Medicine Lodge Creek Subbasin Total Maximum Daily Load Implementation Plan for Agriculture

Developed for the

Idaho Department of Environmental Quality

Prepared by
Elliot Traher
Water Quality Resource Conservationist
Idaho Association of Soil Conservation Districts
St. Anthony, Idaho
In
Cooperation with Clark Soil and Water Conservation District

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IASCD
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Soil Conservation Districts

Table of Contents

Tables and Figures

Acronyms:

AFO - Animal Feed Operation.

BMP - Best Management Practice.

BPA - Bonneville Power Administration.

CRP - Conservation Reserve Program.

EPA - Environmental Protection Agency.

EQIP - Environmental Quality Incentives Program.

FSA - Environmental Quality Incentives Program.

HIP - Habitat Improvement Program.

IASCD - Idaho Association of Soil Conservation Districts.

ICA - Idaho Cattle Association.

IDEQ - Idaho Department of Environmental Quality.

ISCC - Idaho Soil Conservation Commission.

ISDA - Idaho State Department of Agriculture.

NRCS - Natural Resources Conservation Service.

MOU - Memorandum of Understanding.

CSWCD - Clark Soil and Water Conservation District.

RCRDP - Resource Conservation and Rangeland Development Program.

RMS - Resource Management System.

SAWQP - State Agricultural Water Quality Program.

TMDL - Total Maximum Daily Load**.**

TU - Treatment Unit.

UI-CES - University of Idaho, Cooperative Extension System.

USGS - United States Geological Survey**.**

WQLS - Water Quality Limited Segment**.**

Introduction

Purpose

The purpose of this plan is to recommend BMPs that would improve or restore physical, chemical, and biological functions for Medicine Lodge, Edie, Fritz, and Irving creeks. This plan will satisfy the requirements described in Idaho Code 39-3601. This plan will build upon past conservation accomplishments that have been made and will assist and/or compliment other subbasin efforts in restoring beneficial uses.

Goals and Objectives

The goal of the agricultural component of the Medicine Lodge Subbasin TMDL Implementation Plan is to restore cold-water biota and salmonid spawning beneficial uses in streams on private agricultural lands. The purpose of this document is to identify the BMPs that will be needed to meet the requirements of the TMDL. The implementation plan identifies BMPs to treat approximately 38 miles of streams within the subbasin. This includes more than 1,650 acres of riparian area that need to be treated.

The objectives of this plan include the following:

?? Improve riparian and stream channel habitat
?? Reduce stream channel erosion
?? Improve grazing management
?? Decrease sediment, nutrient and bacteria concentrations
?? Reduce livestock concentration on streams
?? Eliminate runoff from AFOs
?? Monitor project progress and apply adaptive management

Beneficial Use Status

Medicine Lodge Creek, Edie Creek, Irving Creek, and Fritz Creek are on the State of Idaho's 1998 303(d) list of water quality impaired water bodies. Medicine Lodge Creek (WQLS# 2206) is listed from Spring Hollow to the town of Small, Idaho. Edie Creek (WQLS# 2210) is listed from its headwaters to Medicine Lodge Creek. Irving Creek (WQLS# 2211) is listed from its headwaters to Medicine Lodge Creek and Fritz Creek (WQLS# 2212) is listed from Forks to Medicine Lodge Creek. Approximately 35 miles of creeks are listed. Beneficial uses that exist on these creeks include cold-water biota, salmonid spawning, primary contact recreation, secondary contact recreation, and agricultural water supply. Historic impacts within the subbasin have impaired the beneficial uses of Medicine Lodge Creek and its tributaries. The identified problems in the subbasin according to the IDEQ are shown in Table 1.

Table 1. Beneficial Use Support Status of Water Quality Limited Segments (IDEQ 2002)

Stream	WQLS#	Pollutant	Support Status	Concerns
Edie Creek	2210	**Flow Alteration & Sediment**	**Not full support**	**Improper Grazing & Stream Bank Erosion**
Fritz Creek	2212	Nutrients & Temperature	**Not full support**	**AFOs & Stream Bank Erosion**
Irving Creek	2211	**Habitat Alteration, Nutrients & Sediment**	**Not full support**	**Improper Grazing Management, Stream Bank Erosion**
Medicine	2206	**Flow Alteration, Sediment & Temperature**	**Not full support**	**Stream Bank Erosion, Unstable Diversions, Lack of vegetation, AFOs**

The subbasin's TMDL is scheduled for 2004, however extensive inventories and monitoring have already been completed within the subbasin providing agencies a window of opportunity to develop an early TMDL for the subbasin. A proactive approach is being taken by the CSWCD, CDWAG, IDEQ, ISCC, IASCD, and NRCS to address water quality problems for the subbasin.

Project Setting

The Medicine Lodge Creek Subbasin (USGS Hydrologic Unit Code 17040215) is located in northwestern Clark County and is 15 miles west of Dubois, Idaho. The subbasin consists of six subwatersheds, Edie, Fritz, Irving, Indian, Middle, and Medicine Lodge. The subbasin drains approximately 16,195 acres or 25 square miles. Approximately 72% of the land within the subwatersheds are privately owned. Rangeland is the predominant land use within the subwatersheds at 78% of the acres. Elevations range from 9,000 feet at Fritz Peak to 5,000 feet where Medicine Lodge Creeks disappears into the ground.

The subbasin, shown in Figure 1, is a semi-arid steppe with many miles of ephemeral and intermittent drainages. Streams within the subbasin incorporate flow from natural steady thermal springs, to receiving snowmelt directly from the Beaverhead Mountain Range. The subbasin's principal drainage is Medicine Lodge Creek. The headwaters begin at the confluence of Warm and Fritz creeks and then flows approximately 21 miles in a southeasterly direction slightly past the town of Small. The creek then dissipates from diversions and naturally sinks into the channel bed directly above the aquifer northwest of Cedar Butte (BLM 2001).

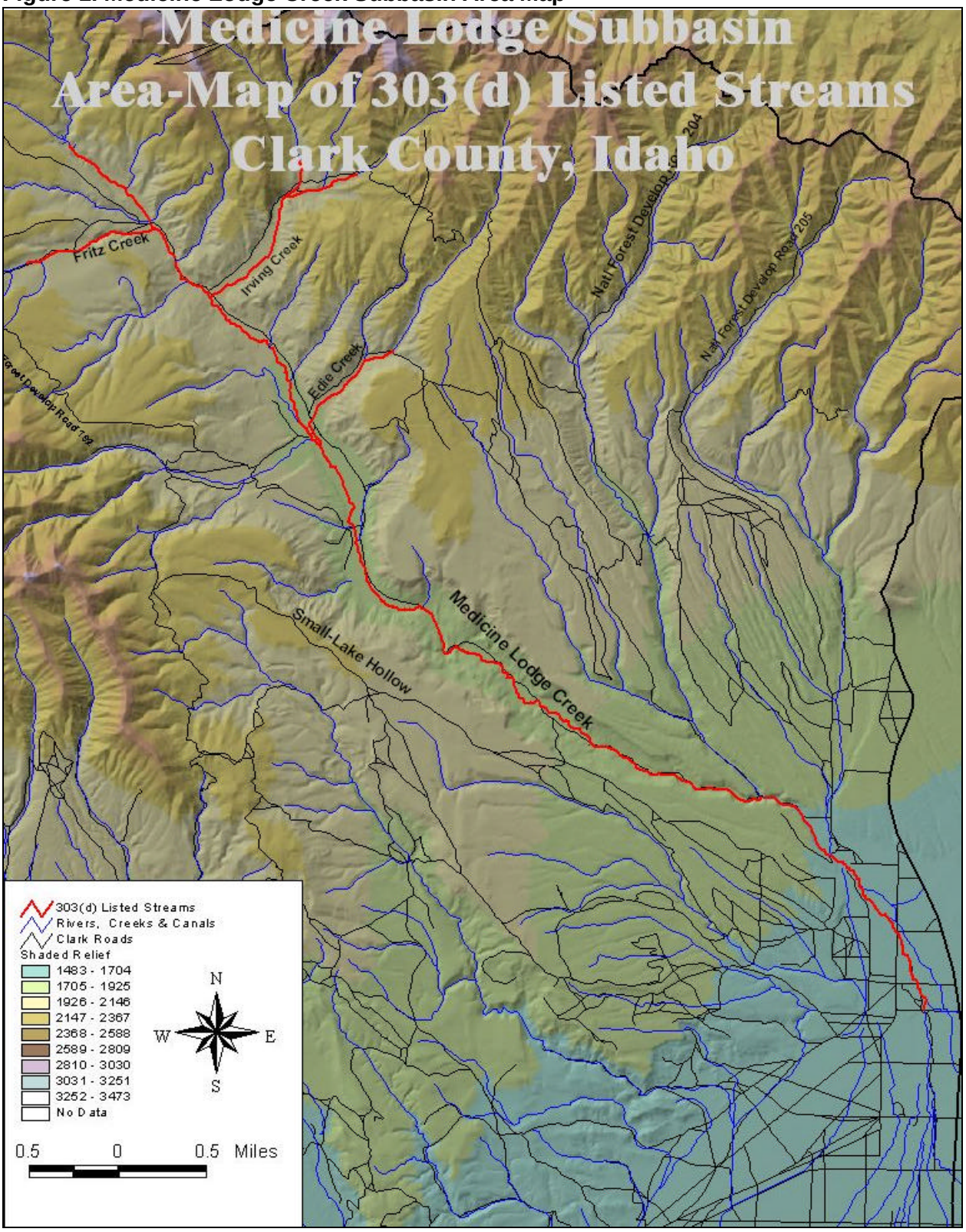
Accomplishments

Several conservation practices have been implemented within the subbasin as shown in Table 2. Most of the projects have focused on agricultural irrigation diversions, irrigation efficiency and prescribed grazing protection. Recently, five additional landowners have applied for assistance to install approximately 485 acres of riparian forest buffer with livestock exclusions through the C-CRP.

Table 2. Completed BMP Projects & Practices in the Medicine Lodge Creek Subbasin.

Target Stream	Acres Treated	Site Type	Work Type	Project Benefits	Program
Medicine Lodge Creek	127	Upland Instream	Irrigation & Grazing Modification	Water Conservation, Riparian Protection, Wildlife Enhancement, Pasture & Hay Land Management	LTA
Medicine Lodge Creek	237	Upland Instream	Irrigation & Grazing Modification	Water Conservation, Wildlife Enhancement, Pasture & Hay Land Management	RCRDP & LTA
Medicine Lodge Creek	2,100	Uplands	Grazing Modification	Wildlife Enhancement, Pasture & Hay Land Management	LTP & LTA
Medicine Lodge Creek	2,041	Uplands	Grazing Modification	Wildlife Enhancement, Pasture & Hay Land Management	LTA
Weber Creek	1,832	Uplands	Grazing Modification	Wildlife Enhancement, Pasture & Hay Land Management	CRMP
Weber Creek	10	Instream	Streambank Stabilization	Bank Erosion Reduction & Irrigation Water Conservation	CRMP
Middle Creek	39	Riparian	Irrigation & Diversion Modification	Water Conservation, Riparian Protection, Wildlife Enhancement & Fish Passage	ACP-ANA
Weber Creek	318	Upland	Grazing Modification	Riparian Protection, Wildlife Enhancement, Pasture & Hay Land Management	CRMP
Medicine Lodge Creek	500	Instream	Fencing & Streambank Stabilization	Riparian Protection, Bank Erosion Reduction	RCRDP

Figure 1. Medicine Lodge Creek Subbasin Area Map



Problem Identification

Pollutants of Concern

The following pollutants were identified on the 1998 § 303(d) list as responsible for, or contributing to, impaired water quality conditions in the Subbasin: nutrients, sediment, flow alteration, habitat alteration, and temperature (IDEQ 2002). Sediment was identified as a pollutant affecting four segments, nutrients affected three segments, temperature affected two segments, habitat alteration affected two segments, and flow alteration affected one segment. All of the identified pollutants in this subbasin originate as nonpoint sources. There are no industrial or municipal point sources of discharge. However seven animal feeding operations have been identified on Medicine Lodge Creek and it tributaries.

There are no state water quality criteria that pertain to flow alteration or habitat alteration, and it is DEQ's policy that TMDLs will not be developed for these pollutants. Among the assumptions used to compile Idaho's 1998 § 303(d) list, DEQ asserts that flow alteration and habitat alteration are 1) not defined by the Clean Water Act as pollutants, and 2) unsuitable for TMDL development (DEQ 1998). The capacity of a waterbody to support aquatic life is initially determined by the presence of water and secondarily by the quality of that water. However, the relationship between flow apportionment and water quality is clearly addressed in Idaho's water quality standards (IDAPA 58.01.02.050.01) as follows;

> The adoption of water quality standards and the enforcement of such standards is not intended to conflict with the apportionment of water to the state through any of the interstate compacts or decrees, or to interfere with the rights of Idaho appropriators, either now or in the future, in the utilization of the water appropriations which have been granted them under the statutory procedure…

Identified Problems

Based on the findings from the ICBEMP, water temperature, sediment, nutrients and stream flow alterations were the most common causes of water quality impairment (Quigley, Arbelbibe, et, al, 1997). Additional findings from BLM address current and historical conditions within the subbasin.

> *"Based on historical accounts and personal communications, many of the tributary streams to Medicine Lodge Creek long ago had extensive beaver dam complexes and ponds that provide abundant fishing opportunities. Today the hydrologic regime is altered with these streams experiencing down cutting and gullying, with a lower water table stressing and reducing remnant riparian wetland vegetation. Beaver removal, dredging, and draining of wetlands, irrigation withdrawals, improper grazing, combined with natural high flow events have all contributed to the present condition. This present condition of the stream channel compared to the earlier prevalence of beaver-dominated systems is still affecting the hydrologic regime and sediment delivery." (BLM 2001)*

Current land use practices, and structures in the subbasin are definitely contributing to the degradation of beneficial uses. The inventories completed by the NRCS and SCC clarifies that removal of vegetation and canopy cover, unstable diversions, and culverts, road encroachment, concentrated livestock feeding and watering areas are underlying factors. IDEQ presumes that beneficial uses were or would be fully supported between current and natural background loading rates. There is no data at this time that can determine what load that may be. Therefore the strategy is to establish a no net trend in load capacities through best management practices improving land use management and restoring beneficial uses. The proposed implementation will focus on four streams in the subbasin, which are on the State of Idaho's 1998 §303(d) list.

Temperature

The temperature load that can be assimilated by any of the stream segments in the subbasin without violating water quality standards or impairing beneficial uses is unknown.

Nutrients

The nutrient load that can be assimilated by any of the stream segments in the subbasin without violating water quality standards or impairing beneficial uses is unknown.

Flow Alteration

There are no state water quality criteria that pertain to flow alteration and it is DEQ's policy that TMDLs will not be developed for these pollutants.

Habitat Alteration

There are no state water quality criteria that pertain to habitat alteration, and it is DEQ's policy that TMDLs will not be developed for these pollutants.

Sediment

The sediment load that can be assimilated by any of the stream segments in the subbasin without violating water quality standards or impairing beneficial uses is unknown. Sediment reductions for individual reaches were assessed and estimated. The following table describes the sediment reductions and reveals segments of concern within the subbasin.

Table 3. Stream Bank Erosion Estimates for Medicine Lodge, Edie, Fritz & Irving Creeks.

Creek	Reach	Inventoried Length (ft)	Percent Inventoried	Existing Erosion (tons/year)	Desired Erosion (tons/year)	Percent Reduction
Edie Creek	E1	5,280	100%	11	11	0
	E2	16,896	100%	347	72	79
	E3	6,336	100%	126	13	90
Fritz Creek	F1	3,168	100%	6	6	0
	F2	6,336	100%	20	20	0
	F3	8,448	100%	19	19	0
	F4	5,280	100%	11	11	0
Irving Creek	I1	24,604	100%	893	118	87
	I2	4,858	100%	72	45	37
	I3	10,560	100%	968	148	85
	EI	9,504	100%	93	64	31
Medicine Lodge Creek	MLC1	17,952	100%	138	76	45
	MLC2	19,008	100%	125	73	42
	MLC3	4,752	100%	157	27	83
	MLC4	12,144	100%	63	63	0
	MLC5	12,000	100%	10	10	0
	MLC6	10,600	100%	367	76	79
	MLC7	17,952	100%	146	100	32
	MLC8	15,734	100%	50	29	42
	MLC9	12,672	100%	516	77	85
	MLC10	1,000	100%	0	0	0

	MLC11	16,896	100%	69	69	0
	MLC12	18,162	100%	92	63	32
	MLC13	10,560	100%	51	42	18
	MLC14	19,008	100%	105	75	29
	MLC15	24,288	100%	215	80	63
	MLC16	16,790	100%	127	91	28
	MLC17	16,896	100%	544	87	84
	MLC18	13,728	100%	175	65	63
	MLC19	6,864	100%	91	29	68
	MLC20	7,392	100%	102	16	85
	MLC21	10,560	100%	19	19	0
	MLC22	15,840	100%	169	35	79
	MLC23	2,112	100%	34	5	84

Stream Assessment Methods

Documenting Field Observations

At each reach, the teams completed field sheets. Photos were taken at the beginning and end of each reach to document conditions during the assessment. Every eroding bank was photographed and measured, inventories were completed on every 303 (d) listed stream in the sub basin, and reference sites were established for future monitoring.

Delineating Stream Reaches

The streams were divided into reaches using soils, geology, slope, sinuosity, vegetation, hydrology, roads, drainage area, valley type and land use. Elevations, slopes, stream order, and sinuosity were determined from 1:24,000 scale DRGs, DLGs and DEMs. The streams in the subwatersheds were compiled from 1:12,000 scale DOQs. Reaches are shown in Figure 2.

Assessing Aquatic Habitat Suitability

SVAP provides a simple procedure to evaluate the condition of a stream based on visual characteristics. The protocol provides an overall assessment of the condition of the stream and riparian ecosystems, identifies opportunities to enhance biological value, and conveys information on how streams function and the importance of protecting or restoring stream and riparian areas (NRCS 1998). SVAP is a qualitative method that includes 14 ranking factors and corresponding numeric values, which are then averaged to rate the reach's condition, as shown in Table 4. Eleven ranking factors are required while three factors are ranked only when applicable. Currently, NRCS requires the use of SVAP when assessing aquatic habitat and recommends that a "fair" condition be achieved as a minimum for conservation plan implementation (NRCS 2001).

Table 4. SVAP Conditions and Average Score Ranges (NRCS 1998)

SVAP Condition	Average Score
Poor	0 to 6.0
Fair	6.1 to 7.4
Good	7.5 to 8.9
Excellent	9.0 to 10.4

Estimating Stream Erosion

SECI estimates long-term stream erosion rates. This method produces an index by ranking six factors; bank stability, bank condition, bank cover, channel shape, channel bottom and deposition. The teams used

SECI to estimate erosion on the entire reach. Eroding sections, not similar to the entire reach's erosion condition, were measured and ranked separately from the rest of the reach. Stream erosion rates are estimated by applying LRRs to bank height and bank length measurements as shown in Table 5. SECI was used for comparison rather than absolute erosion rates in a sediment budget (NRCS 2000).

Table 5. SECI Conditions, Index and LRR Ranges (NRCS 2000)

SECI Condition	Index Range	LRR Range
Slight	0 to 4	0.01 to 0.05 ft/yr
Moderate	5 to 8	0.06 to 0.15 ft/yr
Severe	9 to 12	0.16 to 0.30 ft/yr
Very Severe	12 to 15	0.30 to 0.50 ft/yr

Stream Assessment Results

Summarizing the Assessment Results

CSWCD and NRCS requested permission to conduct the stream assessment. The private landowners granted the team access to all 303(d) listed streams within the subbasin. NRCS, ISCC, and IASCD began the assessment on June 5th, 2000 and finished on August 15th, 2000. The interdisciplinary team assessed approximately 38 miles of streams within the subbasin. Results for each reach are shown in Table 6. About 29 miles of Medicine Lodge Creek, 2.6 miles of Edie Creek, 2.2 miles of Fritz Creek and 4.8 miles of Irving Creek were assessed. The combined SVAP and SECI scores of the assessed reaches are shown in Figure 2. The different protocols allowed the reaches to be evaluated based upon habitat suitability and erosion condition.

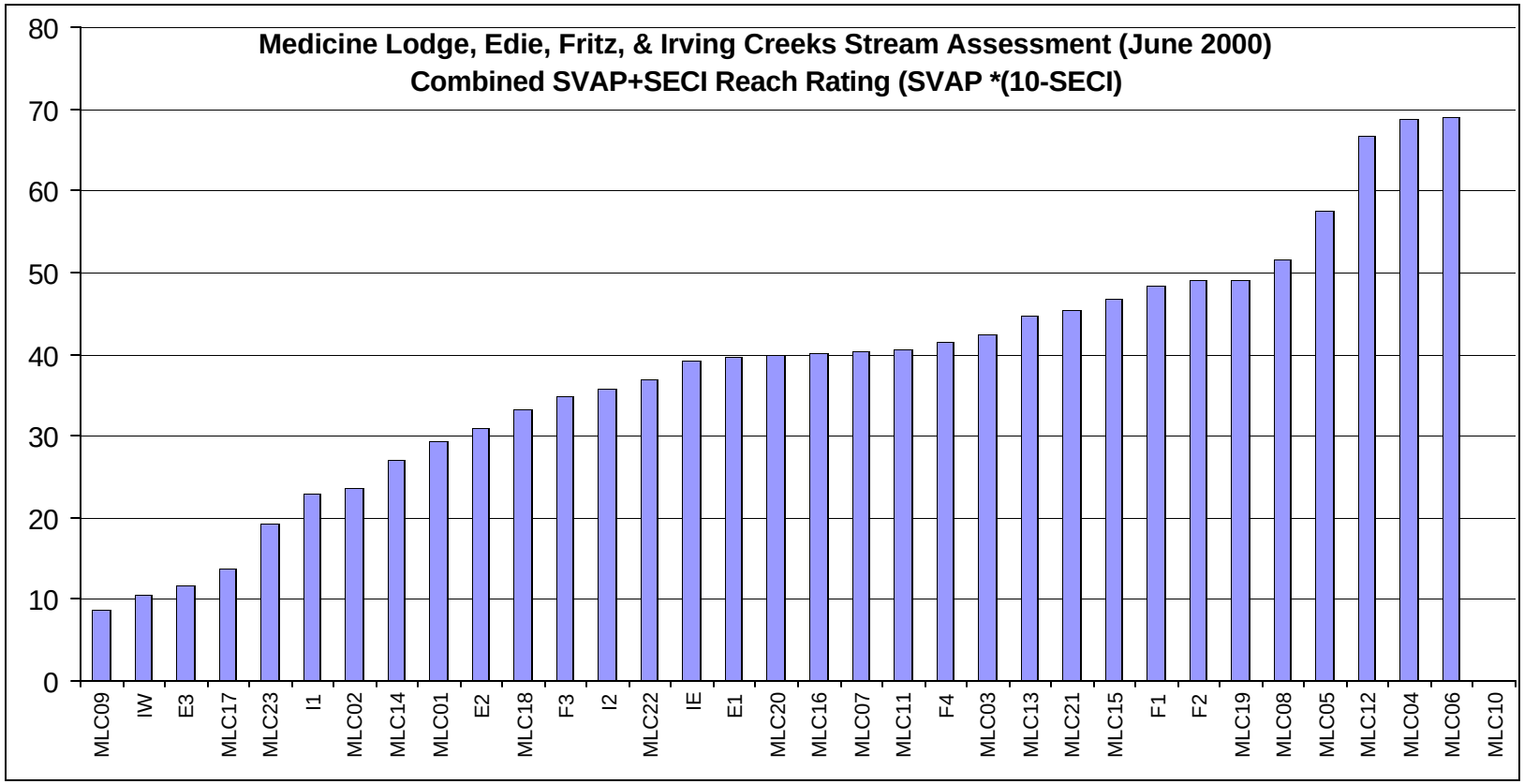
Table 6. Medicine Lodge, Edie, Fritz and Irving Creeks Assessment Summary

Reach	Length	SVAP	SECI Category	Erosion Rate*	Erosion Rate*
MLC1	1.8	Poor	Moderate	100	55
MLC2	1.8	Fair	Moderate	81	44
MLC3	0.5	Poor	Severe	157	342
MLC4	1.2	Fair	Slight	63	57
MLC5	0.7	Fair	Slight	10	15
MLC6	1.3	Fair	Moderate	89	67
MLC7	1.7	Fair	Severe	146	84
MLC8	1.5	Good	Moderate	33	22
MLC9	1.2	Poor	Severe	269	203
MLC10	0.2				
MLC11	1.6	Good	Severe	103	64
MLC12	1.7	Good	Moderate	62	37
MLC13	1.0	Fair	Severe	72	71
MLC14	1.8	Fair	Severe	217	122
MLC15	2.3	Good	Severe	93	40
MLC16	1.6	Fair	Severe	117	74
MLC17	1.6	Poor	Severe	302	190
MLC18	1.3	Fair	Severe	124	94
MLC19	0.7	Fair	Moderate	28	43
MLC20	0.7	Good	Moderate	18	27
MLC21	1.0	Fair	Slight	17	16

MLC22	1.5	Fair	Moderate	41	27
MLC23	0.2	Poor	Moderate	12	55
E1	0.5	Fair	Slight	10.8	23
E2	1.6	Fair	Moderate	84	54
E3	0.6	Fair	Moderate	57	92.7
F1	0.3	Fair	Slight	6	18
F2	0.6	Fair	Slight	20	37
F3	0.8	Poor	Slight	19	23
F4	0.5	Fair	Slight	11	21
I1	2.3	Poor	Moderate	370	158
I2	0.5	Good	Severe	72	154
IW	1.0	Poor	Severe	522	509
IE	0.9	Fair	Severe	94	98
Total	**38 miles**			**3,419 tons/yr**	**2,937 tons/mile/yr**

Erosion Rate = (Stream Length) * Bulky Density * Lateral Recession R

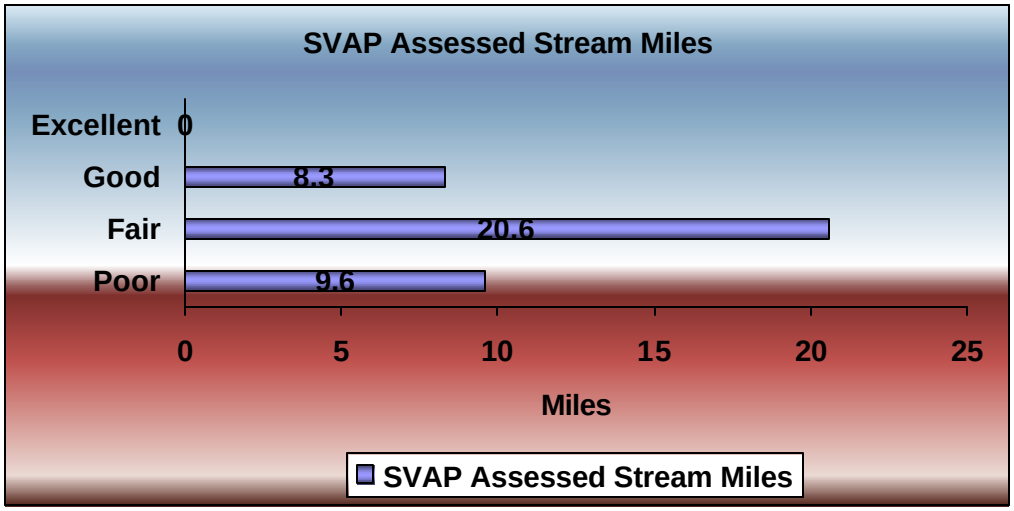
Figure 2. Medicine Lodge, Edie, Fritz and Irving Creeks SVAP/SECI Combined Chart



SVAP Results

SVAP results show that 25% or 9.6 miles of the assessed reaches were in poor condition, 53% or 20.6 miles of the assessed reaches rated in fair condition, while 22% or 8.3 miles of the assessed reaches rated in good condition and 0% rated in excellent condition. These results are Figure 4.

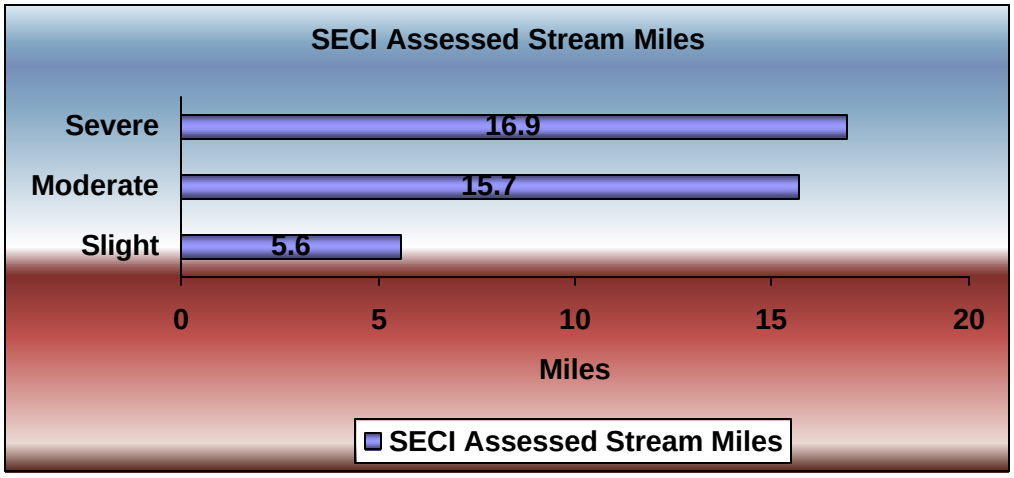
Figure 3. Percent of Assessed Stream Miles for SVAP Rating Categories



SECI Results

SECI results reveal that of the 38 miles of assessed stream miles about 15% or 5.6 miles had slight erosion. While 41% or 15.7 miles rated in moderate erosion condition and 44% or 16.9 miles rated in the severe erosion category. These results are shown in Figure 5.

Figure 4. Percent of Assessed Stream Miles for SECI Categories



Critical Areas

Areas of agricultural lands that contribute excessive pollutants to water bodies are defined as "Critical Areas" for BMP implementation. Critical areas are prioritized for treatment based on their location to a water body of concern and the potential for pollutant transport and delivery to the receiving water body. Agricultural critical areas in all of the listed stream segments within the subbasin are:

✍✍Unstable and erosive streambed or banks

✍✍Unstable irrigation diversion structures
✍✍Areas of channelization or vegetation removal
✍✍Animal Feed Operations

Tiers

There were two tiers delineated within the subbasin. These tiers were determined by the proximity of the critical areas to the §303(d) listed stream segments. Critical areas and tier amounts are shown in Table 7.

Tier 1 Unstable and erosive streambanks and riparian areas or facilities adjacent to the stream that have a direct and substantial influence on the stream.

Tier 2 Pasture and rangelands or AFOs with an indirect, yet significant influence on the stream.

Table 7. Critical Areas by Subwatershed within the Medicine Lodge Subbasin

	TMDL Implementation Tier 1		TMDL Implementation Tier 2	
Subwatershed	**Riparian**	**AFO**	**Pasture Land**	**Range Land**
Eddie Creek	118		17	1,000
Fritz Creek	96	2	0	428
Irving Creek	204		350	1,129
Medicine Lodge Creek	1,252	5	4,065	6,946
Totals	1,670		5,864	9,503

Animal Feed Operations

National Definition: The term "animal feeding operation" or AFO is defined in EPA regulations as a "lot or facility" where animals "have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 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."

The Idaho Legislature passed the Beef Cattle Environmental Control Act in the spring of 2000. Governor Kempthorne then signed this Act in April 2000. ISDA then went into a rule making process and on September 18, 2000, the "Rules of the Department of Agriculture Governing Beef Cattle Animal Feeding Operations" (IDAPA 02.04.15) became effective. Subsequent to the rules becoming effective, a Memorandum of Understanding (MOU) was written and signed by ISDA, IDEQ, ICA, and EPA in January 2001. The MOU gave ISDA authority to regulate beef cattle feeding operations that fall under the definitions of IDAPA 02.04.15 not located on Indian Reservations (ISDA 2000).

Threatened and Endangered Species

According to the Medicine Lodge Subbasin Assessment written by IDEQ, there are three species of salmonids in the Medicine Lodge Drainage. These include Yellowstone cutthroat (*Oncorhynchus clarki*), Brook trout (*Salvelinus fontinalis*) and Rainbow trout (*Oncorhynchus mykiss*). The Yellowstone Cutthroat is considered a state sensitive species in Idaho and is carefully managed by the IDFG. In 1998, it was petitioned to become a threatened species, but after review in February 2001, the USFWS declined the petition to list the Yellowstone Cutthroat under the Endangered Species Act. Medicine Lodge Creek also contains non-salmonid species of fish, including the Short-headed Sculpin (*Cottus confusus*), which are found in the majority of the tributaries as well as the main stem of Medicine Lodge Creek. Western Mosquito fish (*Gambusia affinis*), a warm water species, have also been found in Warm Springs Creek and have obviously been introduced although there are no records of this (NRCS 2002 Tech Guide).

According to the USFWS, there are two threatened species in Clark County, the Grizzly bear (*Ursus arctos horribilis*) and the Bald eagle (*Haliaeetus leucocephalus*). The Gray wolf (Canis lupus) is the only species listed as endangered in Clark County. The Gray wolf is considered experimental/non-essential under section 10(j) of the Endangered Species Act. Under these circumstances, Federal action agencies are required to confer with the USFWS if their actions are likely to jeopardize the continued existence of Gray wolves as well as any other species listed as threatened or endangered (NRCS 2002 Tech Guide).

Proposed Treatment

Treatment Units

The TUs describe areas with similar use, productivity, resource concern and treatment needs. These not only provide a method for delineating and describing land use but are also used to evaluate land use impacts to water quality and in the formulation of alternatives for solving identified problems. TUs are geographically shown in Figure 5.

Treatment Unit #1 Middle Main Stem

Acres	Soils	Description	Resource Problems
122	Soils consist of very deep, well-drained soils formed in alluvium with some loess and silty alluvium. Slopes are from 0-45% to 0-60%, permeability is moderate, with particle size ranging from silt to sand with some gravel and cobble	Straightened or manipulated channels, moderately entrenched, collapsing meanders, flat gradient, with minimal canopy cover.	Sediment from bank erosion Head cutting from failing culverts Bank trampling from livestock Unstable irrigation diversions Temperature from lack of canopy cover, Meadow dewatering from down cutting Nutrients from the livestock.

Treatment Unit #2 Lower Tributaries

Acres	Soils	Description	Resource Problems
275	Soils consist of very deep, somewhat poorly drained soils that formed in recent alluvium from welded tuff and basalt to well drained soils on mountains that formed in local alluvium or colluvium derived from limestone and loess. Permeability is from slow to moderate, slope are from 0-4% to 4-70% and the typical pedon ranges from a silt loam to a very gravelly loam.	Somewhat wide streams of low gradient (1%). Depositional areas, with high width to depth ratio. Poorly constructed irrigation diversions	Sediment from streambank erosion, livestock concentration, and failing beaver dams. Temperature increase from lack of canopy cover, downing cutting and meadow dewatering. Possible nutrient contribution from animal impact.

Treatment Unit #3 Tributaries

Acres	Soils	Description	Resource Problems
211	Soils mostly consist of very deep, well drained soil that form in alluvium from calcareous siltstone, mudstone, sandstone, quartzite, basalt and tuff. They have slopes of 4 to 7%. Soils vary from gravelly silty loams to very gravelly loams with slow to moderate permeability.	Wide streams of high gradient (2-3%). Moderately entrenched with cut banks. Fine sediment deposition and high grazing use.	Sediment from streambank erosion, livestock concentration, and failing beaver dams. Temperature increase from lack of canopy cover, downing cutting, meadow dewatering and natural warm springs. Possible nutrient contribution from animal impact.

Treatment Unit #4 Lower Main Stem

Units	Soils	Description	Resource Problems
172	Soils are very deep, well drained	Moderately	Sediment from streambank

	formed in alluvium with some loess and silty alluvium from loess influence on fan terraces, foothills and mountain slopes. Slopes are 0-60%, moderate permeability, with a typical pedon consisting of a gravelly silt loam	entrenched, with flat gradients, minimal canopy cover, diversions, feedlots and animal crossing	erosion, poor/failing culverts, and failing diversion. Increase in temperature from lack of canopy cover, widening streams and meadow dewatering.

Treatment Unit #5 Upper Main Stem

Acres	Soils	Description	Resource Problems
330	Soils are very deep, well-drained formed in slope alluvium derived from calcareous siltstone, shale and some limestone. Slopes are 0-70%, moderate permeability, with a typical pedon consisting of a loam	Widening streams of low gradient (1%). Low cut banks, woody vegetation, fine sediment, and lack of pasture.	Sediment from concentrated livestock and upland area. Increase in temperature from lack of canopy cover and nutrients from concentrated grazing animals.

Treatment Unit #6 Upper Tributaries

Acres	Soils	Description	Resource Problems
200	Soils consist of very deep, well drained soils that formed in recent alluvium from welded tuff and basalt to well drained soils on mountains that formed in local alluvium or colluvium derived from limestone and loess. Permeability is from slow to moderate, slopes are from 0-4% and 4-70% and ranges from a silt loam to a very gravelly loam.	Narrow streams of low gradient. Very little in-channel sediment, with low width to depth ratio	Overgrazing resulting in decreased vegetative condition, suitability, and composition. Unstable and eroding streambanks. Sediment from failing beaver dams and poor constructed culverts. Increased water temperature. Increased bacterial contribution to the stream.

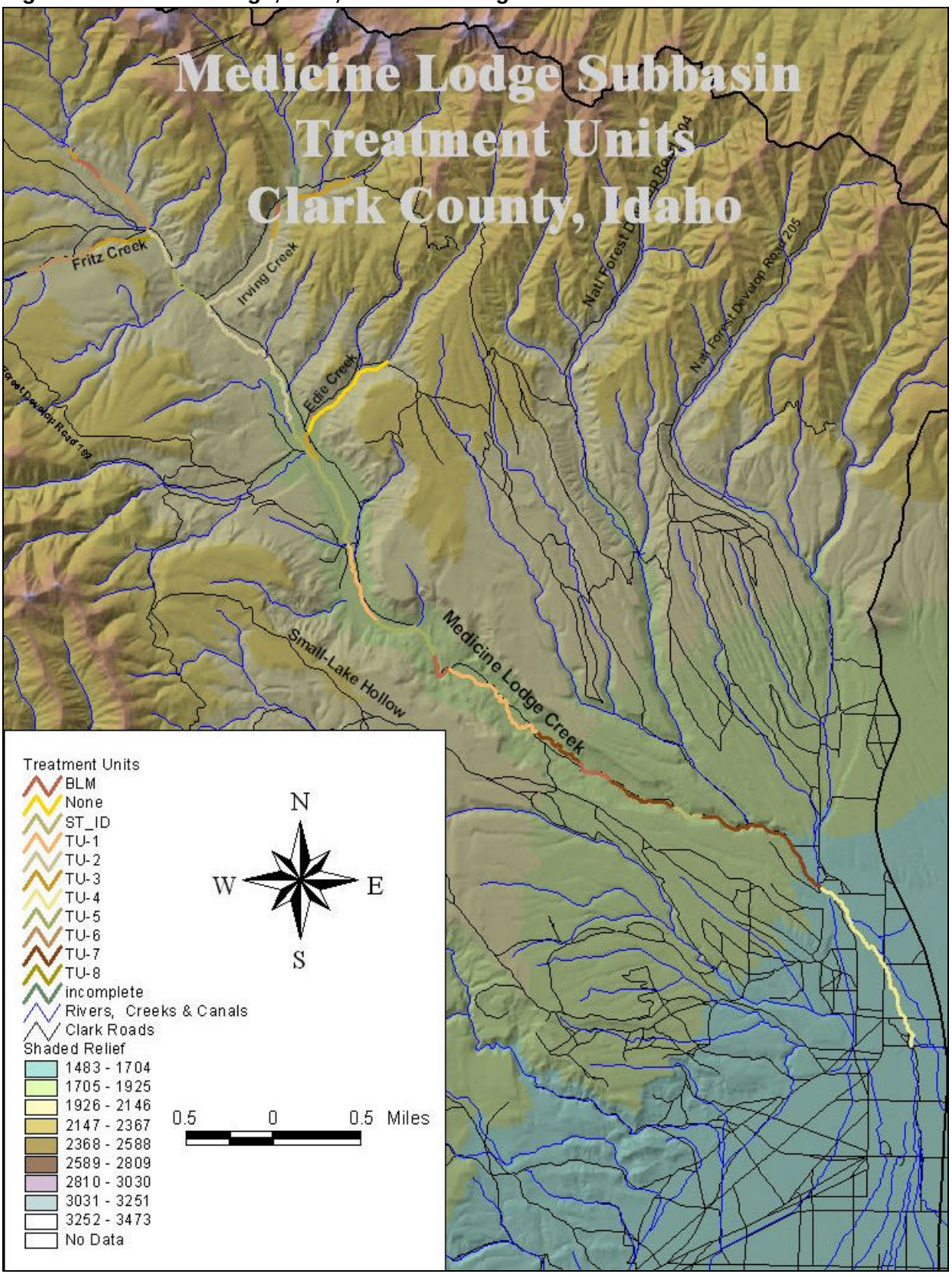
Treatment Unit #7 Main Stem

Acres	Soils	Description	Resource Problems
282	Soils are very deep, well-drained formed in slope alluvium and in calcareous loess derived from calcareous siltstone, shale, and rhyolite. Slopes are 1-70%, moderate permeability, with pedons ranging from a loam to a gravelly silt loam.	Narrow valley, straight, high canopy cover, some road encroachment, and few ox-bow cutoffs.	Sediment from road, nutrients from recreation.

Treatment Unit #8 Lower Fritz Creek

Units	Soils	Description	Resource Problems
13	Soils range from well drained and moderately deep to very deep and poorly drained. Formed from recent alluvium from mixed sources, permeability ranges from moderate to slow, slopes range from 0-12% and the typical pedon would be a silt loam.	Moderately entrenched, flat gradient, coarse soils, with no canopy cover, high width to depth ratio and large macrophyte beds.	Temperature from lack of canopy cover, from stream widening and from warm springs. Nutrients from grazing animals and possible septic.

Figure 5. Medicine Lodge, Edie, Fritz and Irving Creeks Treatment Units



BMP Implementation

The proposed treatment for sediment, nutrient and temperature reduction will be to implement BMPs through RMS conservation plans in TUs within each subwatershed. RMS plans are a combination of BMPs and is defined in Idaho's Agricultural Pollution Abatement Plan. Table 8 lists the estimated cost of BMPs.

Table 8. Total BMP Costs for the entire Medicine Lodge Subbasin (all treatment units)

Treatment Units 1-8: Middle Main Stem, Lower Tributaries, Tributaries, Lower Main Stem, Upper Main Stem, Upper Tributaries, Main Stem, Lower							
Components	**Unit Type**	**Unit Cost**	**C/S Percent**	**Unit Amount**	**C/S Funds**	**Operator Funds**	**Total Funds**
Prescribed Grazing - 528							
Prescribed Grazing System	Ac	$22.49	75%	1,134	$19,129	$6,376	$25,506
Riparian Exclusion	Ac	$74.87	75%	290	$16,284	$5,428	$21,713
Riparian Forest Buffer - 319							
Trees shrubs, Bareroot	Ft	$4.81	75%	94,409	$340,301	$113,434	$453,735
Trees Shrubs, Containerized	Ft	$2.39	75%	97,609	$175,294	$58,431	$233,726
Fence 4-Wire	Ft	$1.5	75%	204,271	$229,805	$76,601	$306,406
Streambank Protection - 580							
Vegetation Revetments	Ft	$44.52	75%	8,837	$29,508	$9,836	$39,345
Poles or Bundles	Ft	$3.00	75%	49,228	$20,763	$6,921	$27,684
Clump Planting	Ft	$10.00	75%	2,424	$18,180	$6,060	$24,240
Barbs	Each	$1,000	75%	49	$36,750	$12,250	$49,000
Toe Rock	Ft	$29.60	75%	4,200	$93,240	$31,080	$124,320
Stream channel Stabilization - 584							
Rock V-weir	Each	$1,568	75%	44	$51,750	$17,250	$69,000
Structures for Water Control							
Diversions	Each	$3,654	75%	13	$35,625	$11,875	$47,500
Diversions (concrete, pipe, fish screens)	Each	$21,250	75%	4	$63,750	$21,250	$85,000
Rock V-weirs	Ft	$1,000	75%	6	$4,500	$1,500	$6,000
Animal Trails and Walkways - 575							
Crossing	Each	$1,800	75%	5	$6,750	$2,250	$9,000
Water Facilities - 614							
Water Gaps	Each	$2,500	75%	57	$106,875	$35,625	$142,500
Water Developments	Each	$5,000	75%	10	$37,500	$12,500	$50,000
Waste Storage Facilities - 313							
Corral Dikes	Ft	$4.5	75%	1,500	$5,062	$1,687	$6,750
Corral Systems	Each	$8000	75%	4	$24,000	$8,000	$32,000
				Totals	$1,315,069	$438,356	$1,753,425

Funding

Current funding for implementation of agricultural projects is being provided through WQPA, §319, C-CRP programs. Other potential funding sources being evaluated include EQIP, RCRDP, and BPA.

Information and Outreach

The conservation partnership (CSWCD, ISCC and USDA-NRCS) will use their combined resources to provide information to agricultural landowners and operators within the subbasin. A local outreach plan will be developed by the conservation partnership. Newspaper articles, district newsletters,

watershed and project tours, landowner meetings, and one on one personal contact will be used as outreach tools. Outreach efforts will:

- Provide information about the TMDL process.
- Provide water quality monitoring results.
- Accelerate the development of conservation plans and program participation.
- Provide progress reports.
- Enhance technology transfer related to BMP implementation.
- Increase awareness of agriculture's contribution to conserve and enhance natural resources.
- Increase the public's awareness of agriculture's commitment to meeting the TMDL challenge.

Evaluation an Monitoring

Evaluation and monitoring will be an integral component of this implementation plan. At the field level the ISCC and USDA-NRCS will complete annual status reviews in cost-share programs such as EQIP, CRP, WQPA, RCRDP, and §319. In addition, the ISCC will complete BMP effectiveness evaluations through out the implementation phase. The ISCC has an established BMP evaluation format and process that will be implemented in conjunction with the annual status reviews. Evaluation protocols have been developed for many water quality BMPs and component practices. Should the situation arise where an appropriate protocol is lacking, the ISCC will work with agencies such as USDA-NRCS, UI-CES, IDEQ, and CSWCD to develop the needed protocol.

At the subbasin level, ISDA and IASCD water quality analysts will provide water quality monitoring. The CSWCD plans to coordinate with IASCD and ISDA in developing a water quality BMP effectiveness-monitoring plan for the entire subbasin. Currently, monitoring is being conducted by the IDEQ. Efforts to develop a monitoring plan have already begun. It is anticipated the plan will be finalized by June 1, 2002 with actual monitoring soon after.

Table 9. Action items to be completed in the Medicine Lodge Subbasin

Priority Subwatershed	Action Item	Completion Date
1. Medicine Lodge Creek	Outreach efforts for example projects, tours and newsletters	
	Complete conservation plans with project contracts	
2. Irving Creek	Outreach efforts for example projects, tours and newsletters	
	Complete conservation plans with project contracts	
	Ongoing surveys and inventories for the west fork	
3. Fritz Creek	Outreach efforts for example projects, tours and newsletters	
	Complete conservation plans with project contracts	
4. Edie Creek	Complete conservation plans with project contracts	
	Outreach efforts for example projects, tours and newsletters	

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