South Fork Clearwater River TMDL Implementation Plan for Agriculture

Idaho Soil Conservation Commission

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Introduction

A subbasin assessment and several total daily maximum loads (TMDLs) were developed for the South Fork Clearwater River (SFCR) subbasin in pursuant to Clean Water Act. This implementation plan will address the significant non-point, agricultural sources of sediment, temperature, nutrients, and bacteria in areas of the South Fork Clearwater River watershed dominated by agricultural and grazing activities (Table 1).

Table 1: Streams and Pollutants for which TMDLs were developed

Stream	Pollutant(s)
South Fork Clearwater River	Sediment, Temperature
Threemile Creek	Bacteria, Nutrients, DO, Sediment, Temperature
Butcher Creek	Sediment, Temperature
Other Water Bodies	Temperature

The agricultural component of the SFCR Subbasin (HUC 17060305) TMDL implementation plan presents an adaptive management approach for the implementation of agricultural Best Management Practices (BMPs) and Resource Management Systems (RMS) as described in the Agricultural Pollution Abatement Plan (Ag Plan) fir Idaho (Idaho Soil Conservation Commission 2002b) on private lands.

Implementation activities will be phased on a sub-watershed basis due to the size of the South Fork Clearwater River Subbasin, which encompasses approximately 752,000 acres. Within the South Fork Clearwater River Subbasin approximately 203,840 acres (27%) are grazing and agricultural lands (Figure 1).

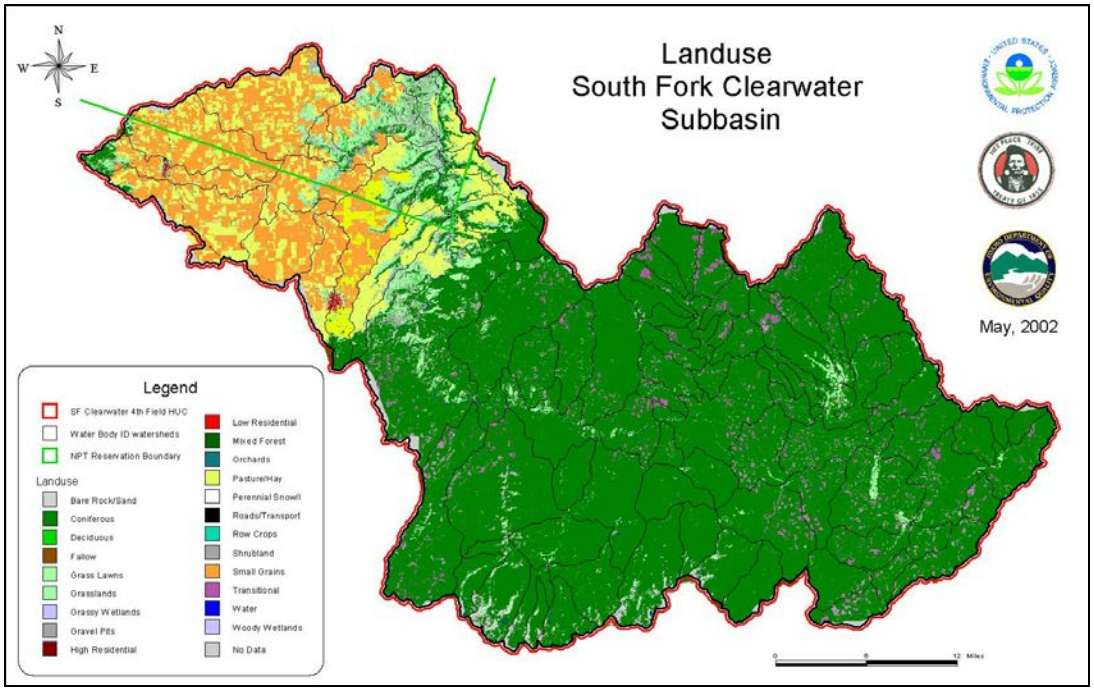

Figure 1. Land Use Distribution in the SFCR Subbasin

The Cottonwood Creek TMDL implementation plan was completed in 2001. This plan addressed the following streams which are within the SFCR watershed: Lower Cottonwood Creek, Upper Cottonwood

Creek, Lower Red Rock Creek, Upper Red Rock Creek, Stockney Creek, Shebang Creek, South Fork (SF) Cottonwood Creek, and Long Haul Creek (Figure 2). Implementation activities are currently in progress in the Cottonwood Creek watershed as outlined in the Cottonwood Creek implementation plan. (Idaho Soil Conservation Commission 2001)

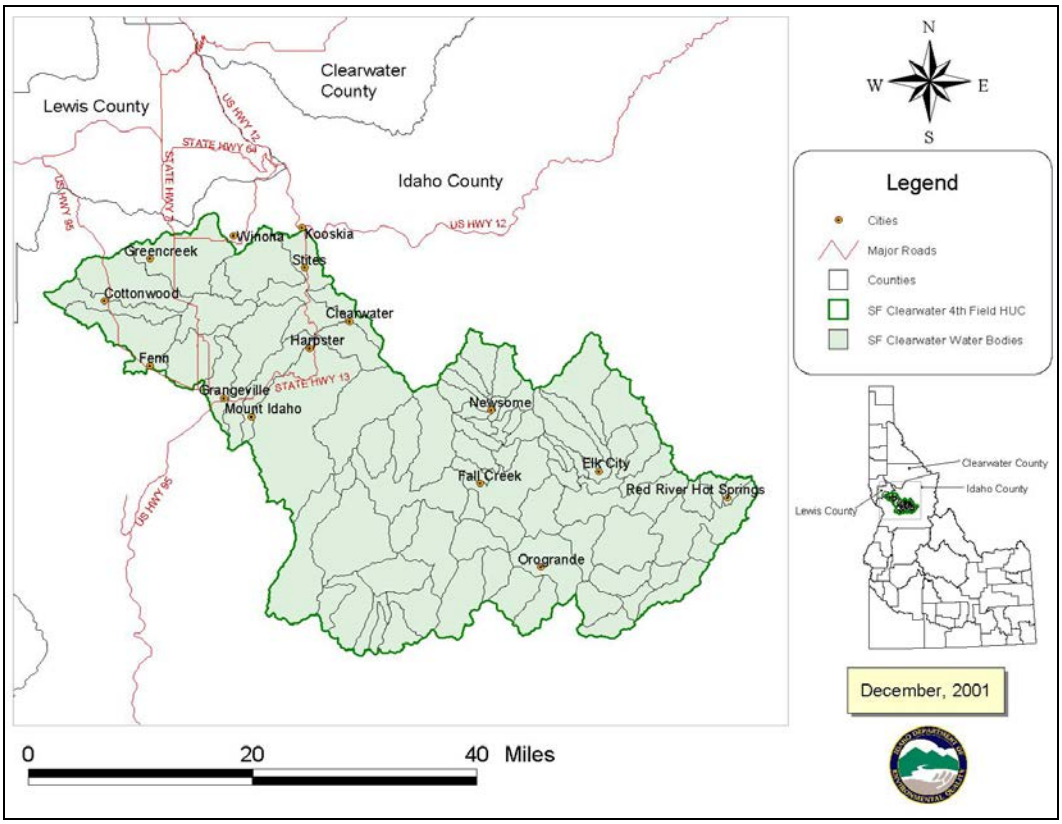

Figure 2. The South Fork Clearwater River Subbasin in North-Central Idaho

Goal

The goal of this Implementation Plan is to develop a comprehensive and detailed plan for agriculture in order to successfully implement the SFCR TMDL and work toward meeting the TMDL loading targets for sediment, nutrients, bacteria and temperature while assisting and/or complimenting other watershed efforts in restoring and protecting beneficial uses for the 303(d) listed stream segments.

Objectives

The primary objectives of this plan are to (1) reduce the amount of sediment, nutrients, and bacteria and lower temperatures in Threemile Creek, (2) reduce sediment and lower temperatures in Butcher creek, and (3) lower temperatures and reduce sediments in SFCR. Agriculture pollutant reductions and temperature reductions (where feasible) will be achieved through the BMPs and RMS developed and implemented on a site-specific basis with individual agriculture operators.

Another objective of this plan is the implementation of a water quality outreach program to encourage landowner participation in the application of water quality BMPs. Emphasis will also be placed on BMP effectiveness evaluation and monitoring in terms of pollutant reduction and impacts on designated beneficial uses of the listed stream segments. Educate local landowners, citizens and agency personnel about water quality issues, conditions, concerns, and best management practices will enhance the overall success of the project.

Project Setting

The SFCR watershed is located in north-central Idaho and encompasses an area of approximately 1,175 square miles (752,000 acres) with a 207 – mile perimeter (Figure 2). The watershed extends from the headwaters above Elk City (elevation 6,382 feet) to the confluence with the Middle Fork of the Clearwater River at Kooskia, Idaho (elevation 1,280 feet). Included in the SFCR watershed are 17 major sub-watersheds and numerous face drainages that flow into the mains stem SFCR. The lower 12.8 miles of the SFCR main stem flow through the Nez Perce Tribe (NPT) Reservation. The NPT Reservation encompasses 84,035 acres of the subbasin.

Land Use

Primary land uses and economic interests within the subbasin include timber harvest, mining, grazing, outfitting and guiding, recreation, and agriculture (Figure 3). This documentation focuses on agricultural and grazing land uses. The other land uses are discussed in the SFCR Sub-basin assessment (Table 2).

Table 2. Land use in each SFCR sub-watershed.

Water Body Name	Agriculture (acres)	Grazing (acres)	Forestry (acres)	Urban (acres)
Threemile Creek	14,235	4,146	2,671	391
Butcher Creek	6,432	2,393	1,921	0
Lower SFCR	6,758	8,513	4,129	0
Mid-Lower SFCR	3,025	12,551	40,063	44
Sally Ann Creek	2,370	1,365	5,148	0
Rabbit Creek	2,464	828	1,945	0

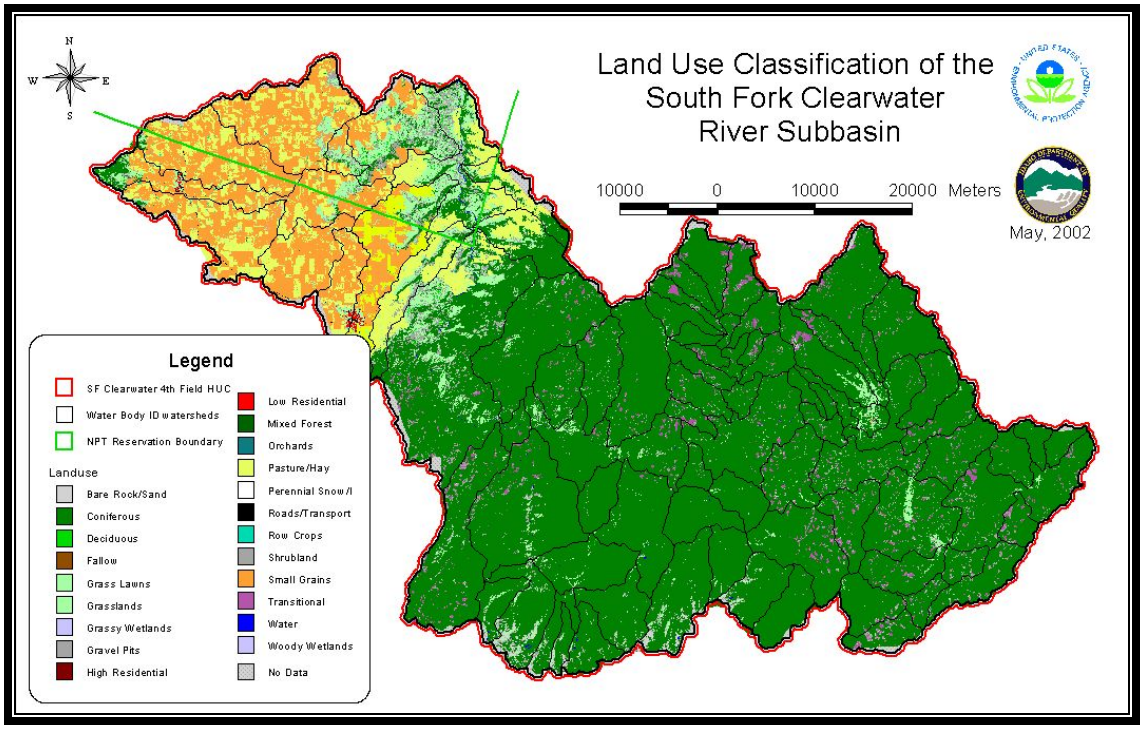

Figure 3. Land Use Distribution in the SFCR Subbasin

The majority of cropland is devoted to dry land agriculture. About 10% of area farmers are now using direct seed and no tilling practices, with the trend on the increase (Rowan, 2002). The major crops are winter wheat, spring wheat, barley, peas, lentils, and canola. Most of the cropland is on gently sloping, well-drained soils. Range and grazing lands tend to be on the steeper slopes or areas with soils unsuitable for crop production.

Land Ownership

The SFCR Subbasin includes a mixture of private and public lands covering approximately 752,000 acres (Figure 4). Federally managed lands are primarily forested and privately owned lands are primarily used for agricultural and grazing activities. Table 3 lists the acreage of the major management groups. The Camas Prairie portion of the subbasin contains approximately 199,000 acres and is comprised of private, BLM, State of Idaho, and Nez Perce Tribe (NPT) ownership.

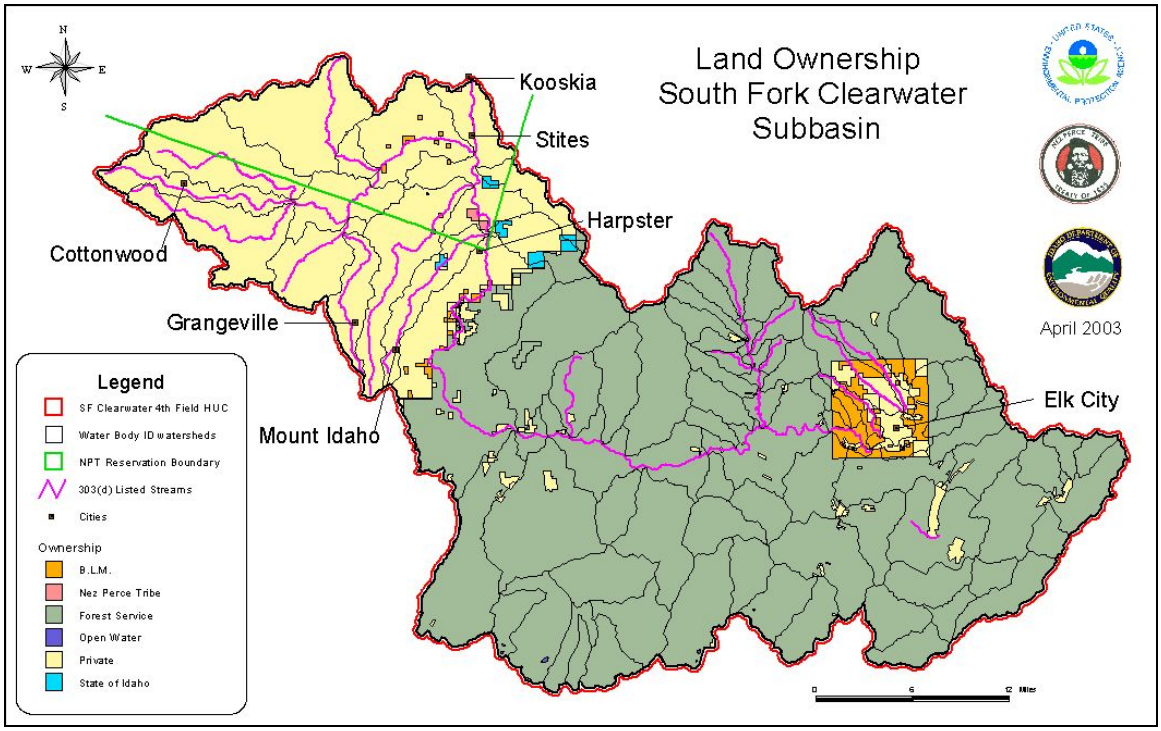

Figure 4. Major Land Managers of the SFCR Subbasin

Table 3. Acreages of the SFCR Subbasin land management groups.

Land Ownership/Management Agency	Acres	Percent
Nez Perce National Forest	516,262	68
Bureau of Land Management	14,906	2
Private	218,316	29
Nez Perce Tribe	564	<1
Idaho State Department of Lands	3,330	<1

Accomplishments

Non-point source pollution control efforts in the SFCR subbasin are numerous and widespread. For the most part, they come from the implementation of standardized BMPs for forestry and agriculture. Several specially funded projects have been implemented in the watershed since passage of the Clean Water Act.

State, tribal, federal, and private lands in the watershed have been cultivated and grazed since the mid-1800s (USFS 1998). Records are kept only on current contracts with private landowners for land enrolled in the Conservation Reserve Program through the Farm Services Agency. Currently, the records show contracts as early as 1992 and extending through 2015 (includes 2005 contracts). Land enrolled in the program in the SFCR drainage as a whole totals 1,743.7 acres, which includes the Cottonwood Creek watershed. Most of the land is enrolled as permanent wildlife habitat. There are some lands under contract to maintain existing vegetative cover, others to maintain permanent grasses and lagoons, some to provide wildlife food plots, two to maintain shallow water areas, one to establish a shelter belt (windbreak adjacent to a stream), and one to establish a tree planting plot (Sickels 2002). The NRCS in Grangeville has treated, or is currently treating, approximately 320 acres of cropland pasture, and hay land under the NRCS Environmental Quality Incentives Program in the SFCR subbasin. The program encourages using no-till agriculture, planting grass waterways, and seeding pastures and hay lands (Spencer 2002). Cottonwood Creek has had a significant amount of land treated through Cottonwood Creek TMDL implementation efforts.

There have been several major areas of accomplishments in the SFCR subbasin for Agriculture and Grazing. The Cottonwood Creek implementation phase 1 project; Red River projects; tribal accomplishments; and grazing allotment accomplishments.

Cottonwood Creek

Critical Areas Treated

There has been ~4842 acres in the Cottonwood Creek watershed which have active contracts through the 319 and WQPA programs. No-till or direct seed implementations account for 91% of the total acres being implemented. The majority of these acres are in six-year contracts. The installed BMP's in the Cottonwood Creek watershed can be found in Table 4. Other funding sources have treated an additional ~4,880 acres within the Cottonwood Creek watershed. (ISSC 2002; with edits)

Acres have been treated using a variety of funding sources, which include 319, Water Quality Program for Agriculture (WQPA), Environmental Quality Incentive Program (EQIP), and the Conservation Reserve Program (CRP). These are grouped into two general categories: 319/WQPA and other sources. The 319 and WQPA funds are being used together to extend contract times and cost share amounts as needed. The Division 2 Animal feeding operation 319 grant was used to fund two feeding operations within the Cottonwood watershed. (ISCC 2002)

Estimated Pollutant Reductions

Sediment - Based on RUSLE results there has been an estimated decrease in rill and sheet erosion of ~10 tons/acre/year due to the implementation of no-till or direct seed, resulting in an erosion decrease of 43,570 tons/year for the Cottonwood Creek Watershed. Soil quality results show an increase in infiltration rates, aggregate stability and earthworm counts due to no-till and direct seed, which will reduce runoff and soil erosion rates, thus substantiating the RUSLE predictions. (ISSC 2002; with edits)

Nutrients - Reduction of sediment losses often results in a reduction of nutrient losses since many nutrients are transported with sediment particles to the water source. Nutrient Management systems use soil tests to

identify current soil nutrient levels before fertilizer is applied reducing excess fertilizer applications. Thus the potential for leaching or runoff of nutrients is reduced. (ISCC 2002)

Table 4. Summary of the Cottonwood Creek Watershed BMP Installations as of December 2003.

Best Management Practice:	*Amount Installed[b]:*	*Acres Treated[c]:*	*Acres Contracted[a]:*
ANIMAL TRAILS & WALKWAYS	120 CY	80	0
ANIMAL TRAILS & WALKWAYS	54 FT	105	0
FENCE	5123 FT	150	150
FILTER STRIP	3 AC	3	3
HEAVY USE AREA PROTECTION	1 EA	45	45
NUTRIENT MANAGEMENT	3727.6 AC	3,728	0
PIPELINE	4856 FT	75	0
RESIDUE MANAGEMENT; DIRECT SEED	5842.2 AC	5,842	3,392
RESIDUE MANAGEMENT; NO TILL & STRIP TILL	2666.6 AC	2,667	965
ROOF RUNOFF STRUCTURE	480 FT	80	0
SEDIMENT BASIN	1 EA	240	240
SPRING DEVELOPMENT	2 EA	70	0
UNDERGROUND OUTLET	280 FT	80	0
WASTE MANAGEMENT SYSTEM	173 FT	0	0
WASTE TREATMENT LAGOON	2 EA	10	10
WASTE UTILIZATION	38 AC	38	38
WATERING FACILITY	3 EA	30	0
Project Total:		**13,322**	**4,842**

[a]Refers to actual acres under contract.
[b]Refers to the extent the practice has been implemented within the watershed. Some management practices such as direct seed have yearly installations on the same acres.
[c]Refers to the number of acres that have benefited from the installed practice.

Figure 5 was removed by the SWC in January 2014 to attain compliance with Farm Bill Section 1619.

Red River

Several projects have been initiated in the Red River area and are documented in the SFCR Subbasin Assessment and TMDL (2003). The Lower Red River area is in early stages of the recovery. (LRK communications (2003). Interrelationships within the ecosystem cannot be overemphasized. The response of one component (e.g., fish habitat) of the ecosystem to restoration activities is inextricably influenced by the response of one or more components (e.g., hydrology, woody riparian shrubs, and cross-sectional dimensions). In addition, short-term analysis of several parameters is complicated due to the influence of ecosystem components that can fluctuate sporadically on an annual basis. The breadth of performance indicators evaluated is substantial, including physical as well as biological measurements that describe structural, hydrologic, riparian plant community, aquatic habitat, fish population, and terrestrial habitat changes and initial trends within the lower Red River meadow ecosystem (LRK communications 2003).

Tribal

The NPT Land Services Division is responsible for writing conservation plans of operations for agriculture leases on Indian-owned land, based on wise land use practices and owner input. The conservation plans of operations requirements include residue management and specific tilling requirements. Residue is not to be burned and, except for harvested grass seed, must be returned to the soil. Residue cannot be grazed or baled without authorization. Residue requirements are additionally in place specifying percent coverage for various low and high-residue crops. Tilling and seeding operations are to be performed across slope or as close as possible to contour. These operations must be performed parallel to diversions or terraces, where present (NPT 2002). In 2003, the Tribe enrolled 1,877 acres in priority watersheds on the Reservation into the NPT Direct Seed Incentive Program. In 2005, all Tribal lessees will be eligible for this program. NPT Forestry, Land Services and Water Resources collaborated on 1.5 miles of fencing to exclude 33 acres from grazing, one stream crossing hardened, 421 native shrubs planted along 300 feet of stream, 101.8 acres enrolled in CRP. Riparian vegetation was planted in the corridor and ½ mile of an allotment road re-contoured and seeded using NPT 319 funds and matching tribal funds. The channel was reshaped and 18 foot wide buffer strip along 1300 feet of stream through agricultural leased land was installed. NPT Forestry will plant trees in these allotments in 2005.

USFS Allotments

Grazing laws in the NPNF were enacted when the forest was established in 1908. There are 10 grazing allotments active in the watershed (Lake, 2003). There are five active allotments (41,440 acres) in the American River watershed (BLM, 2003b). Livestock grazing on FS pastures were designed to alleviate riparian resource concerns by controlling the amount of time livestock can spend in any one area. Two provisions are required on FS allotments as identified in the Annual Operating Instructions: utilizing PACFISH grazing standards and Nez Perce Grazing Implementation Guidelines for Riparian Areas.

BLM Allotments

Grazing is authorized on two grazing allotments (2,668 acres) in the Upper SF Clearwater Subbasin; seven allotments (641 acres) in the Lower SF Clearwater Subbasin; and nine allotments (6,296 acres) in the American River watershed. Three provisions are used for administration of BLM grazing leases: (1) PACFISH Grazing Standards and Guidelines; (2) BLM Cottonwood Resource Area Grazing Implementation Guidelines for Riparian Areas; and (3) Required Monitoring for Sensitive Riparian Areas. All these allotments are in compliance with PACFISH and current levels of grazing will not retard recovery of riparian areas or result in degradation. (BLM, 1999; BLM, 1999b, BLM, 2003b)

Problem

Beneficial Use Status

The water quality criteria (narrative and numeric) for the designated and existing beneficial uses for the SFCR subbasin are discussed below. Designated beneficial uses listed for the main stem SFCR include salmonid spawning, primary contact recreation, and special resource water (IDAPA 58.01.02). For undesignated 303(d) listed tributaries, the existing beneficial uses for aquatic life are Salmonid Spawning and Primary or Secondary contact recreation (IDAPA 58.01.02.101.01).

Pollutants – Load Allocation and Reduction

Sediment

Surface erosion from agricultural, grazing, and forestlands outside the federal ownership perimeter was modeled using the RUSLE model (Renard et al. 1997) in a GIS environment (Engel 1999). Staff from the University of Idaho Biological and Engineering Department did the modeling following methods reported in Boll et al. (2001), with an updated land use map for the SFCR area. The largest portion of sediment in the SFCR Subbasin is shown in the SFCR TMDL to move in pulses associated with high rainfall, rapid snowmelt, or large rain-on-snow events. In the largest of these, rain-on-snow events such as occurred in 1996, a significant portion of the sediment is generated by mass failures. (DEQ 2004)

In terms of grazing, the TMDL states "The primary effect of grazing on sediment is increased stream bank erosion as the cattle access the stream. An inventory of stream bank erosion to quantify sediment from this source was conducted. All of the known eroding streams in the subbasin were inventoried.

Table 5 and 6 show the sediment allocations, reductions pertinent to agriculture and grazing in the SFCR subbasin.

Table 5. Sediment load allocations for non-point sources in the SFCR Subbasin.[a]

Water Body Name	Excess Load (t/y) [b]	Target Load (t/y) [b]	Load Reduction (%)
Lower SFCR	7,754	21,964	25
Threemile Creek	780	235	77
Butcher Creek	203	132	61
Mid-Lower SFCR	1,434	4,302	25

[a] Loads presented for these sites are cumulative of all areas upstream of the control location. Loads for water bodies 1, 10, and 11 are total suspended solids loads, while loads for water bodies 12, 22, 30, and 36 are total sediment loads.

[b] t/y = tons per year

Table 6. Sediment excess loads by management responsibility in the SFCR Subbasin.

Control Location	Management Responsibility[a]	Human-Caused Load (tons/year) [b]	Target Sediment Load (tons/year) [b]	Excess Sediment Load (tons/year) [b]
Stites[c]	All	29,718	21,964	7,754
	State Highway	1,151	863	288
	County Roads	516	387	129
	Private	11,006	8,254	2,752
	Cottonwood TMDL[d]	22,300	6,640	15,660
Threemile Creek[c]	All	1,015	235	780
	County Roads	134	39	95
	Private	881	196	685
Butcher Creek[c]	All	335	132	203
	Private	325	128	197
	County Roads	111	60	51
Harpster (Johns Creek to Threemile Creek) [e]	All	5,736	4,302	1,434
	State Highway	1,151	863	288
	County Roads	98	74	25
	Private	2,792	2,094	698

[b] Totals for Stites do not equal the sum of the parts because of different estimation methods used in the Cottonwood Creek TMDL; other totals do not all add up due to rounding
[c] Total suspended solids (TSS)-based loading calculations
[d] Derived from the Cottonwood Creek TMDL
[e] Sediment budget-based calculations

Bacteria

Levels of bacteria that exceed the state WQS were identified at several times throughout the year and at several locations in Threemile Creek. The target is set at the state WQS of a geometric mean of 126 cfu/100 ml. Available data indicate that effluent from the Grangeville WWTP is not contributing to the problem beyond its permitted level of 100 cfu/100 ml. Probable causes are livestock defecation near and in the creek, storm water runoff from the city of Grangeville, wildlife defecation near and in the creek, and possibly failing sewage disposal systems.

While the precise sources of bacteria in Threemile Creek have not been identified, sources that are the result of human activity are known to exist. (Table 8)

Table 8: E. coli Non-point source allocations and wasteload allocations for Threemile Creek

Location	Headwaters to Grangeville WWTP Outfall[d]	Grangeville WWTP Outfall to Nez Perce Reservation		Nez Perce Reservation Boundary to mouth
Target (cfu/100 ml)[a]	126	126	126	126
Allocation Type	NPS - LA[e]	NPS - LA	PS - WLA[f] Grangeville WWTP	NPS - LA
Critical Flow (cfs)[b]	0.71	0.71	0.89	1.54
***E. coli* conc. (cfu/100 ml)**	1530	903	53	196
***E. coli* Current Load (cfu/day)[c]**	2.70E+10	1.60E+10	1.20E+09	7.40E+09
***E. coli* Load Capacity (cfu/day)**	2.20E+09	2.20E+09	2.70E+09	4.70E+09
***E. coli* Allocation (cfu/day)**	2.20E+09	2.20E+09	2.70E+09	4.70E+09
***E. coli* Allocation (cfu/100 ml)**	126 - monthly geo. Mean 576 - daily max.	126 - monthly geo. Mean 576 - daily max.	126 - monthly geo. Mean 576 - daily max.	126 - monthly geo. Mean 576 - daily max.
***E. coli* Load Reduction**	92%	86%	0.00%	36%

[a] cfu/100 ml = colony forming units per 100 milliliters
[b] cfs = cubic feet per second
[c] cfu/day = colony forming units per day
[d] WWTP = wastewater treatment plant
[e] NPS-LA = non-point source load allocation
[f] PS-LA = point source waste load allocation

Nutrients

Monitored levels of nitrogen and phosphorus in Threemile Creek exceed USEPA recommended levels by as much as 2 orders of magnitude. Targets are set at 0.08 mg/L TP above the WWTP outfall, 0.10 mg/L TP from the WWTP outfall to the Big Barn site at the head of the canyon, and 0.30 mg/L TP at the mouth (Table 9). (DEQ 2004)

Table 9. Total phosphorus (TP) target and reduction for Threemile Creek.

Location	TP Target (mg/L)[a]	TP Load Reduction (%)
Headwaters to Grangeville WWTP Outfall [d]	0.08	32
Grangeville WWTP Outfall to Nez Perce Reservation Boundary	0.1	32
Nez Perce Reservation Boundary to Mouth	0.3	0
Applicable Period	July1-Sept 15	

[a] milligrams per liter
[d] WWTP = wastewater treatment plant,

The reach below the WWTP is phosphorus limited at all times of the year, and is the area of greatest concern due to the relatively low gradient, high nutrient concentrations, and low shade, conditions which tend to promote algae growth. (DEQ 2004)

Temperature

The non-point source shade allocations result in the need to increase shade in most of the watershed historically managed by man. Current shade levels are highly variable in all land use types and reflect a wide range of natural and man-induced disturbance conditions and various vegetation types. The summary of needed shade increases shown in the last column of the following table (Table 10) provides a general impression of the average difference between current and target shade levels needed (Figure 6).

Table 10. Non-point source shade increase summary.

Land Use Type	Current shade	Average Percent Shade Increase Needed
SFCR Mainstem	0 – 95%	19%
Forested areas	0 – 90%	21%
Upper Meadow areas	0 – 97%	24%
Agricultural areas	0 - 83%	19%

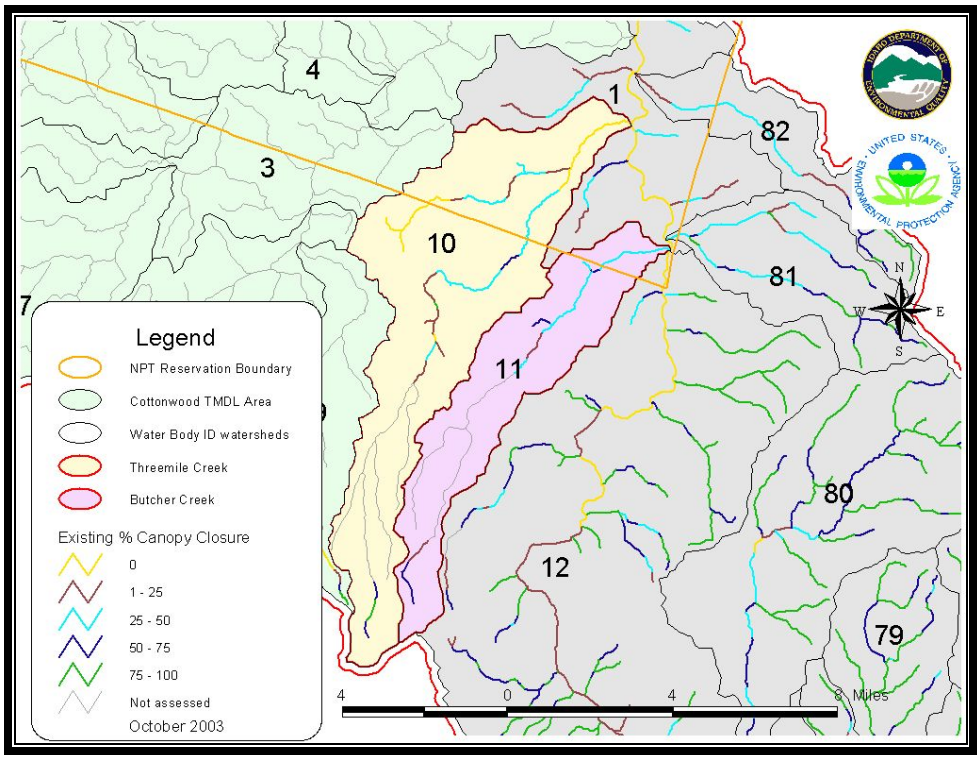

Figure 6. Current Percent Canopy Closure of Threemile and Butcher Creeks

However, landowners and land managers must consult detailed allocations within the TMDL, coupled with on-site field verification, in order to establish site specific targets. (DEQ 2004)

In much of the watershed it is expected that shade targets will be achieved through passive restoration, that is, allowing vegetation to grow to a mature state. In some locations (e.g., dredge mined areas, grazed areas), active restoration through plantings and channel modification will likely be warranted. (DEQ 2004)

Water Quality Monitoring Results

Biological and Other Data

The main stem SFCR below the NPNF, and tributaries including Threemile Creek, Butcher Creek, Mill Creek, and Sally Ann Creek, were assessed using the *Matrix of Pathways and Indicators of Watershed Condition - Local Adaptation for the Clearwater Basin* (NMFS et al. 1998). For most of the criteria evaluated, conditions in the lower SFCR and tributaries were sub optimal, rating "low" for habitat condition.

The *South Fork Clearwater River Biological Assessment* (USFS 1999) rates the biological condition of 15 major watersheds in the SFCR Subbasin for ESA listed species using the *Matrix of Pathways and Indicators of Watershed Condition - Local Adaptation for the Clearwater Basin* (NMFS et al. 1998). The watersheds assessed included the SFCR main stem and the face drainages. Summarized at a watershed scale, the majority of water quality and habitat elements rate as "low" condition, while watershed condition (road parameters), channel conditions, and species take (harassment, redd disturbance, juvenile harvest) rate as "moderate" condition.

Reference Stream Habitat Data was used to assess the condition of the streams and rivers of the SFCR Subbasin as they are affected by sediment. Two data sets for hydrologic systems considered to be in good

to near pristine condition were acquired where data sets consisted of measures of cobble embeddedness, percent pools, residual pool volumes, pool filling, bank full width, and Rosgen channel type. As a reference for the lower SFCR main stem, particularly within the basalts, data from the Wallowa-Whitman National Forest for the Imnaha River was acquired. The Imnaha River lies about 50 miles to the west of the SFCR Subbasin in Oregon. It flows down out of the Eagle Cap Wilderness through some relatively undisturbed basalt forestlands into the Snake River.

Fish Data

Pertinent fish data including IDFG snorkeling surveys conducted for the SFCR main stem in 2000, historic influences on fisheries resources, and current status of Salmonid populations in the watershed are discussed in Appendix D of the SFCR TMDL (IDEQ et al 2003), Fisheries Resources. Tables 11 and 12 list species known to be present in the SFCR Subbasin.

Table 11. Salmon, trout, and char species present in the SFCR Subbasin.

Common Name	Scientific Name
Bull trout	*Salvelinus confluentus*
Spring Chinook salmon	*Oncorhynchus tschawytscha*
Snake River fall Chinook	*Oncorhynchus tschawytscha*
Steelhead rainbow /redband trout	*Oncorhynchus mykiss*
Westslope cutthroat trout	*Oncorhynchus clarki lewisi*
Brook trout (introduced species)	*Salvelinus fontinalis*

Table 12. Other fish species known to occur in the SFCR Subbasin.

Common Name	Scientific Name	Origin
Pacific lamprey	*Lampetra tridentatus*	Native
Mountain whitefish	*Prosopium williamsoni*	Native
Northern pikeminnow	*Ptychocheilus oregonensis*	Native
Chiselmouth	*Acrocheilus alutaceus*	Native
Bridgelip sucker	*Catostomus columbianus*	Native
Sculpin	*Cottus sp.*	Native
Black bullhead	*Ictalurus melas*	Introduced
Redside shiner	*Richardsonius balteatus*	Native
Speckled dace	*Rhinichthys osculus*	Native
Longnose dace	*Rhinichthys cataractae*	Native
Smallmouth bass	*Micropterus dolomieui*	Introduced

BURP Data and WBAG Assessment

Figure 7 shows all of the BURP locations in the SFCR Subbasin. BURP surveys were completed on the 303(d) streams in the SFCR Subbasin during the summer monitoring seasons of 1995, 1996, and 2000. The BURP surveys collected data on fish, macro-invertebrates, and stream habitat. The data were analyzed through a systematized and statistical process to determine whether a particular water body supports its

beneficial uses as described in the WBAG. The WBAG results using the 1996 version for the 303(d) listed water bodies are presented in Table 13. Several streams have two BURP sites; and therefore, two sets of results. These are the WBAG results that were used in the development of the 1998 303(d) list (DEQ 1999).

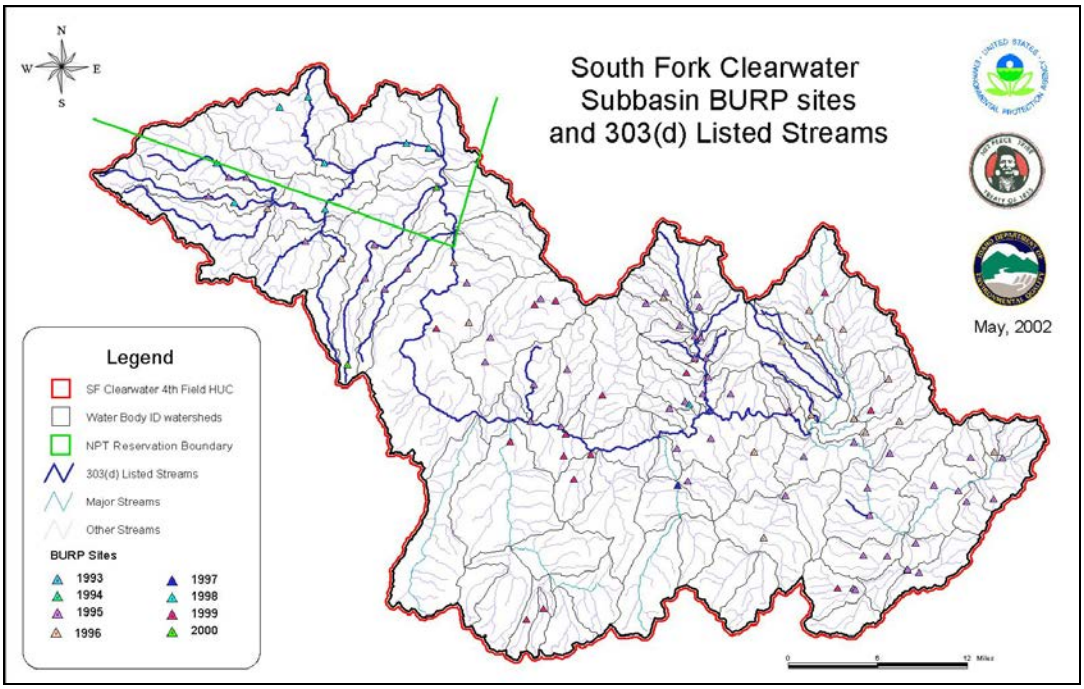

Figure 7. Locations of BURP Sites Throughout the SFCR Subbasin

Table 13. WBAG version 1996 results for 303(d) listed water bodies in the SFCR Subbasin.

Water Body	Macro-invertebrate Biotic Index (MBI)	Salmonid Age Classes[a]	Temperature (^{0}C)	Habitat Index (HI)	Support Status[b]
Threemile Creek (L)[c]	3.30	1	16	104	NFS
Threemile Creek (U)[d]	2.61	0	15	75	NFS
Butcher Creek (L)	3.04	1	23	85	NFS
Butcher Creek (U)	3.42	0	18	85	NV
SF Clearwater	*e	*	*	*	*

[a]+j = including juveniles
[b]FS = Full support, NFS = Not full support, NV = Needs verification, from 1998 303(d) list (DEQ 1999)
[c]L = Lower
[d]U = Upper
[e]To be assessed using the Large River Protocol, which is not yet available
[f]Beneficial Use Reconnaissance Program

The macroinvertebrate biotic index (MBI) is one of the primary indices used to confirm beneficial uses support status. The second indicator of full supprt of beneficial uses is the presence of salmonid species and their young of the year in a stream. If three age classes of fish, including juveniles (fish <100 mm in length) are present, then a water body is considered to be fully supporting salmonid spawning. Following a literal interpretation of the WBAG 1996 version, only Threemile Creek and Butcher Creek data are not fully supporting their beneficial uses.

Watershed Flow Characteristics

The SFCR has a snowmelt runoff dominated flow pattern. Highest mean monthly flows occur in spring (April-June) and lowest flows occur in the fall and winter. It is likely that April high flows are predominantly prairie and other lower elevation snowmelt runoff events, whereas June high flows are predominantly high country snowmelt runoff. An average spring runoff peak at Stites is about 5,000 to 7,000 cfs. The annual runoff from the watershed as measured at Stites averages about 12 inches. The largest flood had an estimated peak of 17,500 cfs. Floods occasionally result from snowmelt or rain-on-snow events between November and March.

Because the TMDLs developed in this document are heavily dependent on understanding the flows in Threemile and Butcher Creeks, as well as Cottonwood Creek, flow patterns were estimated in these drainages based on flow data from Lapwai Creek (IDEQ et al. 2003). Lapwai Creek drains the Camas prairie, at the same elevations as Threemile and Butcher Creeks, and has many of the same vegetative, geologic, landform, and land use characteristics.

Water Column Data

Subbasin-wide water quality data is presented and discussed in the South Fork Clearwater Assessment and TMDL (2004). The conclusions of the water column data pertinent to agriculture and grazing are below.

Turbidity, TSS, and flow data for Threemile Creek, Butcher Creek, and the lower main stem SFCR show exceedances of the WQS during periods of high flows throughout the three water bodies. The periods of high flows occur episodically during January through May. The exceedances occur with both fine and coarse sediment. Indicators of use impairment are cobble embeddedness, bank instability, and a lack of pools in Threemile and Butcher Creeks, and a lack of pools and cobble embeddedness in the main stem SFCR. Sediment TMDLs need to be developed for Threemile Creek, Butcher Creek, and the lower main stem SFCR.

Summary and Analysis of Existing Water Quality Data for Threemile Creek and Butcher Creek

Threemile Creek and Butcher Creek are 303 (d) listed for a number of pollutants in addition to sediment and temperature, including bacteria, dissolved oxygen, nutrients, and ammonia (Threemile Creek only). These additional pollutants are discussed below for each of these two waterbodies.

Threemile Creek

Threemile Creek has been designated by the state of Idaho for Salmonid spawning and secondary recreation beneficial uses. The Salmonid spawning WQS apply over the entire reach of the creek. There are portions of the creek not far from the mouth blocked by landslides, where the creek travels subsurface, which restricts fish migration during low flows. In addition, a series of 2-meter falls occurs approximately 9.5 kilometers upstream from the mouth, which may limit fish passage on a seasonal basis. Fuller et al. (1984) documented mature rainbow/steelhead above this potential barrier at stream kilometer 10.3. Currently, studies are underway to change the designation to Cold-Water Biota instead of Salmonid spawning due to the lack of juvenile Salmonid's above the falls (Woodruff, 2003).

Threemile Creek data were collected biweekly (February 2, 2000, through January 22, 2001) by DEQ at the six monitoring sites shown in Figure 8. Parameters sampled included continuous temperature at the mouth, flow, pH, DO, turbidity, TSS, total and ortho-phosphorous, nitrates and ammonia, and *E. coli* and coliform bacteria. Sporadic measurements were taken at sites called "Big Barn" and "Headwaters." A detailed discussion of these results is presented in the SFCR TMDL (IDEQ et al. 2003).

Flow was below normal and air temperatures were higher than normal during the summer months that Threemile Creek was monitored. The low flow and high temperatures could indicate a year where there may have been less recreational use and higher than normal concentrations of pollutants in the creek.

Pathogen levels in the creek are above the secondary contact criteria set by the state. Potential sources include grazing/livestock operations, septic systems, and waterfowl and animals.

Dissolved oxygen levels were borderline at the mouth on two occasions and no data was available to evaluate diurnal DO stages. Further monitoring to verify DO levels at critical times is warranted

In-stream ammonia concentrations were below the criteria set by the state of Idaho. The Grangeville WWTP discharges ammonia and is well within its permit limit. Since ammonia levels are below criteria, a TMDL will not be written. It was recommended that Threemile Creek be delisted for ammonia by the SFCR WAG.

The nutrient levels in Threemile Creek are generally an order of magnitude or more higher than the USEPA guidelines. Nitrogen levels above the WWTP outfall are lower than the 0.3 mg/L guideline. At the WWTP outfall and below it, the N concentrations are much higher and are a cause for concern. At the mouth of the creek the level of N tends to be seasonal, decreasing in the summer when the concentration at the outfall reaches its maximum. This may indicate that plants are taking up the N. Phosphorus concentrations are at or below the target set by the USEPA above the WWTP outfall, but are higher than the target at and below the outfall. The P concentrations at and below the outfall also increase in the spring and summer. The WWTP outfall directly influences the site below it. There are no indications that the concentration of P has any seasonality at the mouth; the concentration of P remains at a steady 0.30 mg/L regardless of flow, temperature, or any other parameter measured during this monitoring period. Due to the significantly elevated levels of TP, a TMDL was written.

Stream Visual Assessments conducted in 2004 indicated that the agricultural impacted portion of Threemile creek have banks that are not stable. The lower segment of Threemile is not stable due to high, flashy flows that cause large amounts of bedload to be moved down the creek. These same areas with unstable banks have low habitat, pools and fish cover. In general implementation activities should be focused on these agriculturally impacted areas.

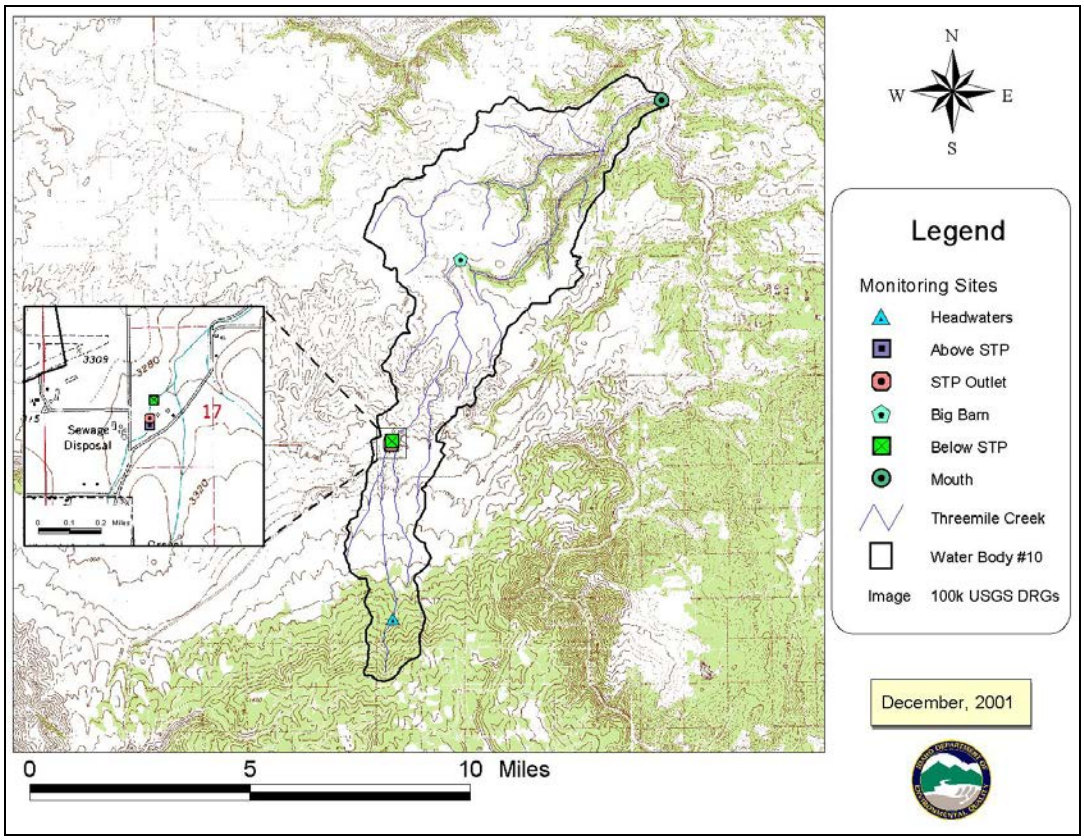

Figure 8. Monitoring Sites on Threemile Creek

Butcher Creek

Butcher Creek beneficial uses are currently undesignated by the state of Idaho. Prior to designation, according to Idaho Code, "undesignated waters shall be protected for beneficial uses, which includes all recreational use in and on the water and the protection and propagation of fish, shellfish, and wildlife, wherever attainable" (IDAPA 58.01.02.101). Studies by the NPT and DEQ (Fuller et al. 1984, DEQ 1995, NPT 2002) have established Salmonid spawning as an existing beneficial use. Butcher Creek also has the beneficial uses of primary and/or secondary contact recreation.

The Salmonid spawning water quality criteria apply over the entire length of the Butcher Creek, although there is a series of falls approximately 6 miles upstream from the mouth that may limit fish movement upstream. This TMDL will use the mouth of the creek as the point of compliance for meeting Salmonid spawning water quality criteria.

Butcher Creek data were collected by the NPT monthly (February 27, 2001, through February 26, 2002) approximately 1 mile upstream from its confluence with the SFCR. Parameters sampled included continuous temperature at the mouth, flow, pH, DO, turbidity, TSS, total and ortho-phosphorous, nitrates and ammonia, and *E. coli* and coliform bacteria. A detailed discussion of these results is presented in the SFCR TMDL (IDEQ et al. 2003).

There were no instantaneous exceedances of either primary or secondary contact recreation *E. coli* criteria during the 15-month sampling period, although on two occasions levels exceeded 126 cfu. Since *E. coli* concentrations were below criteria on all sampling dates, a TMDL will not be written. It was recommended that Butcher Creek be delisted for bacteria.

Dissolved oxygen levels were never low enough to cause a concern and may indicate the lack of excessive algae growth in the creek at the monitoring site. Since the DO concentrations were above the criteria on all the sampling dates, a TMDL will not be written. It was recommended that Butcher Creek be delisted for DO.

The nitrogen levels in Butcher Creek are generally higher than the USEPA guidelines, and generally occur in winter during periods of high flow. Phosphorus levels were generally within the guidelines set by USEPA. Nitrogen levels are elevated, but there is no indication that there is a DO or nuisance algae problem. A TMDL for nutrients will not be written; however, the implementation of the TMDLs being written for temperature and sediment is expected to lower the N levels.

According to 2004 SVAP data Butcher creek in contrast to Threemile was characterized by its high volume flows and multiple blowouts that cause banks to be unstable in the canyon reaches. Upland reaches appeared to be moderately stable. Barriers to fish passage, low pools, low fish cover, low canopy cover, low macro-invertebrates and low invertebrate habitat were found in most segments surveyed. When the survey was conducted in 2004 water appearance, nutrient levels, riparian zone, hydrologic alteration and channel condition were in adequate condition.

Critical Acres

Definitions

Critical acres are defined as those acres that have the potential to deliver the greatest amount of pollutant to the creek (Figure 9). Cropland where management practices allow gully, rill or sheet erosion on an annual basis are considered as critical acres. Feeding areas with direct access to live water are generally considered critical acres; unless management of the feeding area has limited access to stream banks thus reducing stream bank degradation and erosion. Grazing land critical acres are those acres where forage utilization levels exceed standards; or acres where direct access to live water has resulted in degraded stream banks and increased temperatures.

Quantifications

The following are quantifications of critical agriculture acres in the SFCR (excluding Cottonwood Creek which is covered in a separate implementation plan.).

Cropland -
Critical Acres: 30,432 acres

Feeding Areas -
Miles of stream with direct access: 25 miles of stream with greater than 4 tons of stream bank erosion

Grazing lands –
Acres of forage utilization exceedances: 0 acres
Miles of degraded stream banks: 22 miles of stream with greater than 4 tons of stream bank erosion.

Location

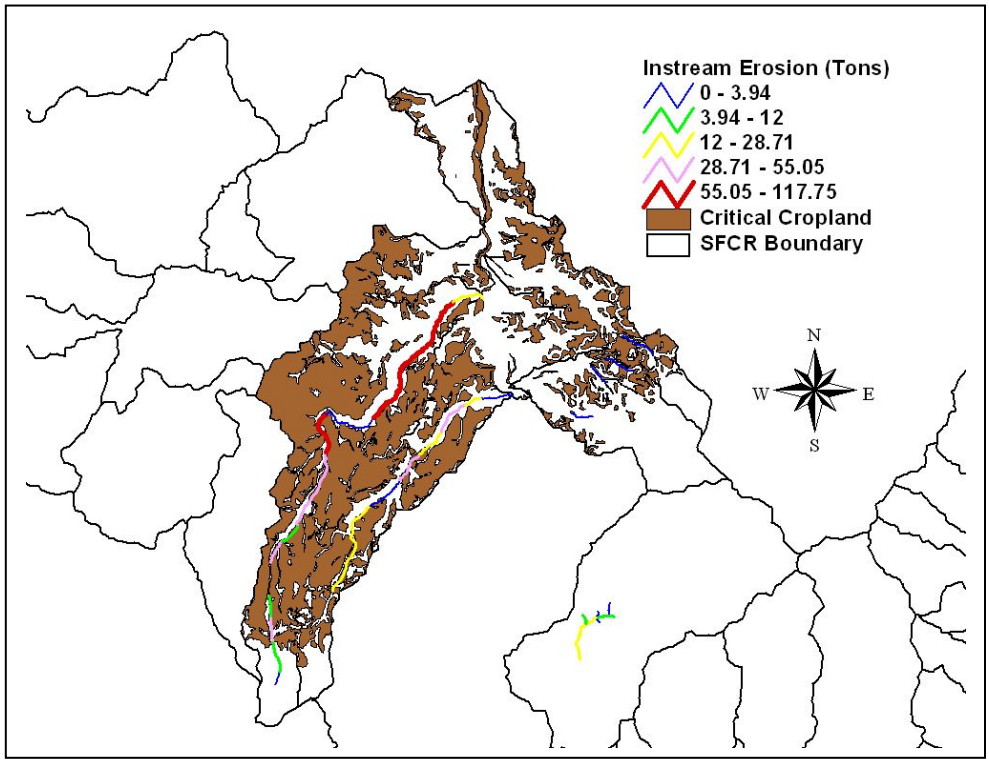

Figure 9. Location of Critical Acres in SFCR Subbasin

ESA Issues

Section 7 of the Endangered Species Act of 1973, "mandates all Federal agencies to determine how to use their existing authorities to further the purpose of the Act to aid in recovering listed species and address existing and potential conservation issues". Section 7 (a)(2) states that "agencies shall consult with either the U. S. Fish and Wildlife Service (USFWS) or NOAA Fisheries, to insure that any action they authorize, fund or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat." The Natural Resources Conservation Service (NRCS) is required to follow the above mandate for all project implementation and TMDL implementation within this plan will also follow this process.

If it is determined that a proposed action is within close proximity to habitat used by a listed Threatened or Endangered species (T&E) or the known location of a T&E species, consultation is initiated with the appropriate regulatory agency. Consultation involves describing the project, assessing the potential project impacts, describing the mitigation effort for the project and determining the effect of the project on the species of concern. The consultation process results in the development of reasonable alternatives for implementation and helps to minimize the impacts of conservation practices to critical habitat. Generally, good communication between consulting agencies ensures the development of sound decisions being made.

Federally listed species documented as occurring or potentially may occur Idaho County, South Fork Clearwater River Subbasin are as follows (NRCS, 1999; BLM, 2003):

Mammals
Gray wolf (*Canis lupus*)
Canada lynx (*Lynx cancdensis*)

Birds
Bald eagle (*Haliaeetus leucocephalus*)

Fish
Bull trout (*Salvelinus confluentus*)
West Coast steelhead (*Oncorhynchus mykiss*)
Chinook salmon (Oncorhynchus ishawyascha)

Plants
Macfarlane's four-o'clock (*Mirabilis macfarlanei*)
Spalding Silene (*Silene spaldingii*)

BLM sensitive fish species occurring in the Subbasin:
Spring/summer Chinook salmon
Westslope cutthroat trout
Redband trout
Pacific lamprey

Species of Concern in Idaho County include (NRCS, 1999):
Wolverine (*Gulo gulo luscus*)
Long-legged myotis (*Myotis volans*)
Townsend's big-eared bat (*Plecotus townsendii*)
Long-eared myotis (*Myotis evotis*)
Yuma Myotis (*Myotis yumannensis*)
Harlequin duck (*Histrionicus histrionicus*)
Northern goshawk (*Accipiter gentilis*)
Interior redband trout (*Oncorhynchus mykiss gairdneri*)
Idaho banded mountainsnail (*Oreohelix idahoensis*)
Boulder pile mountainsnail (*Oreohelix jugalis*)
Whorled mountainsnail (*Oreohelix vortex*)
Lava rock mountainsnail (*Oreohelix waltoni*)
Columbia pebblesnail (*Flumincola columbiana*)
Carinated striate banded mountainsnail (*Oreohelix strigosa goniogyra*)
Palouse goldenweed (*Haplapappus liatrifomres*)
Jessica's aster (*Aster jessicae*)
Broad-fruit mariposa (*Calochortus nitidus*)

Another tool available in the planning process is the Idaho Department of Fish and Game Conservation Data Center, 2002 Threatened and Endangered Species GIS database. The database contains documented locations for terrestrial species (plants and animals only!). This can help identify known locations of T&E species and identify critical habitat types that may harbor threatened or endangered species. Planners can reference habitat requirements to help landowners determine the potential benefits of their project implementation. These discussions remain confidential between the landowner and the planners. The South Fork Clearwater Subbasin contains numerous rare plants and species of concern. Impacts to these species will be taken into account in any TMDL project implementation.

AFOs

Some areas have large numbers of animals confined to relatively small areas with direct access to the creek. Currently none of these areas are officially designated as "confined animal feeding operations" (CAFOs) (Rowan 2002). There are however, a number of animal feeding operations in the watershed that will need to be addressed. Feeding areas with direct access to live water are generally considered critical acres; unless management of the feeding area has limited access to stream banks thus reducing stream bank degradation and erosion. Grazing land critical acres are those acres where forage utilization levels exceed standards; or acres where direct access to live water has resulted in degraded stream banks.

Nitrate Priority Area

Historically, ground water throughout the west has been viewed as an inexhaustible resource: a resource that is inexpensive, readily available and invulnerable to the detrimental effects of activities occurring on the land surface. This perception has led to the widespread indiscriminate use of this natural resource. With the ever-expanding use of the resource, Idaho's principle aquifers have been mapped. Four percent of the ground water is used for domestic drinking water. Generally, Idaho's ground water is acceptable for drinking water and other beneficial uses. However, recent incidents of ground water contamination have occurred from such activities as agricultural chemicals, household chemicals, industrial chemicals and failing septic systems, which has created an awareness of ground water vulnerability (Figure 8). Protection of this resource can be achieved most effectively by preventing contamination through implementing best management practices and other measures that prevent contamination.

During a ground water study of the Camas Prairie in 1998, entitled "A Reconnaissance of Nitrite/Nitrate in Camas Prairie Ground Water," land use was recorded for each well site and those wells within 100 feet of cultivated farmland had elevated levels of nitrate concentrations. The Camas Prairie Nitrate Priority Area is ranked fifth in the state of Idaho due to the degradation of the groundwater resources in that area. A portion of the Camas Prairie Nitrate Priority Area extends into the SFCR Subbasin boundary (Figure 9).

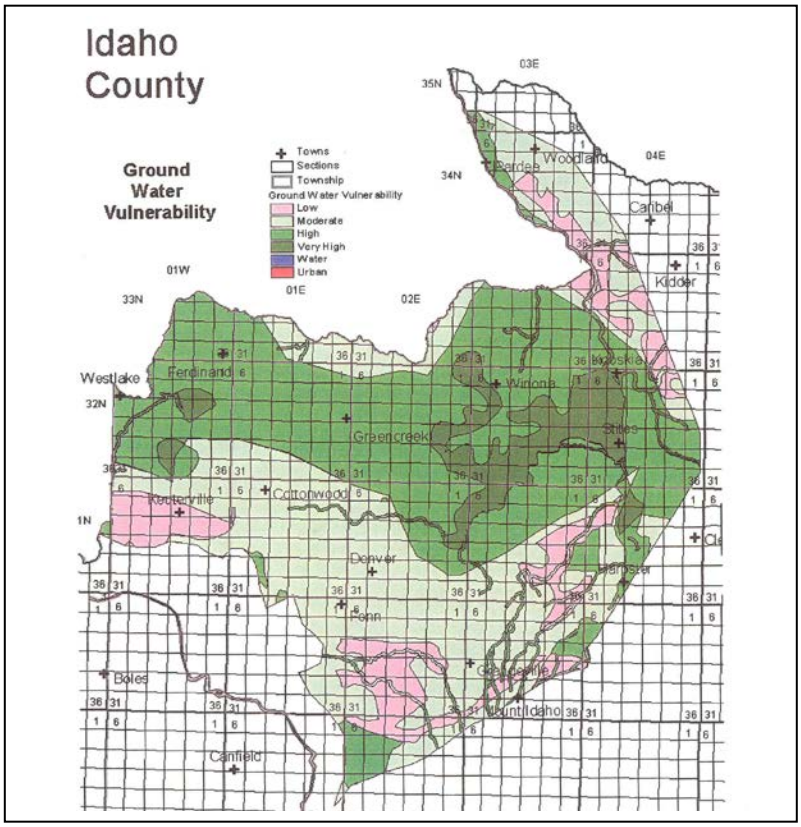

Figure 8 – Ground Water Vulnerability Areas in Idaho County.

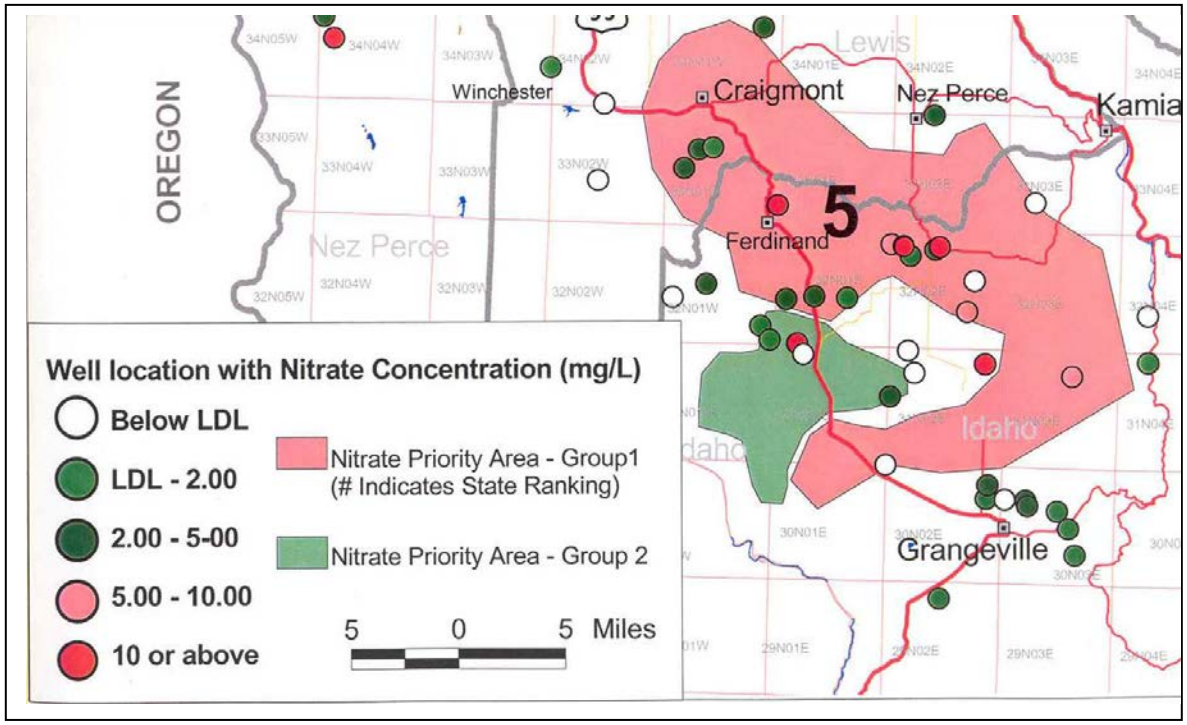

Figure 9 – Camas Prairie Groundwater Nitrate Priority Areas

Implementation Priority

Sub-Watersheds

Sub-watersheds were prioritized by the SFCR Ag Implementation Committee using several criteria; which include sediment loads, and number of agricultural or grazing acres. The prioritization is as follows:

- Threemile Creek
- Butcher Creek
- Sally Ann Creek
- Rabbit Creek
- Lower SFCR
- Mid-Lower SFCR
- Grazing acres above the Forest Service Boundary

Critical Areas

The following is the prioritization of pollutants (by the SFCR Ag Implementation Committee): Sediment, Nutrients and Bacteria, and Temperature. Sediment was established as a priority because of large sediment targets in the TMDL. Nutrients, Bacteria, and Temperature were given less priority due to the fact that management practices installed for treatment of sediment loads will decrease nutrient and bacteria loads and possibly increase shade therefore improving water quality. Critical acres will be prioritized within the sub-watersheds by their potential to reduce sediments loads, decrease nutrient and bacteria loads, and increase shade; respectively. The ultimate success of the implementation plan will be measured by meeting all pollutant targets in the agricultural watersheds, including nutrients, bacteria and temperature as well as sediment. Implementation efforts should focus on decreasing loads in all pollutant areas.

Treatment

Treatment Units

Cropland, Riparian, Pasture/Hayland and Rangeland were determined to be the primary agricultural and grazing treatment units of concern in the SF Clearwater Watershed. The Cropland unit was split - greater than and less than 12 percent slope. Figure 10 shows an overview of the treatment units within each sub-watershed.

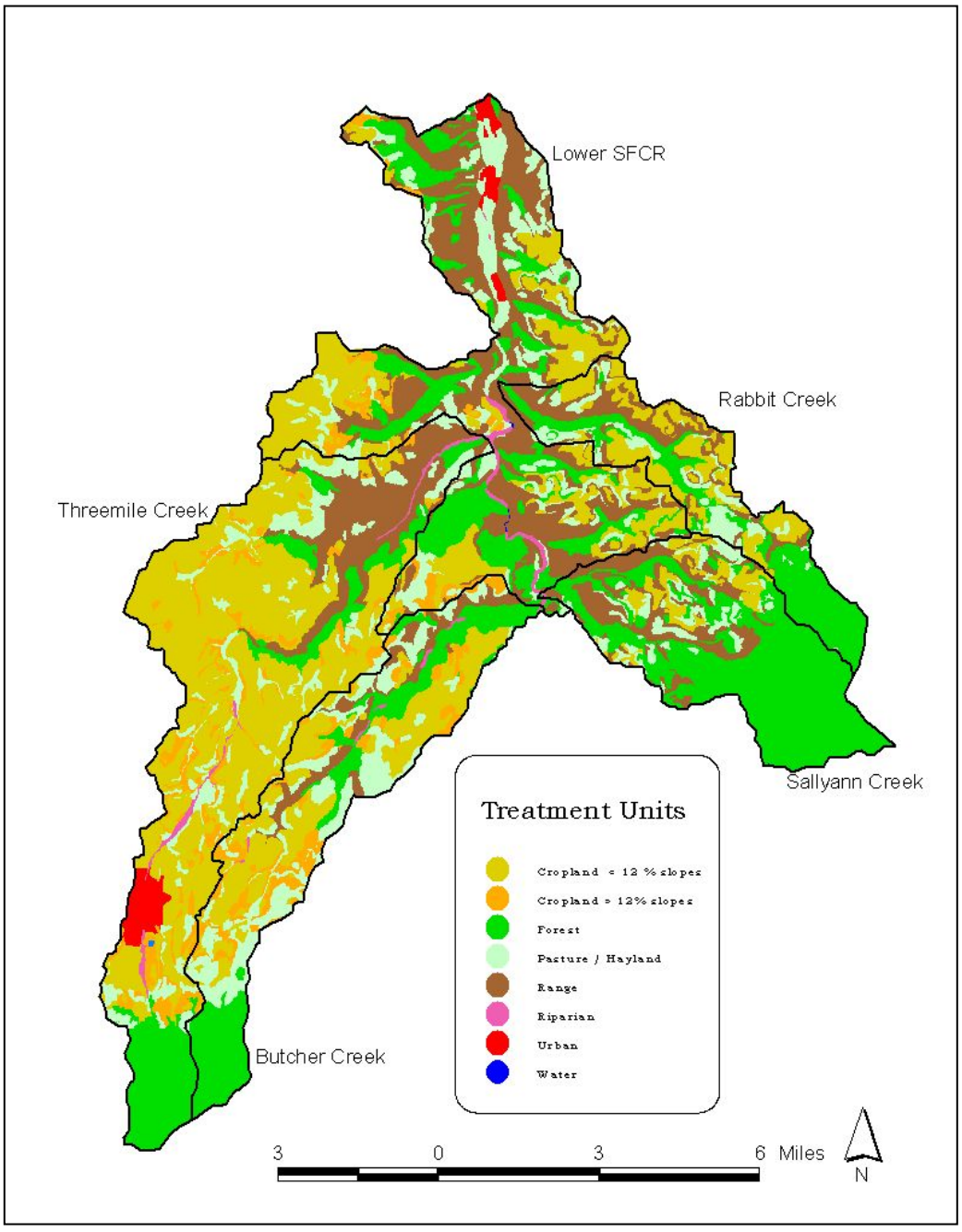

Figure 10 - South Fork Clearwater Treatment Units

Threemile Creek

Cropland <12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~10,680 acres	NezPerce, Chicane, Shebang, Uhlorn, Ferdinand, Boles, Fenn, Uptmor, Meland, Caribel, Kooskia	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment, Nutrients

Cropland >12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~1,700 acres	NezPerce, Chicane, Shebang, Uhlorn, Boles, Meland, Kooskia, Jacket	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment, Nutrients

Pasture/Hayland

Acres	Soils	Resource Problems	TMDL Pollutants
~2,550 acres	Ferdinand, Fenn, Jacket, Riggins, Keuterville, Wilkins	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality	Sediment, Nutrients, Bacteria, Temperature

Rangeland

Acres	Soils	Resource Problems	TMDL Pollutants
~2,740 acres	Flybow, Rockoutcrop, Bluesprin, Klickson, Keuterville, Ferdinand	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Sediment, Nutrients, Bacteria, Temperature

Riparian

Acres	Soils	Resource Problems	TMDL Pollutants
~380 acres	Westlake, Typic Xerofluvents	Excess nutrients, organics, streambank degradation, plant productivity	Sediment, Nutrients, Bacteria, Temperature

Butcher Creek

Cropland <12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~3,400 acres	NezPerce, Chicane, Shebang, Uhlorn, Ferdinand, Boles, Meland, Kooskia	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment, Nutrients

Cropland >12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~1,140 acres	NezPerce, Chicane, Shebang, Boles, Kooskia, Ferdinand	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment, Nutrients

Pasture/Hayland

Acres	Soils	Resource Problems	TMDL Pollutants
~2,500 acres	Ferdinand, Fenn, Jacket, Riggins, Keuterville, Wilkins, Kooskia, Meland, Uhlorn, Fenn, Wilkins	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality	Sediment, Nutrients, Bacteria, Temperature

Rangeland

Acres	Soils	Resource Problems	TMDL Pollutants
~1,000 acres	Flybow, Rockoutcrop, Bluesprin, Keuterville, Ferdinand, Gwin	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Sediment, Nutrients, Bacteria, Temperature

Riparian

Acres	Soils	Resource Problems	TMDL Pollutants
~97 acres	Westlake, Typic Xerofluvents	Excess nutrients, organics, streambank degradation, plant productivity	Sediment, Nutrients, Bacteria, Temperature

Sally Ann Creek

Cropland <12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~740 acres	Kooskia	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment

Pasture/Hayland

Acres	Soils	Resource Problems	TMDL Pollutants
~900 acres	Kooskia, Caribel, Johnson, Nicodemus	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality	Sediment, Temperature

Rangeland

Acres	Soils	Resource Problems	TMDL Pollutants
~1,700 acres	Gwin, Mehlhorn, Jacknife, Yakus	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Sediment, Temperature

Rabbit Creek

Cropland <12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~1,900 acres	Kooskia, Potlatch	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment

Pasture/Hayland

Acres	Soils	Resource Problems	TMDL Pollutants
~800 acres	Kooskia, Jughandle	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality	Sediment, Temperature

Rangeland

Acres	Soils	Resource Problems	TMDL Pollutants
~1,250 acres	Gwin, Mehlhorn, Jacknife	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Sediment, Temperature

Lower SFCR

Cropland <12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~4,600 acres	NezPerce, Chicane, Uhlorn, Ferdinand, Meland, Kooskia, Wilkins, Fenn, Nicodemus	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment

Cropland >12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~550 acres	Meland, Uhlorn, Chicane, Ferdinand, NezPerce	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment

Pasture/Hayland

Acres	Soils	Resource Problems	TMDL Pollutants
~3,000 acres	Jacket variant, Johnson, Uhlorn, Suloaf, Ferdinand, Kooskia, Rigggins, Meland	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality	Sediment, Temperature

Rangeland

Acres	Soils	Resource Problems	TMDL Pollutants
~7,000 acres	Jacknife, Yakus, Gwin, Mehlhorn, Bluesprin, Keuterville, Rockoutcrop, Klickson	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Sediment, Temperature

Riparian

Acres	Soils	Resource Problems	TMDL Pollutants
~85 acres	Typic Xerofluvents, Nicodemus variant, Riverwash	Excess nutrients, organics, streambank degradation, plant productivity	Sediment, Temperature

Mid-Lower SFCR

Cropland <12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~700 acres	Ferdinand, Kooskia, Jacket	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment

Cropland >12% slopes

Acres	Soils	Resource Problems	TMDL Pollutants
~200 acres	Ferdinand, Boles, Uptmor	Surface and groundwater quality; ephemeral and classic gully erosion; sheet and rill erosion; excess nutrients	Sediment

Pasture/Hayland

Acres	Soils	Resource Problems	TMDL Pollutants
~2,000 acres	Ferdinand, Meland, Uhlorn, Kooskia, Lochsa	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality	Sediment, Temperature

Rangeland

Acres	Soils	Resource Problems	TMDL Pollutants
~6,200 acres	Jacknife, Gwin, Bluesprin, Keuterville, Rockoutcrop, Sallyann, Lawyer	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Sediment, Temperature

Riparian

Acres	Soils	Resource Problems	TMDL Pollutants
~30 acres	Typic Xerofluvents	Excess nutrients, organics, streambank degradation, plant productivity	Sediment, Temperature

Above Forest Service Boundary

Rangeland / Grazing

Acres	Soils	Resource Problems	TMDL Pollutants
~6,200 acres	Unknown	Plant productivity; noxious and invasive plants; streambank degradation; excess nutrients; organics; surface and groundwater quality, sheet and rill erosion	Temperature

Alternatives and Costs

Threemile Creek

BMP Practice	Amount	Units	Cost	Total Cost
Cropland < 12% slopes				
Direct Seed	8,000	Acres	$30.00	$240,000.00
Minimum Till	8,000	Acres	$0.00	$0.00
Mulch Till	8,000	Acres	$0.00	$0.00
Crop Rotation	10,680	Acres	$0.00	$0.00
Nutrient Management - Soil tests	800	Each	$55.00	$44,000.00
Nutrient Management - Split Fertilizer Applications	8,000	Acres	$5.00	$40,000.00
Sediment Basins	15	Each	$4,000.00	$60,000.00
Water Control Structures	15	Each	$5,000.00	$75,000.00
Terraces	10,000	Feet	$1.90	$19,000.00
Filter Strips	15	Acres	$80.00	$1,200.00
Grass Waterways	15	Acres	$1,500.00	$22,500.00
Hayland Seedings	2,000	Acres	$80.00	$160,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Cropland > 12% slopes				
Direct Seed	1,200	Acre	$30.00	$36,000.00
Minimum Till	1,200	Acre	$0.00	$0.00
Mulch Till	1,200	Acre	$0.00	$0.00
Crop Rotation	1,700	Acre	$0.00	$0.00
Nutrient Management - Soil tests	120	Each	$55.00	$6,600.00
Nutrient Management - Split Fertilizer Applications	1,200	Acre	$5.00	$6,000.00
Water Control Structures	5	Each	$5,000.00	$25,000.00
Filter Strips	10	Acre	$80.00	$800.00
Grass Waterways	10	Acre	$1,500.00	$15,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Pasture / Hayland				
Off-Channel Water Facilities	7	Each	$800.00	$5,600.00
Spring Developments	7	Each	$1,000.00	$7,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Roof-Runoff Structures	3	Each	$3,000.00	$9,000.00
Culvert Crossings	3	Each	$3,000.00	$9,000.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Diversions	5,000	Feet	$2.50	$12,500.00
Streamside Vegetation Restoration	5,000	Feet	$30.00	$150,000.00
Pasture Management / Rotation	1,900	Acre	$0.00	$0.00
Buffer Strips	10	Acre	$1,500.00	$15,000.00
Forage Harvest Management	1,900	Acre	$0.00	$0.00
Hayland / Pasture Seedings	1,900	Acre	$80.00	$152,000.00
Riparian Pasture	25	Acre	$25.00	$625.00

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	5	Each	$1,000.00	$5,000.00
Off-channel water facilities	5	Each	$800.00	$4,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Riparian Pasture	15	Acre	$25.00	$375.00
Hardened Access Points	5	Each	$3,000.00	$15,000.00
Streamside Vegetation Restoration	2,500	Feet	$30.00	$75,000.00
Buffer Strips	7	Acre	$1,500.00	$10,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Riparian				
Riparian Pasture	200	Acre	$25.00	$5,000.00
Streamside Vegetation Plantings	5,000	Feet	$30.00	$150,000.00
Buffer Strips	5	Acre	$1,500.00	$7,500.00
Tree and Shrub Plantings	5,000	Feet	$15.00	$75,000.00
Fence	5,000	Feet	$2.50	$12,500.00
Off-Channel Water Facilities	5	Each	$800.00	$4,000.00
Spring Developments	5	Each	$1,000.00	$5,000.00
Roof-Runoff Structures	2	Each	$3,000.00	$6,000.00
Waste Management Structures	2	Each	$5,000.00	$10,000.00
Culvert Crossings	5	Each	$3,000.00	$15,000.00
Diversions	1,000	Feet	$2.50	$2,500.00

Butcher Creek

BMP Practice	Amount	Units	Cost	Total Cost
Cropland < 12% slopes				
Direct Seed	2,500	Acres	$30.00	$75,000.00
Minimum Till	2,500	Acres	$0.00	$0.00
Mulch Till	2,500	Acres	$0.00	$0.00
Crop Rotation	3,400	Acres	$0.00	$0.00
Nutrient Management - Soil tests	250	Each	$55.00	$13,750.00
Nutrient Management - Split Fertilizer Applications	2,500	Acres	$5.00	$12,500.00
Sediment Basins	5	Each	$4,000.00	$20,000.00
Water Control Structures	5	Each	$5,000.00	$25,000.00
Terraces	5,000	Feet	$1.90	$9,500.00
Filter Strips	10	Acres	$80.00	$800.00
Grass Waterways	10	Acres	$1,500.00	$15,000.00
Hayland Seedings	1,000	Acres	$80.00	$80,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Cropland > 12% slopes				
Direct Seed	800	Acre	$30.00	$24,000.00
Minimum Till	800	Acre	$0.00	$0.00
Mulch Till	800	Acre	$0.00	$0.00
Crop Rotation	1,100	Acre	$0.00	$0.00
Nutrient Management - Soil tests	80	Acre	$55.00	$4,400.00
Nutrient Management - Split Fertilizer Applications	800	Acre	$5.00	$4,000.00
Water Control Structures	3	Each	$5,000.00	$15,000.00
Filter Strips	5	Acre	$80.00	$400.00
Grass Waterways	5	Acre	$1,500.00	$7,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Pasture / Hayland				
Off-Channel Water Facilities	7	Each	$800.00	$5,600.00
Spring Developments	7	Each	$1,000.00	$7,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Roof-Runoff Structures	3	Each	$3,000.00	$9,000.00
Culvert Crossings	3	Each	$3,000.00	$9,000.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Diversions	5,000	Feet	$2.50	$12,500.00
Streamside Vegetation Restoration	5,000	Feet	$30.00	$150,000.00
Pasture Management / Rotation	1,900	Acre	$0.00	$0.00
Buffer Strips	10	Acre	$1,500.00	$15,000.00
Forage Harvest Management	1,900	Acre	$0.00	$0.00
Hayland / Pasture Seedings	1,900	Acre	$80.00	$152,000.00
Riparian Pasture	25	Acre	$25.00	$625.00

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	3	Each	$1,000.00	$3,000.00
Off-channel water facilities	3	Each	$800.00	$2,400.00
Fence	5,000	Feet	$2.50	$12,500.00
Riparian Pasture	10	Acre	$25.00	$250.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Streamside Vegetation Restoration	1,500	Feet	$30.00	$45,000.00
Buffer Strips	5	Acre	$1,500.00	$7,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Riparian				
Riparian Pasture	70	Acre	$25.00	$1,750.00
Streamside Vegetation Plantings	1,000	Feet	$30.00	$30,000.00
Buffer Strips	2	Acre	$1,500.00	$3,000.00
Tree and Shrub Plantings	1,000	Feet	$15.00	$15,000.00
Fence	1,000	Feet	$2.50	$2,500.00
Off-Channel Water Facilities	1	Each	$800.00	$800.00
Spring Developments	1	Each	$1,000.00	$1,000.00
Roof-Runoff Structures	1	Each	$3,000.00	$3,000.00
Waste Management Structures	1	Each	$5,000.00	$5,000.00
Culvert Crossings	1	Each	$3,000.00	$3,000.00
Diversions	500	Feet	$2.50	$1,250.00

Sally Ann Creek

BMP Practice	Amount	Units	Cost	Total Cost
Cropland < 12% slopes				
Direct Seed	500	Acres	$30.00	$15,000.00
Minimum Till	500	Acres	$0.00	$0.00
Mulch Till	500	Acres	$0.00	$0.00
Crop Rotation	740	Acres	$0.00	$0.00
Nutrient Management - Soil tests	50	Each	$55.00	$2,750.00
Nutrient Management - Split Fertilizer Applications	500	Acres	$5.00	$2,500.00
Sediment Basins	1	Each	$4,000.00	$4,000.00
Water Control Structures	1	Each	$5,000.00	$5,000.00
Terraces	1,000	Feet	$1.90	$1,900.00
Filter Strips	5	Acres	$80.00	$400.00
Grass Waterways	5	Acres	$1,500.00	$7,500.00
Hayland Seedings	500	Acres	$80.00	$40,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Pasture / Hayland				
Off-Channel Water Facilities	5	Each	$800.00	$4,000.00
Spring Developments	5	Each	$1,000.00	$5,000.00
Fence	5,000	Feet	$2.50	$12,500.00
Roof-Runoff Structures	1	Each	$3,000.00	$3,000.00
Culvert Crossings	1	Each	$3,000.00	$3,000.00
Hardened Access Points	1	Each	$3,000.00	$3,000.00
Diversions	1,000	Feet	$2.50	$2,500.00
Streamside Vegetation Restoration	1,000	Feet	$30.00	$30,000.00
Pasture Management / Rotation	600	Acre	$0.00	$0.00
Buffer Strips	3	Acre	$1,500.00	$4,500.00
Forage Harvest Management	600	Acre	$0.00	$0.00
Hayland / Pasture Seedings	600	Acre	$80.00	$48,000.00
Riparian Pasture	5	Acre	$25.00	$125.00

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	3	Each	$1,000.00	$3,000.00
Off-channel water facilities	3	Each	$800.00	$2,400.00
Fence	5,000	Feet	$2.50	$12,500.00
Riparian Pasture	10	Acre	$25.00	$250.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Streamside Vegetation Restoration	1,500	Feet	$30.00	$45,000.00
Buffer Strips	5	Acre	$1,500.00	$7,500.00

Rabbit Creek

BMP Practice	Amount	Units	Cost	Total Cost
Cropland < 12% slopes				
Direct Seed	1,400	Acres	$30.00	$42,000.00
Minimum Till	1,400	Acres	$0.00	$0.00
Mulch Till	1,400	Acres	$0.00	$0.00
Crop Rotation	1,900	Acres	$0.00	$0.00
Nutrient Management - Soil tests	140	Each	$55.00	$7,700.00
Nutrient Management - Split Fertilizer Applications	1,400	Acres	$5.00	$7,000.00
Sediment Basins	3	Each	$4,000.00	$12,000.00
Water Control Structures	3	Each	$5,000.00	$15,000.00
Terraces	1,000	Feet	$1.90	$1,900.00
Filter Strips	7	Acres	$80.00	$560.00
Grass Waterways	7	Acres	$1,500.00	$10,500.00
Hayland Seedings	1,000	Acres	$80.00	$80,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Pasture / Hayland				
Off-Channel Water Facilities	5	Each	$800.00	$4,000.00
Spring Developments	5	Each	$1,000.00	$5,000.00
Fence	5,000	Feet	$2.50	$12,500.00
Roof-Runoff Structures	1	Each	$3,000.00	$3,000.00
Culvert Crossings	1	Each	$3,000.00	$3,000.00
Hardened Access Points	1	Each	$3,000.00	$3,000.00
Diversions	1,000	Feet	$2.50	$2,500.00
Streamside Vegetation Restoration	1,000	Feet	$30.00	$30,000.00
Pasture Management / Rotation	600	Acre	$0.00	$0.00
Buffer Strips	3	Acre	$1,500.00	$4,500.00
Forage Harvest Management	600	Acre	$0.00	$0.00
Hayland / Pasture Seedings	600	Acre	$80.00	$48,000.00
Riparian Pasture	5	Acre	$25.00	$125.00

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	3	Each	$1,000.00	$3,000.00
Off-channel water facilities	3	Each	$800.00	$2,400.00
Fence	5,000	Feet	$2.50	$12,500.00
Riparian Pasture	10	Acre	$25.00	$250.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Streamside Vegetation Restoration	1,500	Feet	$30.00	$45,000.00
Buffer Strips	5	Acre	$1,500.00	$7,500.00

Lower SFCR

BMP Practice	Amount	Units	Cost	Total Cost
Cropland < 12% slopes				
Direct Seed	3,400	Acres	$30.00	$102,000.00
Minimum Till	3,400	Acres	$0.00	$0.00
Mulch Till	3,400	Acres	$0.00	$0.00
Crop Rotation	4,600	Acres	$0.00	$0.00
Nutrient Management - Soil tests	340	Each	$55.00	$18,700.00
Nutrient Management - Split Fertilizer Applications	3,400	Acres	$5.00	$17,000.00
Sediment Basins	7	Each	$4,000.00	$28,000.00
Water Control Structures	7	Each	$5,000.00	$35,000.00
Terraces	5,000	Feet	$1.90	$9,500.00
Filter Strips	10	Acres	$80.00	$800.00
Grass Waterways	10	Acres	$1,500.00	$15,000.00
Hayland Seedings	2,000	Acres	$80.00	$160,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Cropland > 12% slopes				
Direct Seed	400	Acre	$30.00	$12,000.00
Minimum Till	400	Acre	$0.00	$0.00
Mulch Till	400	Acre	$0.00	$0.00
Crop Rotation	550	Acre	$0.00	$0.00
Nutrient Management - Soil tests	40	Each	$55.00	$2,200.00
Nutrient Management - Split Fertilizer Applications	400	Acre	$5.00	$2,000.00
Water Control Structures	1	Each	$5,000.00	$5,000.00
Filter Strips	3	Acre	$80.00	$240.00
Grass Waterways	3	Acre	$1,500.00	$4,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Pasture / Hayland				
Off-Channel Water Facilities	7	Each	$800.00	$5,600.00
Spring Developments	7	Each	$1,000.00	$7,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Roof-Runoff Structures	3	Each	$3,000.00	$9,000.00
Culvert Crossings	3	Each	$3,000.00	$9,000.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Diversions	5,000	Feet	$2.50	$12,500.00
Streamside Vegetation Restoration	5,000	Feet	$30.00	$150,000.00
Pasture Management / Rotation	1,900	Acre	$0.00	$0.00
Buffer Strips	10	Acre	$1,500.00	$15,000.00
Forage Harvest Management	1,900	Acre	$0.00	$0.00
Hayland / Pasture Seedings	1,900	Acre	$80.00	$152,000.00
Riparian Pasture	25	Acre	$25.00	$625.00

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	10	Each	$1,000.00	$10,000.00
Off-channel water facilities	10	Each	$800.00	$8,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Riparian Pasture	30	Acre	$25.00	$750.00
Hardened Access Points	7	Each	$3,000.00	$21,000.00
Streamside Vegetation Restoration	2,500	Feet	$30.00	$75,000.00
Buffer Strips	7	Acre	$1,500.00	$10,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Riparian				
Riparian Pasture	70	Acre	$25.00	$1,750.00
Streamside Vegetation Plantings	1,000	Feet	$30.00	$30,000.00
Buffer Strips	2	Acre	$1,500.00	$3,000.00
Tree and Shrub Plantings	1,000	Feet	$15.00	$15,000.00
Fence	1,000	Feet	$2.50	$2,500.00
Off-Channel Water Facilities	1	Each	$800.00	$800.00
Spring Developments	1	Each	$1,000.00	$1,000.00
Roof-Runoff Structures	1	Each	$3,000.00	$3,000.00
Waste Management Structures	1	Each	$5,000.00	$5,000.00
Culvert Crossings	1	Each	$3,000.00	$3,000.00
Diversions	500	Feet	$2.50	$1,250.00

Mid SFCR

BMP Practice	Amount	Units	Cost	Total Cost
Cropland < 12% slopes				
Direct Seed	500	Acres	$30.00	$15,000.00
Minimum Till	500	Acres	$0.00	$0.00
Mulch Till	500	Acres	$0.00	$0.00
Crop Rotation	700	Acres	$0.00	$0.00
Nutrient Management - Soil tests	50	Each	$55.00	$2,750.00
Nutrient Management - Split Fertilizer Applications	500	Acres	$5.00	$2,500.00
Sediment Basins	3	Each	$4,000.00	$12,000.00
Water Control Structures	3	Each	$5,000.00	$15,000.00
Terraces	1,000	Feet	$1.90	$1,900.00
Filter Strips	5	Acres	$80.00	$400.00
Grass Waterways	5	Acres	$1,500.00	$7,500.00
Hayland Seedings	250	Acres	$80.00	$20,000.00

BMP Practice	Amount	Units	Cost	Total Cost
Cropland > 12% slopes				
Direct Seed	150	Acre	$30.00	$4,500.00
Minimum Till	150	Acre	$0.00	$0.00
Mulch Till	150	Acre	$0.00	$0.00
Crop Rotation	200	Acre	$0.00	$0.00
Nutrient Management - Soil tests	15	Each	$55.00	$825.00
Nutrient Management - Split Fertilizer Applications	150	Acre	$5.00	$750.00
Water Control Structures	1	Each	$5,000.00	$5,000.00
Filter Strips	3	Acre	$80.00	$240.00
Grass Waterways	3	Acre	$1,500.00	$4,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Pasture / Hayland				
Off-Channel Water Facilities	7	Each	$800.00	$5,600.00
Spring Developments	7	Each	$1,000.00	$7,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Roof-Runoff Structures	3	Each	$3,000.00	$9,000.00
Culvert Crossings	3	Each	$3,000.00	$9,000.00
Hardened Access Points	3	Each	$3,000.00	$9,000.00
Diversions	5,000	Feet	$2.50	$12,500.00
Streamside Vegetation Restoration	5,000	Feet	$30.00	$150,000.00
Pasture Management / Rotation	1,500	Acre	$0.00	$0.00
Buffer Strips	10	Acre	$1,500.00	$15,000.00
Forage Harvest Management	1,500	Acre	$0.00	$0.00
Hayland / Pasture Seedings	1,500	Acre	$80.00	$120,000.00
Riparian Pasture	25	Acre	$25.00	$625.00

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	10	Each	$1,000.00	$10,000.00
Off-channel water facilities	10	Each	$800.00	$8,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Riparian Pasture	30	Acre	$25.00	$750.00
Hardened Access Points	7	Each	$3,000.00	$21,000.00
Streamside Vegetation Restoration	2,500	Feet	$30.00	$75,000.00
Buffer Strips	7	Acre	$1,500.00	$10,500.00

BMP Practice	Amount	Units	Cost	Total Cost
Riparian				
Riparian Pasture	40	Acre	$25.00	$1,000.00
Streamside Vegetation Plantings	500	Feet	$30.00	$15,000.00
Buffer Strips	2	Acre	$1,500.00	$3,000.00
Tree and Shrub Plantings	500	Feet	$15.00	$7,500.00
Fence	500	Feet	$2.50	$1,250.00
Off-Channel Water Facilities	1	Each	$800.00	$800.00
Spring Developments	1	Each	$1,000.00	$1,000.00
Roof-Runoff Structures	1	Each	$3,000.00	$3,000.00
Waste Management Structures	1	Each	$5,000.00	$5,000.00
Culvert Crossings	1	Each	$3,000.00	$3,000.00
Diversions	500	Feet	$2.50	$1,250.00

Above FS Boundary

BMP Practice	Amount	Units	Cost	Total Cost
Range				
Spring Developments	10	Each	$1,000.00	$10,000.00
Off-channel water facilities	10	Each	$800.00	$8,000.00
Fence	10,000	Feet	$2.50	$25,000.00
Riparian Pasture	30	Acre	$25.00	$750.00
Hardened Access Points	7	Each	$3,000.00	$21,000.00
Streamside Vegetation Restoration	2,500	Feet	$30.00	$75,000.00
Buffer Strips	7	Acre	$1,500.00	$10,500.00

Funding

Financial and technical assistance for installation of BMPs is needed to ensure success of this implementation plan. There are many potential sources for funding that will be actively pursued by the Idaho SWCD to implement water quality improvements on private agricultural and grazing lands. These sources include (but are not limited to):

CWA 319 projects refer to section 319 of the Clean Water Act. These are Environmental Protection Agency funds that are allocated to the Nez Perce Tribe and to Idaho State. The Idaho Department of Environmental Quality has primacy to administer the Clean Water Act §319 Non-point Source Management Program for areas outside the Nez Perce Reservation. Funds focus on projects to improve water quality and are usually related to the TMDL process. Source: Idaho Department of Environmental Quality. The Nez Perce tribe has CWA 319 funds available for projects on Tribal lands on a competitive basis.

The RCRDP program is the Resource Conservation and Rangeland Development Program administered by the Idaho Soil Conservation Commission. This is a grant/loan program for implementation of agricultural and rangeland best management practices or loans to purchase equipment to increase conservation. Source: Idaho Soil Conservation Commission. http://www.scc.state.id.us/programs.htm

PL-566 The small watershed program administered by the USDA Natural Resources Conservation Service (source).

Agricultural Management Assistance (AMA): AMA provides cost-share assistance to agricultural producers for constructing or improving water management structures or irrigation structures; planting trees for windbreaks or to improve water quality; and mitigating risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming. http://www.nrcs.usda.gov/programs/ama/

Conservation Reserve Program (CRP): CRP is a land retirement program for blocks of land or strips of land that protect the soil and water resources, such as buffers and grassed waterways. http://www.nrcs.usda.gov/programs/crp/

Conservation Technical Assistance (CTA): CTA provides free technical assistance to help farmers and ranchers identify and solve natural resource problems on their farms and ranches. This might come as advice and counsel, through the design and implementation of a practice or treatment, or as part of an active conservation plan. This is provided through your local Conservation District and NRCS. http://www.nrcs.usda.gov/programs/cta/

Environmental Quality Incentives Program (EQIP): EQIP offers cost-share and incentive payments and technical help to assist eligible participants in installing or implementing structural and management practices on eligible agricultural land. http://www.nrcs.usda.gov/programs/eqip/

Wetlands Reserve Program (WRP): WRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. Easements and restoration payments are offered as part of the program. http://www.nrcs.usda.gov/programs/wrp/

Wildlife Habitat Incentives Program (WHIP): WHIP is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Cost-share payments for construction or re-establishment of wetlands may be included. http://www.nrcs.usda.gov/programs/whip/

SRF State Revolving Loan Funds are administered through the Idaho Soil Conservation commission. http://www.scc.state.id.us/programs.htm

Grassland Reserve Program (GRP) is a voluntary program offering landowners the opportunity to protect, restore, and enhance grasslands on their property. Administered by the NRCS. http://www.nrcs.usda.gov/programs/GRP/

CSP Conservation Security Program is a voluntary program that rewards the Nation's premier farm and ranch land conservationists who meet the highest standards of conservation environmental management. More details can be found at http://www.nrcs.usda.gov

FLEP Forest Land Enhancement Program is a new incentives program authorized in the 2002 Farm Bill to encourage the long-term sustainability of non-industrial private forestlands by providing financial assistance to forest owners for the implementation of a wide variety of non-commercial forest stewardship practices administered by the NRCS. http://www.forestadvice.com/news/flep.htm

GLCI Grazing Land Conservation Initiative mission is to provide high quality technical assistance on privately owned grazing lands on a voluntary basis and to increase the awareness of the importance of grazing land resources. http://www.glci.org/

Existing watershed projects are those that have been coordinated through the Focus Program. These projects are sponsored by the Nez Perce Tribe Watershed Division or soil and water conservation districts and funded with Bonneville Power Administration funds in conjunction with other funding sources. Source: Clearwater Focus Program files

Stewardship projects The U.S. Army Corps of Engineers conducts these projects to improve wildlife habitat. Source: US Army Corps of Engineers.

Land acquisitions and conservation easements are estimated as part of the Nez Perce Tribes Wildlife program proposal before the Bonneville Power Administration and other potential acquisitions. Source: Nez Perce Tribe Wildlife Department and conservation districts.

Craig/Wyden Bill Provides compensation to counties in lieu of lost tax revenue from diminished timber harvest. Source: Nez Perce National Forest staff

NOAA Restoration Center Community-Based Restoration Funding source for habitat restoration for listed species. Source: NOAA

Research/supplementation Idaho Department of Fish and Game, Nez Perce Tribe, and U.S. Fish and Wildlife Service work. Source: Bonneville Power Administration.

New Restoration monitoring Implementation and effectiveness monitoring for new projects started during the budget period. Source: Nez Perce Tribe and conservation districts.

New RME Estimated for actions to address data gaps and research needs. Source: Idaho Department of Fish and Game and Nez Perce Tribe.

The Dworshak Nez Perce Tribe Wildlife Mitigation Fund established in part to mitigate the losses of wildlife habitat from flooding caused by Dworshak Dam. The program is administered through the Nez Perce Tribe Wildlife Department. The Department also receives funding for project work from the Bureau of Indian Affairs. Source: Nez Perce Tribe Wildlife Department.

NPT Wildlife Category reflects the Bureau of Indian Affairs budget component of the Nez Perce Tribe Wildlife Department annual budget. Source: Nez Perce Tribe Wildlife Department.

Idaho Department of Fish and Wildlife and Potlatch Corporation Estimated total annual expenditures for restoration and monitoring. Source: Idaho Department of Fish and Wildlife and Potlatch Corporation.

Many of these programs could be used in combination with each other to implement BMPs.

Outreach

An intensive outreach program will be conducted through the Idaho Soil and Water Conservation District (ISWCD) and its partners, the Idaho Association of Soil Conservation Districts (IASCD), Idaho Soil Conservation commission (ISCC), and the Natural Resource Conservation Service (NRCS). The purpose of these outreach programs is to inform agricultural landowners and operators how water-quality BMP's can benefit their farm or ranch.

Newspaper articles, district newsletters, direct mailings, project tours, demonstration projects, landowner meetings, a sixth grade field day and personal contacts will be conducted as part of this outreach effort. Other outreach objectives include:

- Provision of information about the TMDL process
- Accelerated technology transfer
- Dissemination of water-quality monitoring results
- Increased landowner support for water-quality BMP's
- Distribution of TMDL implementation progress reports
- Greater awareness of agriculture's involvement in the protection and enhancement of natural resources
- Increased public awareness of agriculture's commitment to meeting the TMDL challenge.

Monitoring and Evaluation

Field Level

Status Reviews

At the field level the ISCC and NRCS will complete annual status reviews in cost-share programs such as EQIP, CRP, WQPA, 319, and RCRDP. Annual status reviews are field checks of progress towards meeting the individuals contract goals and objectives as well as a visual assessment of installed BMP's.

BMP Effectiveness

Along with status reviews the ISCC will complete in-field BMP effectiveness evaluations throughout the implementation phase on installed BMP's. The BMP effectiveness guide posted on the ISCC website will guide these efforts (Resource Planning Unlimited, 2003).

Tools for BMP effectiveness evaluations such as on-site observations, client interviews, soil quality test kit measurements, field measurements on structures, soil samples and water quality samples will be used to help assess BMP effectiveness.

Watershed Level

Pollution Source and Transport

BURP monitoring

IDAPA 58.01.02.053 establishes a procedure to determine whether a water body fully supports designated and existing beneficial uses. The procedure detailed in the *1996 Water Body Assessment Guidance* (WBAG) (DEQ 1996) and revised in 2000 (Grafe et al. 2000) relies on physical, chemical, and biological parameters to identify water quality limited segments that require TMDL development.

The General Surface Water Quality Criteria (IDAPA 58.01.02.200) for Idaho set forth general guidance for surface water quality. The Surface Water Quality Criteria for Aquatic Life Use Designations (IDAPA 58.01.02.250) set forth specific numeric criteria to be met for particular beneficial uses. It also sets forth "narrative" standards that require a logical accumulation of evidence to determine whether a water body is supporting its beneficial uses. The WBAG sets forth a methodology whereby a water body is first assessed using the numeric criteria for a particular beneficial use, then identifies indices and methods for "narrative" assessment of pollutants for which numeric criteria do not apply or are not available (DEQ 1996a; Grafe et al. 2000). Sediment is the primary pollutant addressed by narrative means in the WBAG.

Idaho determines if its narrative sediment criteria are being met by collecting BURP data to verify if viable communities of aquatic organisms are present and if evidence of beneficial use exists in the stream. The BURP is a consistent scientific process used statewide for collecting this data. The evaluatation of the BURP data using WBAG results in indices used to compare water quality with the standards to determine beneficial use support status.

Bacteria monitoring

The ISWCD would like to initiate a DNA fingerprinting study for the Cottonwood and Threemile watersheds where bacteria is listed as a pollutant. The purpose of this project is to use DNA fingerprinting technology to identify the actual sources of fecal coliform in the Cottonwood Creek and Threemile Creek. This will, in turn, show us how best to target our implementation plan and bacteria reduction efforts to meet the TMDL load reductions. The results of the source groups that can be positively identified will be used to decide how to best allocate existing resources to reduce bacteria loads to the system.

NezPerce Tribe Monitoring

The Nez Perce Tribe WRD will continue trend monitoring in Reservation watersheds with completed TMDLs in 2005. In 2003 and 2004, WRD conducted water quality trend monitoring at 7 sites on the Nez Perce Reservation at 3 month intervals. Stream sites will be monitored quarterly.

Water Quality Trend Monitoring Sites

Watershed	Site	Description
Cottonwood Creek	1402A	Mouth
Cottonwood Creek	1412A	Mainstem @ NPT Reservation boundary
Threemile Creek	8401A	Mouth
Butcher Creek	701A	Mouth

Water Quality parameters sampled would include: bacteria, flow, TSS, and nutrients (TP, NH4-N, TKN, NO3-NO2, orthophosphate), and ammonia. Hydrolab readings would be taken for temperature, dissolved oxygen, pH, turbidity, and specific conductivity. Temperature data loggers, installed by WRD staff, would also be located at the stream sites. The cost of analysis for each of the six stream sites is $160. Each site will be sampled 4 times for a total cost of $3,840.

IASCD Monitoring

The IASCD will have a monitoring program for the Cottonwood Creek watershed, Threemile and Butcher Creek. These plans will be posted on the Commission web site as well as summary reports with the data that was collected.

Project / Program Reviews

All projects and programs that involve cost-share have a system for review to ensure that cost-share dollars are being spent wisely and being used effectively to reduce TMDL pollutants and/or reduce resource pollutant concerns. All implementation activities that involve cost-share dollars will continue to be subject to these reviews.

Progress Tracking and Reporting

The ISCC and IDSWCD will write annual progress reports containing information on current BMP installations and any available monitoring data pertaining to implementation progress in the watershed. The ISCC will track installations of BMP's in "tracker" (or the current tracking system). NRCS will track BMP installations installed under federal programs in the "PRS" system (or the current system). These two systems of tracking will be used to create annual progress reports. The Nez Perce Tribe is currently working on establishing GIS 319 project tracking by watershed that can be shared with ISCC and NRCS.

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