Upper Hangman Creek Watershed:
Headwaters of Hangman Creek Subwatershed

170103060102
Assessment and Total Maximum Daily Load
Implementation Plan for Agriculture

Prepared by:
Idaho Soil and Water Conservation Commission
In Cooperation With:
Benewah Soil and Water Conservation District
Idaho Association of Soil Conservation Districts
Natural Resources Conservation Service
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Introduction

The Idaho Soil and Water Conservation Commission (ISWCC) is the designated management agency in Idaho for managing agricultural nonpoint source pollution and is therefore the lead in TMDL (Total Maximum Daily Load) implementation activities on agricultural land. Although the ISWCC does not have regulatory or licensing authority over water quality or pollution control, the mission of the ISWCC is to provide support to Idaho's Soil and Water Conservation Districts for wise use and improvement of natural resources (RPU 2003). The ISWCC offers technical assistance to landowners and operators and administers the Water Quality Program for Agriculture (WQPA), the Conservation Improvement Grants program, and the Resource Conservation and Rangeland Development Program (RCRDP) in cooperation with Soil and Water Conservation Districts.

The ISWCC works with the Benewah Soil and Water Conservation District (BSWCD), the Idaho Association of Soil Conservation Districts (IASCD), and the Natural Resource Conservation Service (NRCS) in a conservation partnership to reach common goals and successfully deliver conservation programs in Benewah County. The BSWCD's 5 year plan identifies water quality as one of the top priorities for Benewah County.

This TMDL agricultural implementation plan only addresses the Headwaters of Hangman Creek subwatershed, a smaller unit of the Upper Hangman Creek watershed which lies above the Coeur d'Alene Tribal Reservation boundary. This part of the Upper Hangman Creek watershed encompasses two assessment units and occupies approximately 10,000 acres. The Coeur d'Alene Tribe is the designated management entity responsible for all TMDL plans within their reservation boundaries. A large majority of the Upper Hangman Creek watershed resides within the reservation boundaries.

PURPOSE

The Headwaters of Hangman Creek subwatershed TMDL Implementation Plan for Agriculture outlines an adaptive management approach for implementation of Resource Management Systems (RMS) and Best Management Practices (BMPs) to meet the requirements of the Upper Hangman Creek Subbasin Assessment and TMDL. The purpose of this plan is to complement other efforts in restoring and protecting beneficial uses for 303(d) listed stream segments for which TMDLs have been developed.

GOALS AND OBJECTIVES

This implementation plan will provide guidance to the BSWCD and agricultural producers in the Headwaters of Hangman Creek subwatershed to identify BMPs necessary to meet the requirements of completed TMDLs on 303(d) listed streams for agricultural lands. The objectives of this plan include reducing the amount of sediment and bacteria from agricultural sources and increasing riparian shading where feasible. Agricultural pollutant reductions will be achieved by on-farm conservation planning with individual operators and application of BMPs in agricultural critical areas. This plan recommends BMPs needed to meet TMDL targets and suggests alternatives for reducing surface water quality problems from agricultural related activities. Site-specific BMPs will be developed and implemented onsite with individual landowners on a voluntary basis. Efforts will be made to educate land users in the watershed on the effects of land use on water quality. This will encourage participation in implementation efforts, ensure long-term maintenance of BMPs, and increase awareness of water quality issues. Installed BMPs will be monitored for effectiveness and

evaluated in terms of reducing pollutant loading and impacts on designated beneficial uses of the watershed.

The Upper Hangman Creek TMDL was written using the Idaho Department of Environmental Quality (IDEQ) 1998 303(d) list and 2002 Integrated Report. Identified water quality impaired stream segments in the Headwaters of Hangman Creek subwatershed are listed below in Table 1 and 2.

Table 1: 1998 303(d) listed Stream Segments in the Upper Hangman Creek subwatershed (IDEQ 2001).

Stream	Stream Segment Boundaries	POLLUTANT(S)
Hangman Creek	Headwaters to tribal reservation boundary	Bacteria, Habitat Alteration, Nutrients, Sediment

Table 2: 2002 Integrated Report listed Stream Segments in the Upper Hangman Creek subwatershed (IDEQ 2005).

Stream	Assessment Units	Stream Segment Boundaries	POLLUTANT(S)
Hangman Creek	ID17010306PN001_03	Headwaters to tribal reservation boundary	Bacteria, Nutrients, Sediment
Hangman, South Fork Hangman, Bunnel, Hill, Conrad, Martin, Tenas Creeks	ID17010306PN001_02	Streams outside Coeur d'Alene Tribal Reservation above the Hangman/ South Fork Hangman Creek Confluence	Temperature

In 2007, IDEQ opted to develop sediment, bacteria, and temperature TMDL's for all the creeks listed in Table 2. No TMDL was developed for habitat alteration due to DEQ policy. The TMDL also recommends de-listing nutrients due to monitoring data that shows low levels of phosphorus. The two assessment units in the Upper Hangman Creek subbasin were placed in the approved TMDLs category in the 2008 Integrated Report (IDEQ, 2009). There were no additional impaired assessment units identified. These two assessment units remained in the approved TMDL category in the 2010 Integrated Report (IDEQ, 2011). See Figure 1 for TMDL streams and their general locations.

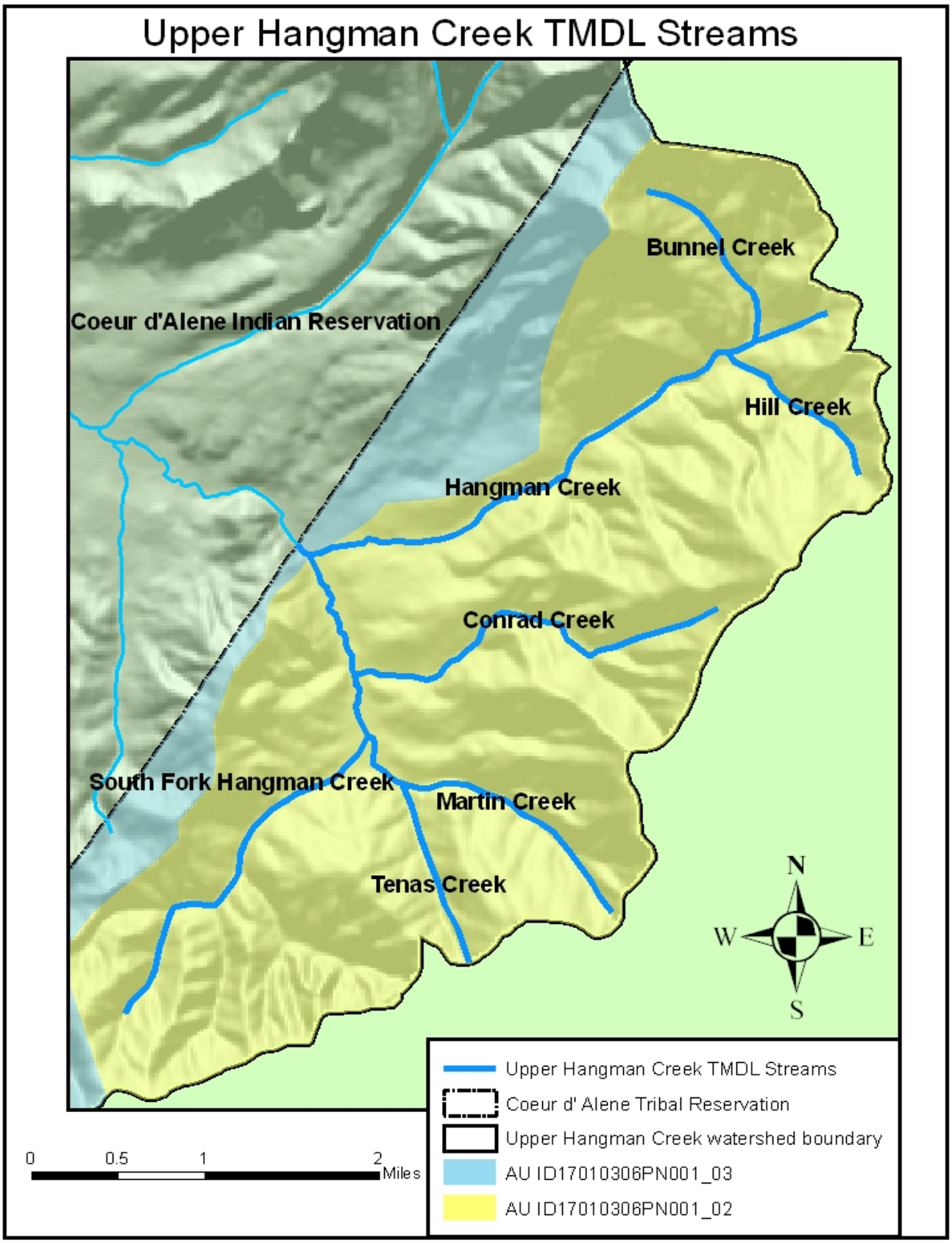

Figure 1: Upper Hangman Creek TMDL Streams (IDEQ, 2007)

Background

PROJECT SETTING

The Headwaters of Hangman Creek subwatershed only includes the headwaters above the Coeur d'Alene Tribal boundary. This area is approximately 10,000 acres (15 square miles) in size and is situated on the western edge of northern Idaho, in southern Benewah County (Figure 2).

As cited in the TMDL, Hangman Creek originates in a wooded canyon between Charles Butte and West Dennis Mountain, 4,806 feet above sea level, and flows southwest until it joins the South Fork Hangman Creek about 500 feet above the Coeur d'Alene Tribal boundary. Elevation at the Tribal boundary is about 2700 feet. The South Fork Hangman Creek originates at the base of Crane Point and flows north to Hangman Creek. From the confluence with the South Fork, Hangman Creek turns northwest and flows through the Coeur d'Alene Tribal Reservation and on into Washington State until it reaches the confluence with the Spokane River, near the city of Spokane, Washington (IDEQ, 2007).

The climate of the Hangman Creek watershed is one of transition. Precipitation varies considerably from the Palouse region to the mountains. Total annual precipitation is about 20 inches on the northwest edge of the watershed and about 45 inches in the southern mountains. Precipitation can vary 20 inches in nine miles, two inches per mile, and in some cases as much as five inches per mile (BSWCD, 1981). The mountains on the west side of the watershed provide the first relief encountered by westerly winds as they reach the eastern extremities of the Palouse prairie. As the air is uplifted and cooled, a rain shadow results on the east side. The valley shape and arrangement of surrounding mountains also creates a venturi effect, which accelerates and cools the air. The combined effects of surface relief and prevailing wind patterns creates a multitude of micro-climates in the watershed (BSWCD, 1981).

Soil units in the headwaters of Hangman Creek proper include Pinecreek-Ahrs-Honeyjones and Reggear-Clarkia-Agatha. Elsewhere throughout the upper watershed are Taney-Cald and Santa-Taney- Moctileme soil units. Taney and Santa soils are very deep, undulating to hilly or steep, slowly permeable, moderately well drained silt loams on loess-covered hills. These soils can have perched water tables in spring and be prone to flooding and high erodibility (Weisel, 1980).

The Headwaters of Hangman Creek subwatershed is primarily forested, although there are some openings. The dominant trees include grand fir, western red cedar, Douglas fir, and ponderosa pine.

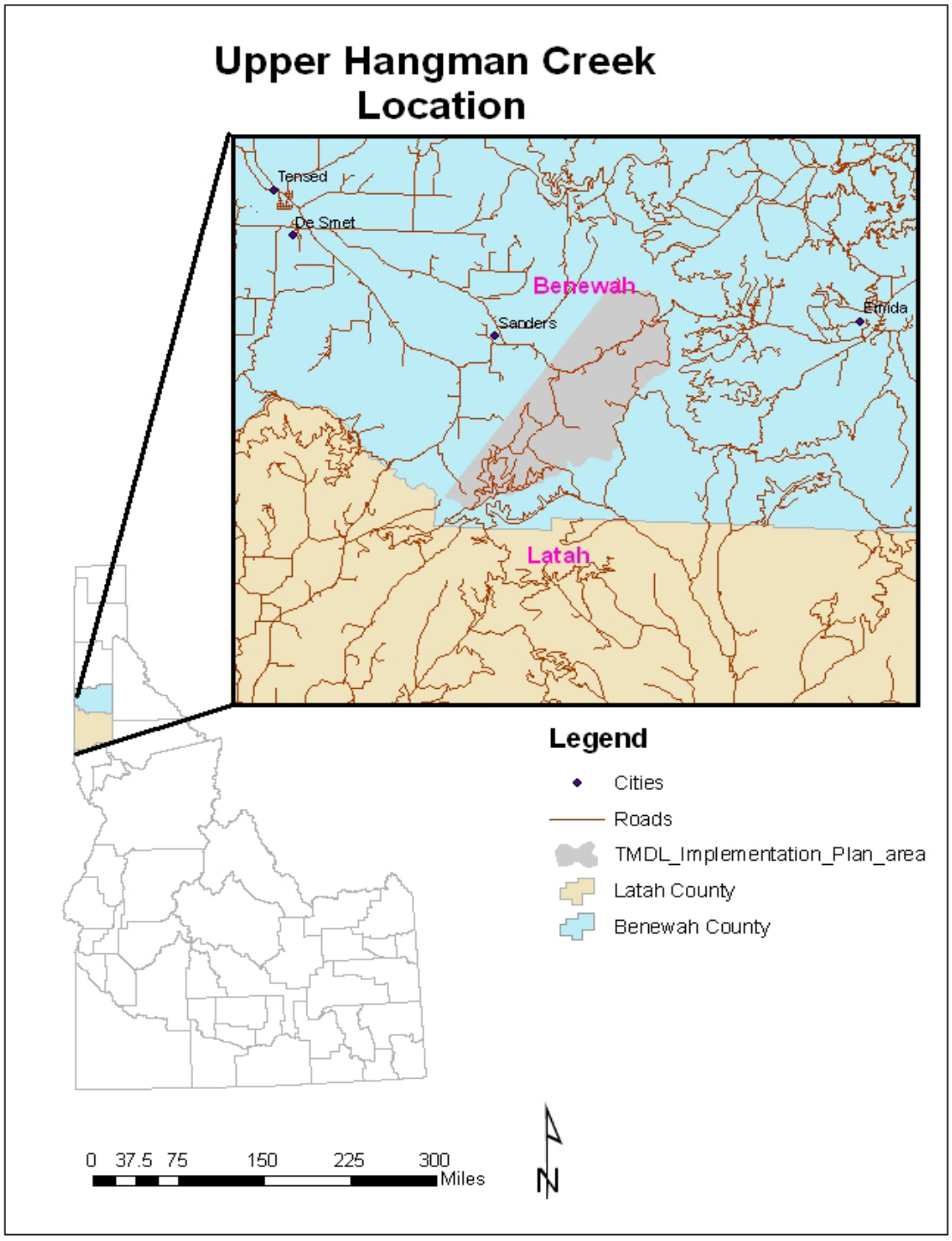

Figure 2: Upper Hangman Creek Subwatershed Location Map (ISWCC, 2011)

SUBWATERSHED STREAM CHARACTERISTICS

Streams in the subwatershed have been identified and summarized in the TMDL as follows:

- Hangman Creek from its headwaters to approximately 500 feet (152 m) below the confluence with the South Fork Hangman Creek,
- Tributaries to Upper Hangman Creek including Bunnel Creek and Hill Creek,
- South Fork Hangman Creek,
- Tributaries to South Fork Hangman Creek including Conrad Creek, Martin Creek, and Tenas Creek.

Hangman Creek and South Fork Hangman Creek are second order streams, both of which are predominantly Rosgen B channel type in their headwaters and C or F channels at lower elevations. Gradients at the lower ends of these streams are generally 1% or greater. Both are trough-like valley types with generally low sinuosity. Both streams are generally 10 feet (3 m) wide with width/depth ratios near 10.

Bunnel Creek is first order, Rosgen B channel type with about 2% gradient near its mouth. It is moderately sinuous, but with a flat bottom valley type. This stream is less than 6.5 feet (2m) wide but has width/depth ratios near 11, reflecting a very shallow system. The timber harvested section of upper Bunnel Creek has a braided channel.

Martin Creek is a first order, moderately sinuous stream with Rosgen C channel type and a gradient of 1.5% near its mouth. Channel widths were less than 10 feet (3 m) and width/depth ratios were less than 10.

LAND USE/ LAND MANAGER OR OWNER

The land is primarily privately owned with only a small amount of national forest lands. The primary land use is timber management with some residential development along major roads and some livestock grazing activity at lower elevations (Table 3 and Figure 3).

Table 3. Land use/manager in the Upper Hangman Creek Subwatershed

	Land Manager/Owner	
Land Use Category	USFS (Acres)	Private (Acres)
Forest-Forest Harvest	2,252	6,786
Agriculture-Grazing	0	728
TOTAL:	2,252	7,514

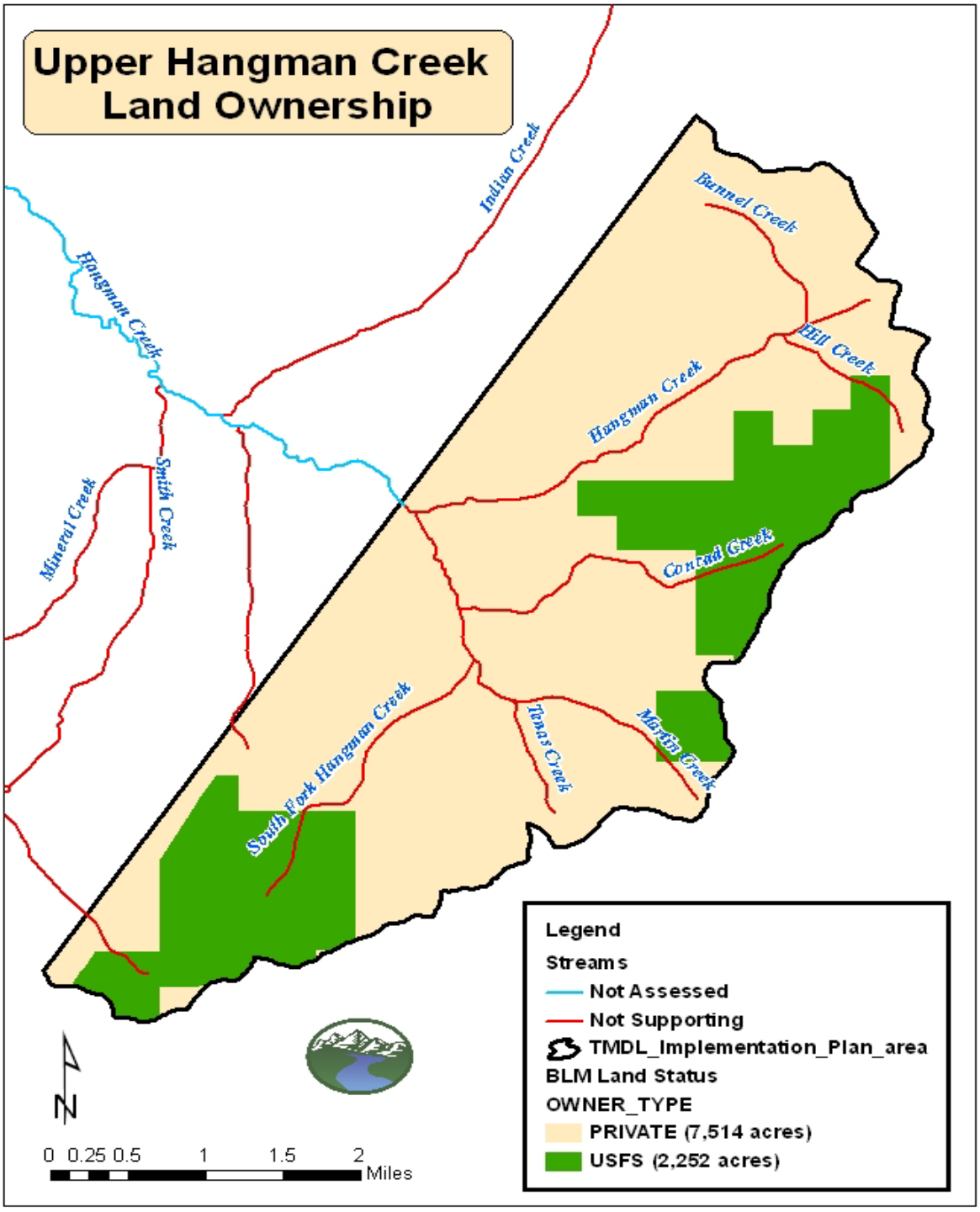

Figure 3. Upper Hangman Creek Subwatershed Land Ownership Map (ISWCC, 2011)

ACCOMPLISHMENTS

In the summer of 2010, the Benewah SWCD worked to replace an undersized culvert which was also a fish passage barrier on Bunnel Creek. Working with several partners, including Idaho Department of Lands, DEQ, Benewah County and Coeur d'Alene Tribe Fish & Wildlife Department, a 24"culvert was replaced with a 60" arch pipe culvert. The new culvert is 75 feet long. In addition, a ditch relief culvert was installed below the main culvert to divert overflow away from the creek and the road surface between the two culverts was rocked to help control erosion. The project targeted pollutant (sediment) load reductions listed in the Upper Hangman Creek TMDL through the following methods:

- Implementing an aggressive plan aimed at the reduction of sediment transport to streams and tributaries.
- Improving fish passage by installing a fish ladder on this Class I stream in 2011.
- On-going BMP effectiveness will be measured through photo documentation, field inspections, maintenance, an on-site monitoring.

Water Quality Problems

BENEFICIAL USE STATUS

Idaho water quality standards require that beneficial uses of all water bodies be protected. Beneficial uses can include existing uses, designated uses, and presumed existing uses. Designated uses are uses officially recognized by the state. In cases where designated uses have not been established by the state for a given water body, DEQ has established the presumed existing uses of supporting cold water aquatic life and either primary or secondary contact recreation. Beneficial uses for water bodies in the Headwaters of Hangman Creek subwatershed are listed below in Table 4 (IDEQ, 2005).

Table 4. Beneficial uses for listed stream segments in Upper Hangman Creek Subwatershed (2002 Integrated Report).

Water Body	Assessment Unit ID#	Beneficial Uses	Support Status
Hangman Creek	ID17010306PN001_02 ID17010306PN001_03	Designated Uses:CWAL,SCR Existing Uses: SS	Not Fully Supporting
Beneficial Uses Key: *CWAL = cold water aquatic life; SS = salmonid spawning; PCR = primary contact recreation; SCR = secondary contact recreation; SRW = special resource water.*			

POLLUTANTS

Sediment, bacteria, and temperature were the identified pollutants of concern discussed in the TMDL. Sediment allocations and reductions were set for Hangman Creek, South Fork Hangman Creek, Martin Creek, Bunnel Creek, Conrad Creek, Hill Creek, and Tenas Creek to address streambank erosion, road erosion, and mass failures. Bacteria allocations and reductions were set for Hangman Creek and South Fork Hangman Creek. Temperature or solar loading allocations and reductions were set for Hangman Creek, South Fork Hangman Creek, Martin Creek, Bunnel Creek, Conrad Creek, and Tenas Creek. Tables 5-7 summarize these TMDL findings.

Table 5. Sediment TMDL loads and required reductions.

Water Body	**Existing Load**	**Proposed Load To Meet TMDL**	**% Reduction**	**Agricultural Concerns**
Hangman Creek (Above Tribal Boundary)	753 tons/yr	339 tons/yr	55	Livestock Grazing of Riparian Areas

Table 6. Bacteria TMDL loads and required reductions.

Water Body	**Flow (cfs*)**	**Load Capacity (cfu/cfs at time of bacteria sampling*)**	**Geometric Mean (cfu/cfs at time of bacteria sampling*)**	**% Reduction**	**Agricultural Concerns**
Hangman Creek	0.35 0.266 0.246 0.232	11,203 8,542 7,899 7,450	74,992 25,571 12,741 6,388	85 67 38 0	Livestock Grazing of Riparian Areas
South Fork Hangman Creek	0.312 0.238 0.222 0.21	10,019 7,643 7,129 6,744	13,477 11,355 8,374 11,251	26 33 15 40	Livestock Grazing of Riparian Areas

*cfs= cubic feet per second; cfu= colony-forming unit.

Table 7. Average Solar TMDL loading and required reductions.

Water Body	Target or Potential Shade (%)	Existing Summer Load (kWh/day*)	Potential Summer Load (kWh/day)	% Reduction	Agricultural Concerns
Hangman Creek	90	20,137	7,386	63	Livestock Grazing of Riparian Areas
South Fork Hangman Creek	90	16,656	4,956	70	Livestock Grazing of Riparian Areas
Martin Creek	90	4,082	1,261	69	Livestock Grazing of Riparian Areas
Bunnel Creek	90	597	505	15	None Observed
Conrad Creek	90	3,809	1,835	52	Livestock Grazing of Riparian Areas
Hill Creek	90	734	550	25	None Observed
Tenas Creek	90	2,118	551	74	Livestock Grazing of Riparian Areas

*kWh/day=kilowatt hour per day.

WATER QUALITY MONITORING

Historical monitoring efforts within the Hangman Creek subwatershed date back to 1981. The Benewah Soil and Water Conservation District initiated the planning and implementation of BMPs to control sediment and nutrient pollution from agricultural cropland runoff (BSWCD, 1981). The Upper Hangman Creek TMDL, thoroughly documents monitoring efforts within the Hangman Creek subwatershed from 1981 to the completion of the TMDL. To the present, this author could not find any monitoring conducted since 2005, or post-TMDL, in the Upper Hangman Creek area.

AGRICULTURAL WATER QUALITY INVENTORY AND EVALUATION

The ISWCC conducted field inventories during the spring, summer, and early fall of 2011 (Hogen, M. 2011). These drive-by surveys were conducted for private lands within the following tributaries or areas: Hangman Creek, South Fork Hangman Creek, Martin Creek, Bunnel Creek, Conrad Creek, Hill Creek, and Tenas Creek. Field visits focused on locating actual agricultural areas, determining the agricultural use, and estimating livestock numbers, where appropriate. Livestock access to the streams was also noted. No agricultural use was observed in Bunnel and Hill Creeks. The main land use in these subwatersheds is private commercial forestry.

The main two agricultural uses found in Upper Hangman Creek subwatershed are pasture and hay land. Hay lands are typically in good to excellent condition and are on relatively flat slopes. Most of the highly productive hay fields are fertilized, but at rates well below recommended. No potential agricultural impacts were observed from hay land and/or pastures, lying outside the TMDL riparian area. The following agricultural acres were observed by land use: pasture= 140 acres; hay/ pasture= 32 acres, hay= 155 acres and grass= 401 acres. Grass areas in this plan are defined by bluegrass fields, abandoned fields with no grazing or harvesting, or possibly old CRP (Conservation Reserve Program) fields. In summary, a total of 728 acres of agricultural lands were inventoried by ISWCC within the entire Upper Hangman Creek area. This amount represents about 7% of the entire TMDL area, which according to the land ownership map is 9,966 acres (Figure 4).

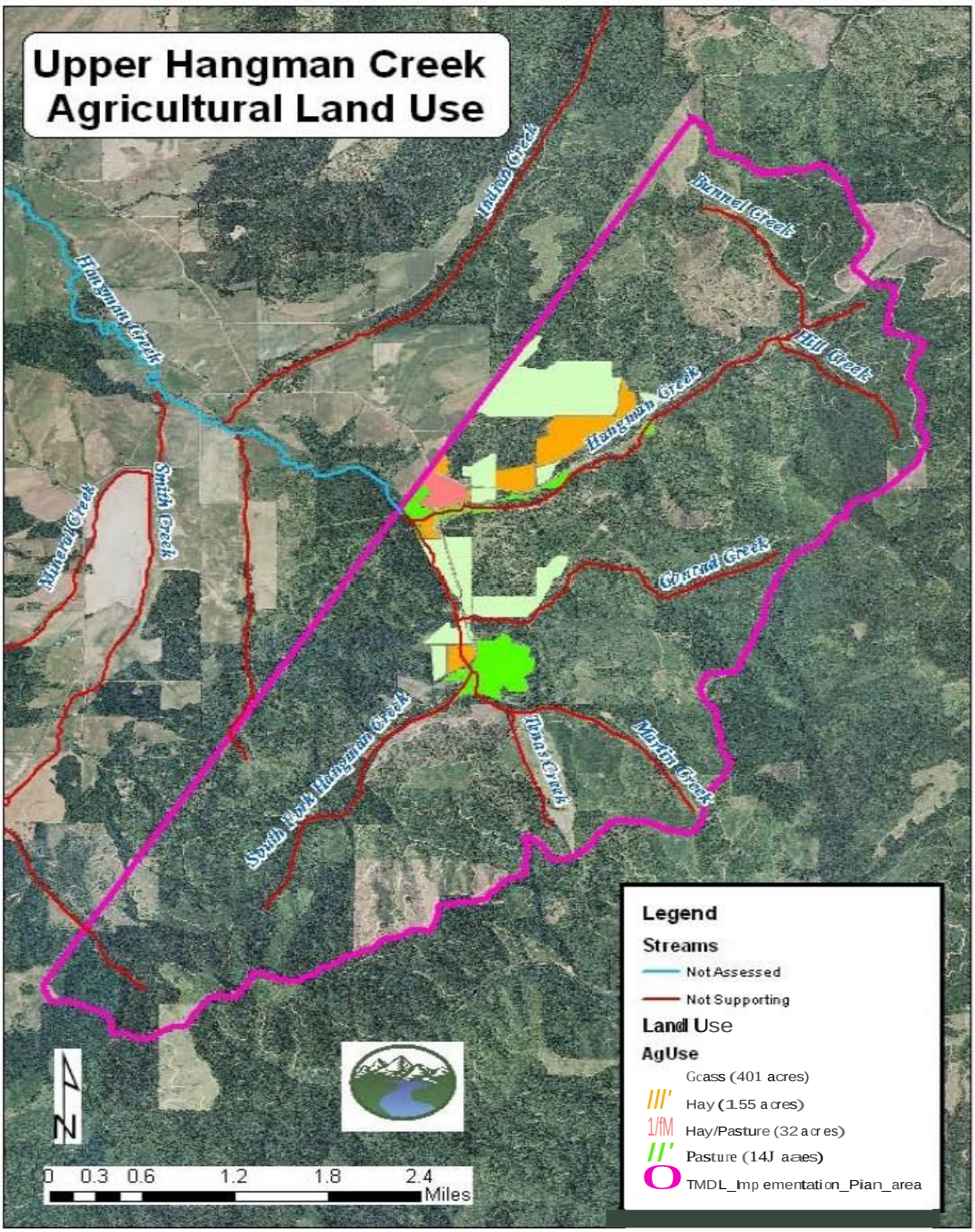

Figure 4: Upper Hangman Creek Subwatershed Agricultural Land Use (ISWCC, 2001)

Livestock numbers and their access to streams were also inventoried. Approximately 100 head of cattle and 5 horses were observed on pasture, with a majority of the animals seen directly accessing TMDL streams for water and crossing. Generally, when livestock are allowed to directly access a stream year round, negative impacts do result. Thus, for land managers in this situation, this author highly recommends the proven conservation treatment procedure lined out on page 15, under the Implementation Priority section of this plan.

Pasture and hay land condition was estimated for 327 acres during the end of September, which constitutes the end of the growing season. Over 90% of these acres were found to be in good condition. Photo documentation of representative agricultural land uses and condition, were also taken at the end of September. The following calculations and representative photos, depicts that the large majority of agricultural lands were found to be in good condition.

% Agricultural Land in Good Condition = 305 acres/ 327 acres x 100 = 93%
% Agricultural Land in Fair Condition = 4 acres/ 327 acres x 100 = 1%
% Agricultural Land in Poor Condition = 18 acres/ 327 acres x 100 = 6%

See the following representative photos in Appendix A:
Photo 1: Typical Hay/Pasture Field
Photo 2: Typical Hay Field
Photo 3: Typical Pasture Field
Photo 4: Typical Grass Field (No Agriculture Use)

ANIMAL FEEDING OPERATIONS AND DAIRIES

According to the Idaho State Department of Agriculture, the definition of an Animal Feeding Operation is: “A lot or facility where slaughter and feeder cattle or dairy heifers are confined and fed for a total of forty-five (45) days or more during any twelve (12) month period and crops, vegetation forage growth, or post harvest residues are not sustained in the normal growing season over any portion of the lot or facility” (See IDAPA 02.04.15.010; Rules Governing Beef Cattle Animal Feeding Operations).

Winter feeding of small herds of cattle, do exist in the Hangman Creek subwatershed. The animals are most likely confined for more than 45 days, but vegetative forage growth is sustained during the normal growing season. Thus, by definition, no beef cattle animal feeding operations were observed within the subwatershed. In addition, no dairies exist within this TMDL area.

THREATENED AND ENDANGERED SPECIES

Section 7 of the Endangered Species Act (ESA) 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 National Oceanic and Atmospheric Administration (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.” As a federal agency, the Natural Resources Conservation Service (NRCS) is required to follow the above mandate for all projects

implemented with federal funding. NRCS policy, as outlined in their General Manual, also includes provisions to consider State species of concern in their conservation activities (190-GM, Amend. 8, December 2003).

Impacts to T&E species and species of concern in the Hangman Creek subwatershed will be taken into account in TMDL project implementation. If it is determined that a proposed action is within close proximity to habitat used by a listed Threatened or Endangered (T&E) species or the known location of a T&E species, consultation will be 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, and helps to minimize the impacts of conservation practices to critical habitat.

The Idaho Department of Fish and Game, Idaho Natural Heritage Technical Reports (http://fishandgame.idaho.gov/content/page/idaho-natural-heritage-program-technical-reports) is available as a tool in conservation planning. The database contains documented locations for terrestrial species. This can help identify known locations of T&E species and identify critical habitat types that may harbor T&E species. Conservation planners can reference habitat requirements to help land users determine the potential benefits of their project implementation. These discussions remain confidential between the landowner and the planners.

Species listed as Threatened and Endangered under the ESA for Benewah County are summarized below:

Mammals
- Gray wolf (*Canis lupus*)
- Idaho Ground Squirrel (Spermophilus brunneus brunneus)
- Canada lynx (*Lynx canadensis*)

Birds
- Bald eagle (*Haliaeetus leucocephalus*)

Fish
- Bull trout (*Salvelinus confluentus*)

Plants
- Ute ladies'-tress (*Spiranthes diluvialis*)

Species of Concern in Benewah County include:

Wolverine (*Gulo gulo luscus*)
Harlequin duck (*Histrionicus histrionicus*)
Northern goshawk (*Accipiter gentilis*)
Westslope cutthroat trout (*Oncorhynchus clarki lewisi*)
Clustered lady's slipper (*Cypripedium fasciculatum* Kellogg ex S. Wats.)
Howell's gumweed (*Grindelia howellii*)

Implementation Priority

The TMDL agricultural implementation planning process includes assessing impacts to water quality from agricultural lands on 303(d) listed streams, and recommending a priority for installing BMPs to meet water quality objectives stated in the Upper Hangman Creek TMDL. Data from water quality monitoring and field inventory and evaluations were used to identify critical agricultural areas affecting water quality, and to set priorities for treatment. The following streams contain riparian areas impacted by agriculture, as determined visually:

- 7,300 feet of Hangman Creek:
- 900 feet of the South Fork of Hangman Creek

Riparian zone BMP implementation on either of these streams should result in sediment, bacteria, and temperature reductions. According to the above summary, Hangman Creek would provide the biggest benefit to water quality.

The recommended voluntary treatment process for private agricultural landowners within the Hangman Creek subwatershed would begin with contacting the local conservation district, the Benewah Soil and Water Conservation District. Contact information for the BSWCD is:

Benewah Soil and Water Conservation District
P.O. Box 488
Plummer, Idaho 83851
www.northidahoswcds.org

The Benewah Soil and Water Conservation District works in partnership with the Natural Resources Conservation Service and the Idaho Soil and Water Conservation Commission, to provide free technical assistance to landowners wanting to improve their agricultural lands. The process begins with a thorough resource inventory of the farm or ranch (soil, water, air, plants, and animals), and ultimately the development of a good conservation plan (for more insight on planning, go to www.oneplan.org). Once the planning process is complete, the BSWCD can assist the landowner in seeking grants or cost-sharing type programs, to help pay for needed BMP installation. A list of funding opportunities for private landowners has been included in Funding Potentials section.

CRITICAL AREAS

Agricultural areas that contribute excessive pollutants to water bodies are defined as “Critical Areas” for BMP implementation. These critical areas are then prioritized for treatment based on their location to a stream segment of concern and the potential for pollutant transport and delivery to the receiving water body. Critical areas are those areas in which treatment is considered necessary to address resource concerns affecting water quality. The following is a list of types of critical areas inventoried within the watershed:

- Unstable and eroding stream banks primarily caused by grazing (sediment).

- Pastures adjacent to stream corridors, where grazing has not been excluded from the riparian area (bacteria).
- Stream corridors that lack adequate buffering and canopy (temperature).
- Pastures with severe gully erosion.

Table 8, summarizes agricultural critical areas for pasture acres, hay land acres, and length of riparian impacted.

Table 8: Agricultural Critical Areas

Waterbody	Pasture (acres)	Hayland (acres)	Riparian Impacted (ft.)
Upper Hangman Creek South Fork Hangman Creek Conrad Creek (Gully Erosion)	47	0	7,300
	5	0	900
	25	0	2,000

Treatment

The proposed treatment for agricultural pollutant reduction will be to implement BMPs through conservation plans. Table 9 lists the recommended agricultural BMPs and estimated costs, to help restore beneficial uses to Upper Hangman Creek.

Table 9. Estimated BMP Installation and Costs for Hangman Creek

BMPs	Amount (Units)	Estimated Cost
Riparian Fence (Animal Exclusion)	8,200 Feet	$31,980
Riparian Forest Buffer	13 Acres	$45,240
Access Control (3 years)	13 Acres	$909
Heavy Use Area Protection	14,000 Square Feet	$28,000
Watering Facilities- On demand	10 Each	$13,400
Pipeline- 1.25” Plastic	10,000 Feet	$26,000
Pumping Plant -170 Watt Solar	850 Watts	$25,075
Spring Developments	2 Each	$5,160
Grade Stabilization Structures	3 Each	$7,590
Total Estimated Costs		**$183,354**

(Above table reflects 2011 EQIP total cost.)

Funding

Much of the funding that can be used to implement BMP's is available annually on a first-come first-serve basis or through a competitive review and ranking process. The Boise State University Environmental Finance Center is a valuable resource for researching funding for projects (http://efc.boisestate.edu). Chapter Four of the Idaho Nonpoint Source Management Plan also contains a listing of programs that could potentially be used for implementation funding.

Nonpoint Source Management §319 Subgrants
http://www.deq.idaho.gov /water-quality/ /water-quality/grants-loans/nps-§319-subgrants.aspx
This program provides financial assistance for the implementation of best management practices to abate non-point source pollution (NPS). The IDEQ manages the NPS program. All projects must demonstrate the applicant's ability to abate NPS pollution through the implementation of BMP's.

Conservation Improvement Grants, ISWCC
http://www.swc.idaho.gov/programs.htm
The Conservation Improvement Grant program is administered by ISWCC, in cooperation with Idaho's 50 soil and water conservation districts. This program provides financial assistance to eligible applicants for the implementation of natural resource conservation projects. The program is aimed primarily at water quality and riparian area improvement projects. A 1:1 match, cash or in-kind, is required. The match cannot originate from another cost-share program or units of government.

Conservation Reserve Program (CRP), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
The CRP program provides a financial incentive to landowners for the protection of highly erodible and environmentally sensitive lands with grass, trees, and other long-term cover. This program is designed to remove those lands from agricultural tillage and return them to a more stable cover. This program holds promise for non-point source control since its aim is highly erodible lands.

Conservation Technical Assistance (CTA), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
Technical assistance for the application of BMP's is provided to cooperators of soil conservation districts by the NRCS. Preparation and application of conservation plans is the main form of technical assistance. Assistance can include the interpretation of soil, plant, water, and other physical conditions needed to determine the proper BMP's. The CTA program also provides financial assistance in implementing BMP's described in the conservation plan.

Environmental Quality Incentives Program (EQIP), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
EQIP is a program based on the 1996 Farm Bill legislation and was reauthorized in the 2002 Farm Bill. This program combines the functions of the Agricultural Conservation Program, Water Quality Incentives Programs, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program. EQIP offers technical assistance, and cost share monies to landowners for the establishment of a two to ten year conservation agreement activities such as manure management,

pest management, and erosion control. This program gives special consideration to contracts in those areas where agricultural improvements will help meet water quality objectives.

Farm Services Agency Direct Loan Program, FSA
http://www.fsa.usda.gov/pas/default.asp
This program provides loans to farmers and ranchers who are unable to obtain financing from commercial credit sources. Loans from this program can be used to purchase or improve pollution abatement structures.

National Fish and Wildlife Foundation (NFWF) Grants in Partnership with NRCS
http://www.nfwf.org/programs/nrcsnacd.cfm
This program is implemented by the NFWF and is designed to support natural resource conservation projects on private land. The program is aimed primarily at farmers and ranchers. Eligible applicants include state and local governments, education institutions, and nonprofit organizations. Special consideration is given to grants in partnership with NRCS, Resource Conservation and Development Areas, and conservation districts. The program requires a 1:1 match of non-federal dollars or goods and services of equal value, although a 2:1 match is encouraged.

Partners for Wildlife (Partners), U.S. Fish and Wildlife Service
http://partners.fws.gov
The Partners for Wildlife program is implemented by the U.S. Fish and Wildlife Service and designed to restore and enhance fish and wildlife habitat on private lands through public/private partnerships. Emphasis is on restoration of riparian areas, wetlands, and native plant communities.

Resource Conservation and Rangeland Development Program (RCRDP), ISWCC
http://www.swc.idaho.gov/programs.htm
The RCRDP program provides grants for the improvement of rangeland and riparian areas, and loans for the development and implementation of conservation improvements.

Small Watersheds (PL-566), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
The Small Watersheds program authorizes the NRCS to cooperate in planning and implementing efforts to improve soil and water conservation. The program provides for technical and financial assistance for water quality improvement projects, upstream flood control projects, and water conservation projects.

Water Quality Program for Agriculture (WQPA), ISWCC
http://www.swc.idaho.gov/programs.htm
WQPA provides financial incentives to owners and operators of agricultural lands, to apply conservation practices to protect and enhance water quality, and fish and wildlife habitat.

Wetlands Reserve Program (WRP), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html

WRP was established to help landowners work toward the goal of "no net loss" of wetlands. This program provides landowners the opportunity to establish 30-year or permanent conservation easements, and cost-share agreements for landowners willing to provide wetlands restoration.

Wildlife Habitat Incentive Program (WHIP), NRCS
http://www.id.nrcs.usda.gov/programs/financial.html
WHIP was established to help landowners improve habitat on private lands by providing cost-share monies for upland wildlife, wetland wildlife, endangered species, fisheries, and other wildlife.

Outreach

Conservation partners in the Upper Hangman Creek area will use their combined resources to provide information about BMPs to agricultural landowners and operators to improve water quality. Newspaper articles, Benewah SWCD newsletter, watershed and project tours, landowner meetings, and one-on-one personal contact may be used as outreach tools. Outreach efforts will be coordinated with the other TMDL designated agencies where possible.

Outreach efforts will:

- provide information about the TMDL process
- supply water quality monitoring results
- accelerate the development of conservation plans and program participation
- distribute progress reports
- enhance technology transfer related to BMP implementation
- increase public understanding of agriculture's contribution to conserve and enhance natural resources
- improve public appreciation of agriculture's commitment to meeting the TMDL challenge
- identify and encourage the use of BMPs for private land management and recreation activities

Applications for technical and financial assistance will be solicited with emphasis in the Upper Hangman Creek community, through cooperation of all conservation partners. As assistance is requested from this area, high priority will be given to these and other applicants in areas critical to TMDL implementation. Assistance requests resulting in field visits allow direct contact with land managers and observation of the land. One-on-one time will be utilized to dispense information on water quality, BMPs, and available resources. Treatment applicable to the needs of the Upper Hangman Creek sub-watershed will be the focus of discussions with landowners in the vicinity.

Monitoring and Evaluation

FIELD LEVEL

At the field level, annual status reviews will be conducted to insure that the contracts are on schedule and that BMPs are being installed according to standards and specifications. BMP effectiveness monitoring will be conducted on installed projects to determine installation adequacy, operation consistency and maintenance, and the relative effectiveness of implemented BMPs in reducing water quality impacts. This monitoring will also measure the effectiveness of BMPs in controlling

agricultural nonpoint-source pollution. These BMP effectiveness evaluations will be conducted according to the protocols outlined in the Agriculture Pollution Abatement Plan and the ISWCC Field Guide for Evaluating BMP Effectiveness.

The Revised Universal Soil Loss Equation (RUSLE) is used to predict sheet and rill erosion on non-irrigated land. Direct-volume measurements are used to determine gully erosion. Stream Visual Assessment Protocol (SVAP) and Streambank Erosion Condition Inventory (SECI) are used to assess aquatic habitat, stream bank erosion, and lateral recession rates. The Idaho One Plan's CAFO/AFO Assessment Worksheet is used to evaluate livestock waste, feeding, storage, and application areas. The Water Quality Indicators Guide is utilized to assess nitrogen, phosphorus, sediment, and bacterial contamination from agricultural land.

WATERSHED LEVEL

At the watershed level, there are many governmental and private groups involved with water quality monitoring. The Idaho Department of Environmental Quality uses the Beneficial Use Reconnaissance Protocol (BURP) to collect and measure key water quality variables that aid in determining the beneficial use support status of Idaho's water bodies. The determination will tell if a water body is in compliance with water quality standards and criteria. In addition, IDEQ will be conducting a five-year TMDL review on Upper Hangman Creek in 2013.

Annual reviews for funded projects will be conducted to insure the project is kept on schedule. With many projects being implemented across the state, ISWCC developed a software program to track the costs and other details of each BMP installed. This program can show what has been installed by project, by watershed level, by sub-basin level, and by state level. These project and program reviews will insure that TMDL implementation remains on schedule and on target. Monitoring BMPs and projects will be the key to a successful application of the adaptive watershed planning and implementation process.

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APPENDIX A

Photo 1: Typical Hay/Pasture Field

Photo 2: Typical Hay Field

Photo 3: Typical Pasture Field

Photo 4: Typical Grass Field