditching, recountouring, surfacing	2.12	Tronsen	High
7320000	Relocation, ditching, recountouring, surfacing	5.90	Peshastin	High
7322000	Relocation, ditching, recountouring, surfacing	6.75	Shaser	Very High
7324000	Culvert replacements, relocation, ditching, recountouring, surfacing	6.14	Scotty	Very High
7230211	Relocation, ditching, recountouring, surfacing	0.72	Tronsen	Very High
	Total	29.88 miles		

Table 4. Project Phases, Timeline, and Funding Source

Year	Action	Funding Source
2010	Analysis- Peshastin MRA - *completed*	USFS Legacy Roads
2011	Planning- NEPA Phase I- 50 miles road decommissioning	USFS Legacy Roads
	Implement- 5 miles road decommissioning	USFS Legacy Roads
2012	Planning- NEPA Phase II- 30 miles road stormproofing	SRFB 2011 application
	Implement- 10 miles road decommissioning	USFS Legacy Roads
	Implement- 20 miles road decommissiniong	SRFB 2011 application
2013	Implement- 30 miles stormproofing	SRFB 2011 application
TBD	Implement- 10 miles decommissioning	TBD

Table 5. Project Budget

Item	Cost/unit	Units	SRFB Fund Request	USFS Legacy Road Funds (match)
Peshastin MRA				$25,000
NEPA and ESA planning and permitting 2011 & 2012	$30,000/yr.	2	$30,000	$30,000
2011 Road Decommissioning	$3,000/mi.*	5		$15,000
2012 Road Decommissioning	$3,000/mi.*	20	$60,000	
2012 Road Decommissioning	$3,000/mi.*	10		$30,000
2013 Road Stormproofing	$5,500/mi.*	30	$165,000	
Stakeholder coordination, public notification, NEPA assistance, grant administration			$10,000	
Total			**$265,000**	**$100,000**

** Estimates for decommissioning and storage are based on averages from past USFS roads projects. Depending on the specific requirements of each road to fully reduce aquatic, road-related risks (e.g. culvert replacement, road relocation, etc.), this estimate could be high or low. Therefore, more or less than the target mileage could be completed with these dollar amounts but they should provide an estimate of expected outcomes.*