Lemhi River Subbasin Assessment

And

Total Maximum Daily Load

Implementation Plan for Agriculture

For the 2012 Addendum and Five-Year Review



Prepared for the Idaho Department of Environmental Quality

By

The Idaho Soil and Water Conservation Commission for use of the Lemhi Soil and Water Conservation District and their partners.

IDAHO
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CONSERVATION COMMISSION

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Abbreviations, Acronyms, and Symbols

§303(d) refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section

§319 refers to Section 319 of the Clean Water Act established a grant program under which states, territories, and tribes may receive funds to support a wide variety of nonpoint source pollution management activities.

ºF degrees Fahrenheit

AFO animal feeding operation

AMA Agricultural Management Assistance

ACEP Agricultural Conservation Easement Program

AU assessment unit

BLM Bureau of Land Management

BMP best management practice

BURP Beneficial Use Reconnaissance Program

C Celsius

CFR Code of Federal Regulations

CAFO confined animal feeding operation

CTP Conservation Technical Assistance

CRP Conservation Reserve Program

CSP Conservation Security Program

CW cold water

CWA Clean Water Act

DEQ Department of Environmental Quality

E. coli *Escherichia coli*

EPA United States Environmental Protection Agency

EQIP Environmental Quality Incentive Program

GIS geographic information systems

GLCI Grazing Land Conservation Initiative

HIP Habitat Improvement Program

HUC hydrologic unit code

ICA Idaho Cattle Association

IDAPA Refers to citations of Idaho administrative rules

IR integrated report
ISDA Idaho State Department of Agriculture
MOU memorandum of understanding
NMP nutrient management plan
PCR primary contact recreation
PNV potential natural vegetation
PL public law
RCRDP Resource Conservation and Rangeland Development Program
RMS resource management system
RUSLE Revised Universal Soil Loss Equation
SGI Sage Grouse Initiative
SS salmonid spawning
SCR secondary contact recreation
SECI Streambank Erosion Condition Inventory
SISL Surface Irrigation Soil Loss
SVAP stream visual assessment protocol
SWCC Soil and Water Conservation Commission
SWCD Soil and Water Conservation District
TMDL total maximum daily load
TSS total suspended solids
TU treatment units
USFS United State Forest Service
WLFW Working Lands for Wildlife

INTRODUCTION

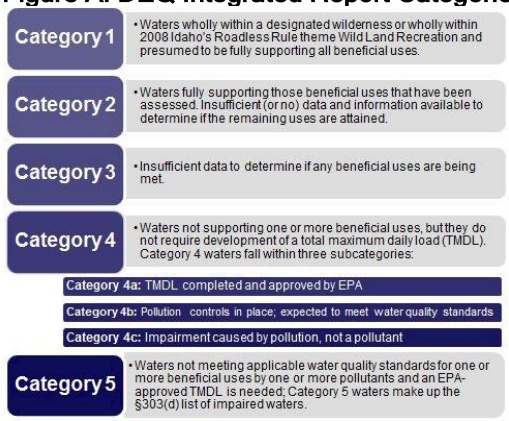
PURPOSE

The Lemhi River Subbasin Assessment and Total Maximum Daily Load Implementation Plan for Agriculture for the 2012 Addendum and Five-Year Review outlines an adaptive management approach for implementation of best management practices (BMPs) and resource management systems (RMS) on agricultural lands to meet the requirements of the Lemhi Subbasin TMDLs. The plan will attempt to identify critical areas in the privately-owned agricultural areas of the subbasin to prioritized funding and target areas for implementation of BMPs and RMS.

GOALS AND OBJECTIVES

The goal of this plan is to provide a strategy for agriculture to assist and/or complement other watershed efforts in restoring and protecting beneficial uses for water quality impaired streams in the Lemhi River Subbasin (HUC 17060204). These water quality impaired assessment units are identified in the Idaho Department of Environmental Quality (DEQ) Lemhi River Subbasin Assessment
And Total Maximum Daily Load Implementation Plan for Agriculture For the 2012 Addendum and Five-Year Review.

Figure A: DEQ Integrated Report Categories



Source: DEQ website Jan 2020
http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report/

The federal Clean Water Act requires states to conduct a biennial comprehensive analysis of state waters to determine if water bodies meet state water quality standards and thus support beneficial uses, or if additional pollution controls are needed. DEQ meets this requirement by preparing Idaho's Integrated Report. The report serves as a guide for developing and implementing water quality improvement plans (aka Total Maximum Daily Loads) to protect water quality and achieve federal and state water quality standards. DEQ categorizes state surface waters into 5 categories in their Integrated Report. (see Figure A) Impaired surface waters are evaluated and a TMDL prepared outlining pollutant limits and to serve as a guide to management decisions.

DEQ divides streams and rivers into Assessment Units (AU) based on Strahler stream order and GIS information of land use designations from the National Land Cover Database. AUs addressed in the Lemhi TMDL are summarized in Table 2.

Table 1. 2010 Integrated Report Category 5 list for the Lemhi River subbasin.

Waterbody/Assessment Unit	Listed Pollutants
Lemhi River – Kenney Creek to mouth ID17060204SL001_06	Temperature, Total Coliform (Bacteria)
McDevitt Creek – diversion to mouth ID17060204SL007a_03	Low flow alteration
Mill Creek – diversion to mouth ID17060204SL026_02	Sediment/siltation; cause unknown (nutrients suspected)
Walter Creek – source to mouth ID17060204SL027_02	Combined biota/habitat bioassessments; Sediment/siltation; Fecal coliform
Lemhi River – confluence of Eighteenmile Creek and Texas Creek ID17060204SL030_04	Temperature
Lemhi River – confluence of Eighteenmile Creek and Texas Creek ID17060204SL030_05	Temperature
Texas Creek ID17060204SL036_03	Combined biota/habitat bioassessments; Sediment/siltation; Fecal coliform
Eighteenmile Creek – Hawley Creek to Mouth ID17060204SL041_04	Temperature
Eighteenmile Creek – Clear Creek to Hawley Creek ID17060204SL042_03	Temperature
Eighteenmile Creek – Divide Creek to Hawley Creek ID17060204SL045_02	Fishes Bioassessments; Temperature
Eighteenmile Creek – source to Divide Creek ID17060204SL045_02	Combined biota/habitat bioassessments assumed to result from temperature
Hawley Creek - diversion to mouth ID17060204SL050a_03	Cause unknown (nutrients suspected)
Canyon Creek – source to mouth ID17060204SL051b_02	Combined biota/habitat bioassessments; *E. coli*
Little Eightmile Creek – diversion to mouth ID17060204SL052a_02	Temperature
Little Eightmile Creek – source to diversion ID17060204SL052b_02	Temperature
Sandy Creek – source to diversion ID17060204SL062b_02	Temperature
Bohannon Creek – diversion to mouth ID17060204SL064a_02	Temperature
Bohannon Creek – source to diversion ID17060204SL064b_02	Temperature

Table 2. Summary of assessment outcomes for assessment units listed in the Category 5, "Impaired Waters", of the DEQ 2010 Integrated Report for the Lemhi River Total Maximum Daily Loads and Five-Year Review: Addendum to the Lemhi Rive Subbasin Assessment and TMDL DEQ 2012.

Assessment Unit/ Water Body Segment	*Listed Pollutants*	*TMDL Completed*	*Recommended Changes to Idaho's Integrated Report*	*Justification*
ID17060204SL001_06 Lemhi River – Kenny Creek to Mouth	Temperature; Total Coliform	Yes	List in Category 4a for Temperature; Delist from Category 5 for Total Coliform	Temperature TMDL completed based on PNV[1]: EPA approved TMDLs for *E. coli* and fecal coliform in 2000.
ID17060204SL007a_03 McDevitt Creek – diversion to mouth	Low flow alterations	No	List in Category 4c, Delist from Category 5	Low flow should be listed in Category 4c and not in Category 5.
ID17060204SL0026a_02 Mill Creek – diversion to mouth	Sediment; Cause unknown (nutrients suspected)	No	Leave in Category 4c; Delist from Category 5	Low flow alterations; other flow regime alterations are sole cause of impairment
ID17060204SL027_02 Walter Creek – Source to mouth	Combined biota/habitat bioassessments	No	Leave in Category 4c; Delist in Category 5	Low flow alterations are sole cause of impairment
ID17060204SL030_04 Lemhi River – confluence of Eighteenmile Creek and Texas Creek	Temperature	Yes	List in Category 4a	Temperature TMDL based on Potential Natural Vegetation (PNV)
ID17060204SL030_05 Lemhi River – confluence of Eighteenmile Creek and Texas Creek	Temperature	Yes	List in Category 4a	Temperature TMDL based on PNV

Assessment Unit/ Water Body Segment	*Listed Pollutants*	*TMDL Completed*	*Recommended Changes to Idaho's Integrated Report*	*Justification*
ID17060204SL036_03 Texas Creek	Combined biota/habitat bioassessments; Sediment; Fecal Coliform	No	Leave in Category 5	Data gaps – inaccessible due to private land use entire Assessment Unit
ID17060204SL041_04 Eighteenmile Creek – Hawley Creek to Mouth	Temperature	Yes	List in Category 4a	Temperature TMDL based on PNV
ID17060204SL042_03 Eighteenmile Creek – Clear Creek to Hawley Creek	Temperature	Yes	List in Category 4a; List in Category 4c for low flow alteration	Temperature TMDL based on PNV; low flow alterations
ID17060204SL043_03 Eighteenmile Creek – Divide Creek to Hawley Creek	Fishes bioassessments; Temperature	Yes	Delist for fishes bioassessments; List in Category 4a for temperature; List in Category 4c for low flow alterations	Temperature TMDL based on PNV; low flow alterations
ID17060204SL045_02 Eighteenmile Creek – source to Divide Creek	Combined biota/habitat bioassessments	Yes	Delist for combined biota; List in Category 4a for Temperature; List in Category 4c for low flow alterations	Temperature TMDL based on PNV; low flow alterations
ID17060204SL050a_03 Hawley Creek – diversion to mouth	Cause unknown (nutrients suspected)	No	Delist for cause unknown; List in Category 4c	No nutrient sources; Low flow alterations are sole cause of impairment
ID17060204SL051b_02 Canyon Creek – source to diversion	Combined biota/habitat bioassessments; bacteria (*E. coli*)	Yes	Delist for combined biota; List in Category4c; List in category 4a for *E.coli*	E. coli TMDL completed; Low flow alterations

Assessment Unit/ Water Body Segment	*Listed Pollutants*	*TMDL Completed*	*Recommended Changes to Idaho's Integrated Report*	*Justification*
ID17060204SL052a_02 Little Eightmile Creek – diversion to mouth	Temperature	Yes	List in Category 4a	Temperature TMDL based on PNV
ID17060204SL052b_02 Little Eightmile Creek – source to diversion	Temperature	Yes	List in Category 4a	Temperature TMDL based on PNV
ID17060204SL062b_02 Sandy Creek - source to diversion	Temperature	Yes	List in Category 4a	Temperature TMDL based on PNV
ID17060204SL064a_02 Bohannon Creek – diversion to mouth	Temperature	Yes	List in Category 4a	Temperature TMDL based on PNV
ID17060204SL064b_02 Bohannon Creek – source to diversion	Temperature	Yes	List in Category 4a; List in Category 4c for low flow alteration	Temperature TMDL based on PNV; Low flow alteration
ID17060204SL066a_03	Has existing temperature TMDL	Yes	Keep in Category 4a and Category 4c	Revises existing temperature TMDL; PNV method replaces earlier load allocation method

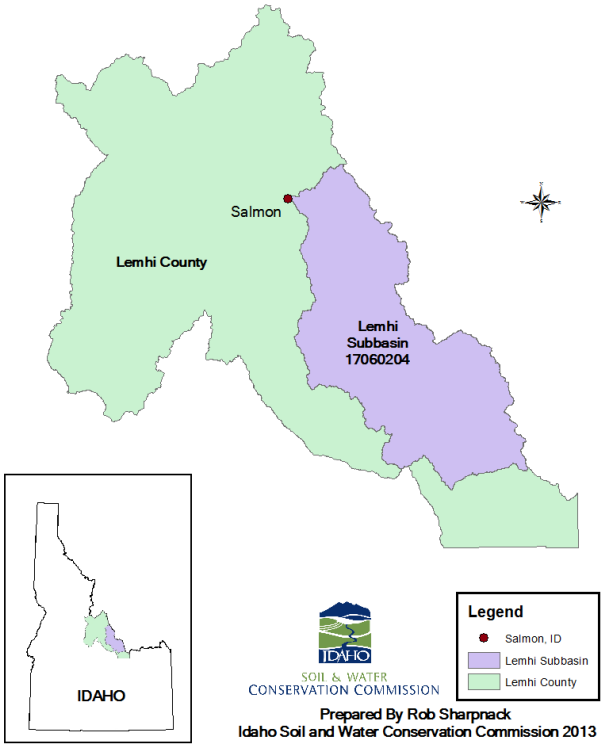
This implementation plan will provide guidance to the Lemhi Soil and Water Conservation District and agricultural producers in the Lemhi River subbasin to identify BMPs necessary to meet the requirements of the TMDLs on 303(d) listed streams. The objective of this plan is to reduce the amount of pollutants entering these water bodies from agricultural-related practices. 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 in the Lemhi River subbasin and suggests alternatives for reducing surface and groundwater quality problems from agricultural related activities.

BACKGROUND

PROJECT SETTING

The Lemhi River Subbasin has an area of greater than 804,000 acres. The Lemhi River Subbasin is wholly within the boundaries of Lemhi County in Idaho. The Lemhi Subbasin is on eastern border of Idaho adjacent to the state of Montana and the Beaverhead Mountain Range. The Lemhi River flows north by northwest through the subbasin to the town of Salmon, ID where it meets the Salmon River. Lemhi County receives 12" of rain per year and on average and 40" of snow.

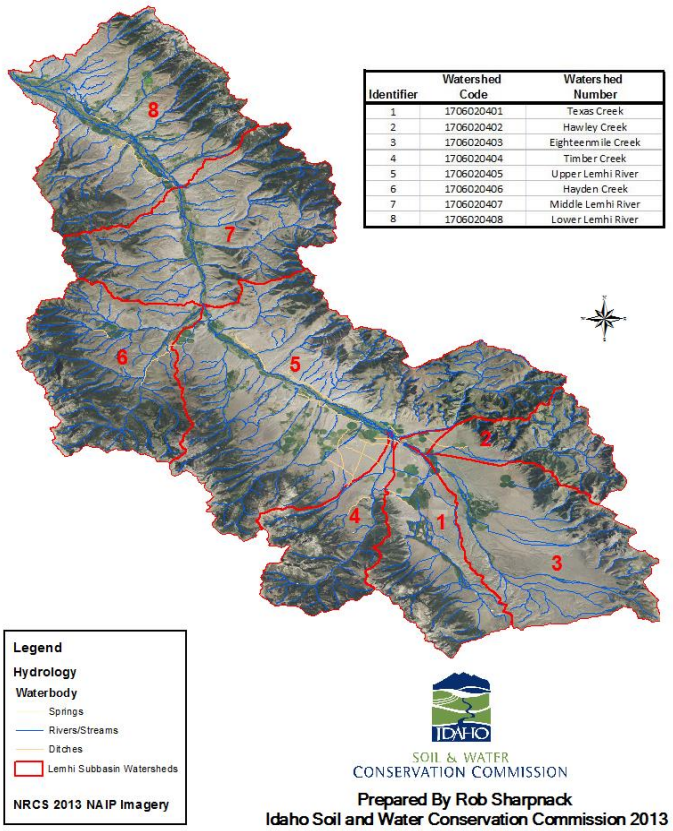
Figure 1: Lemhi Subbasin in Idaho



WATERSHEDS

The Lemhi Subbasin consists of eight watersheds (see Figure 2). The Lemhi River Valley consists of arid desert, with a flat broad valley surrounded by mountain peaks. Water percolates through broad, alluvial fans in the upper valley and enters the river through ground water and springs lower in the valley. The Lemhi River flows down the center of this valley and is the focal point for farming and ranching activities in the valley.

Figure 2: Lemhi Subbasin Watersheds



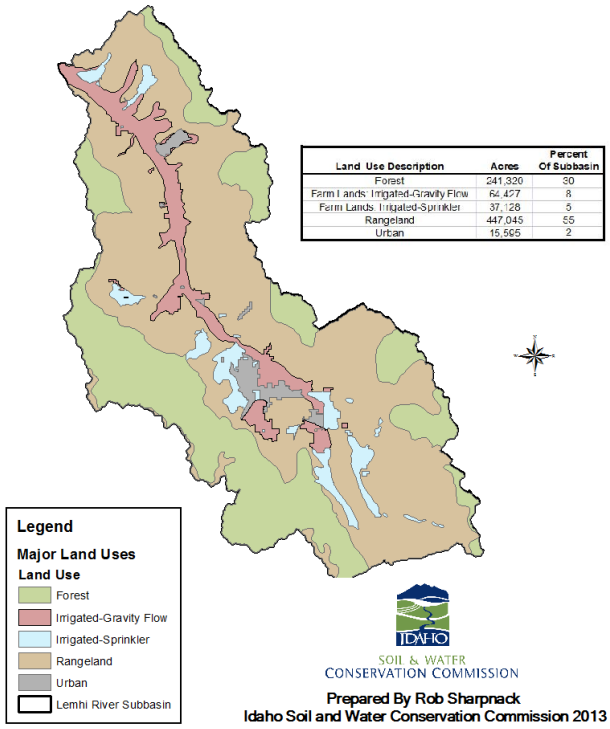
LAND USE

The dominant land use in the Lemhi River Subbasin is rangeland at approximately 447,045 acres (55% of the total acreage). (see Figure 3). Thirty percent of the subbasin is considered forested lands. Only 13 percent of the subbasin is irrigated for agriculture. The primary agricultural product from the irrigated agricultural lands is hay production. Table 3 describes the land use in this subbasin.

Table 3. Land use in the Lemhi River Subbasin.

Land Use Category	*Acres*	*% of Subbasin*
Forest	241,320	30
Farm Land: Irrigated Gravity Flow	64,427	8
Farm Lands: Irrigated Sprinkler	37,126	5
Rangeland	447,045	55
Urban	15,595	2
TOTAL:	805, 513	100%

Figure 3: Lemhi River Subbasin Land Use Categories



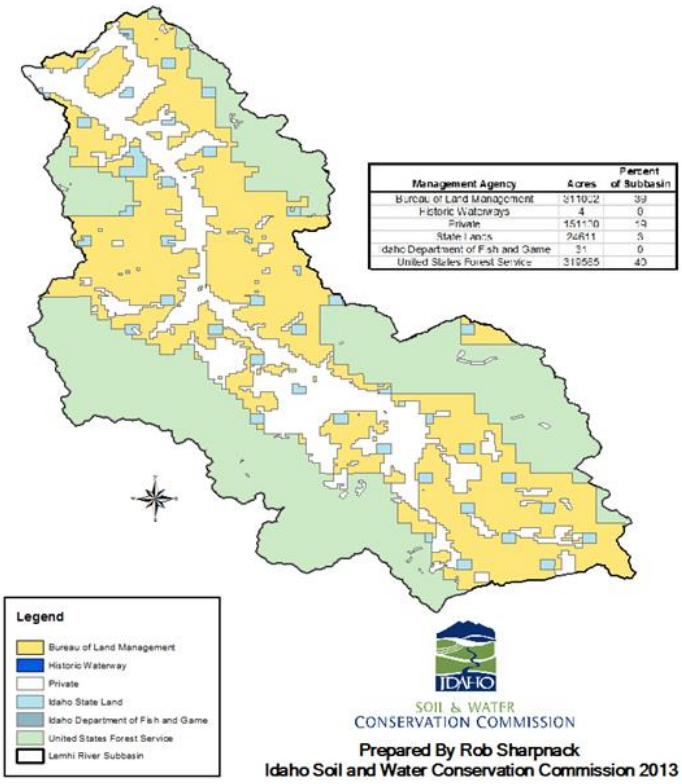
LAND OWNERSHIP

Only 19% of this subbasin are privately owned lands. The majority of the subbasin consists of federally owned and controlled lands (79%). Federal land management in the subbasin is controlled by the United State Department of Interior - Bureau of Land Management (BLM) and the United States Forest Service (USFS). Dispersed throughout BLM lands are sections of Idaho Department of Lands. The upper elevations of this subbasin on both sides of the valley is USFS Salmon-Challis National Forest. Table 4 describes the property management in the Lemhi Subbasin.

Table 4. Land ownership for the Lemhi River subbasin.

Land Management	*Acres*	*% of Subbasin*
Bureau of Land Management	311,002	39
Historic Waterways	4	0
Private	151,130	19
Idaho State Land	24,611	3
Idaho Department of Fish and Game	31	0
United States Forest Service	319,585	40
TOTAL	806,363	100%

Figure 4: Lemhi River Subbasin Land Management



CONSERVATION ACCOMPLISHMENTS

The Lemhi SWCD and partners are very busy in the valley working on conservation projects. One of the major focuses is to restore habitat for endangered salmonids while assisting agriculture in the subbasin.

The Lemhi SWCD has completed numerous projects on the following waters I the subbasin since 2015: Agency Creek, Bohannon Creek, Pratt Creek, Hawley Creek, Eighteenmile Creek, Hayden Creek, Canyon Creek, Little Sawmill Creek/Indian Springs. Prior to 2015 some of the project completed by the district in the subbasin include projects on the Lemhi River, Mill Creek and Big Creek.

More detailed information on the projects completed by the Lemhi SWCD is not available at this time. If more detailed information is desired about the projects the district has been involved in, please contact the Lemhi SWCD directly.

The USDA-NRCS is very active promoting and implementing conservation projects in the Lemhi subbasin. See Appendix B, for a more detailed list of their conservation efforts in the Lemhi Subbasin.

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 on the 303(d) list in the Lemhi River Subbasin are listed below in Table 5. (DEQ 2012)

Table 5. Beneficial uses for 2010 Integrated Report Category 5 listed stream segments in the Lemhi River subbasin.

Water Body	*Boundaries*	*Assessment Unit ID#*	*Beneficial Uses*
Lemhi River	Kenney Creek to mouth	ID17060204SL001_06	CW, SS, PCR, DWS
McDevitt Creek	diversion to mouth	ID17060204SL007a_03	CW, SCR
Mill Creek	diversion to mouth	ID17060204SL026_02	CW, SCR
Walter Creek	source to mouth	ID17060204SL027_02	CW, SCR
Lemhi River	confluence of Eighteenmile Creek and Texas Creek	ID17060204SL030_04	CW, SS, PCR, DWS
Lemhi River	confluence of Eighteenmile Creek and Texas Creek	ID17060204SL030_05	CW, SS, PCR, DWS
Texas Creek		ID17060204SL036_03	CW, SCR
Eighteenmile Creek	Hawley Creek to Mouth	ID17060204SL041_04	CW, SCR
Eighteenmile Creek	Clear Creek to Hawley Creek	ID17060204SL043_03	CW, SCR
Eighteenmile Creek	Divide Creek to Hawley Creek	ID17060204SL045_02	CW, SCR
Eighteenmile Creek	Source to Divide Creek	ID17060204SL045_02	CW, SS, SCR
Hawley Creek	diversion to mouth	ID17060204SL050a_03	CW, SCR
Canyon Creek	source to mouth	ID17060204SL051b_02	CW, SS, SCR
Little Eightmile	diversion to	ID17060204SL052a_02	CW, SCR

Water Body	*Boundaries*	*Assessment Unit ID#*	*Beneficial Uses*
Creek	mouth		
Little Eightmile Creek	source to diversion	ID17060204SL052b_02	CW, SS, SCR
Sandy Creek –	source to diversion	ID17060204SL062b_02	CW, SS, SCR
Bohannon Creek –	diversion to mouth	ID17060204SL064a_02	CW, SCR
Bohannon Creek –	source to diversion	ID17060204SL064b_02	CW, SS, SCR

POLLUTANTS

The original TMDL (DEQ1999) allocated load reductions for sediment for Bohman, Eighteenmile, Geertson, Kirtly, McDevitt, Sandy, and Wimpy Creeks; and load reductions for bacteria for the Lehmi River; and a temperature load reduction for Kirtley Creek. Based on EPA approval of these TMDLs, and after conversion of stream segments of concern into AUs for the Integrated Report (IR), the 2010 IR lists these as applying to 23 steam segments listed in Category 4a for TMDLs completed and approved.

Table 6. 2010 303(d) listed stream segments: identified pollutants and required reductions.

Water Body	*303(d) Listed Pollutants*	*Load Allocation*	*Required Reduction to meet TMDL*	*Agricultural Concerns*
Bacteria TMDLs				
Cruikshank Creek	Bacteria - *E. coli* (DEQ 2012)	126	92%	Wildlife, waterfowl, and livestock
Wildcat Creek	Bacteria - *E. coli* (DEQ 2012)	126	89%	
Lemhi River: LMH 109	Bacteria - Fecal coliform (DEQ 1999)		High Flow - 90% Low Flow – 86%	Residential septic systems, wildlife, irrigated pasture and hayland, irrigation return flows, and animal feeding operations
Lemhi River: LMH 107	Bacteria - Fecal coliform (DEQ 1999)		High Flow - 94% Low Flow – 92%	
Lemhi River: LMH 105	Bacteria - Fecal coliform (DEQ 1999)		High Flow - 92% Low Flow – 91%	
Lemhi River: LMH 103	Bacteria - Fecal		High Flow - 83% Low Flow –	

Water Body	*303(d) Listed Pollutants*	*Load Allocation*	*Required Reduction to meet TMDL*	*Agricultural Concerns*
	coliform (DEQ 1999)		82%	
Lemhi River: LMH 102	Bacteria - Fecal coliform (DEQ 1999)		High Flow - 87% Low Flow - 88%	
Lemhi River: LMH 101	Bacteria - Fecal coliform (DEQ 1999)		High Flow - 89% Low Flow - 92%	
Sediment TMDLs				
McDevitt Creek - Lower ID17060204SL007b_03	Sediment (DEQ 1999)	71.5 (t/yr)	54%	
McDevitt Creek - Lower Middle ID17060204SL007b_03	Sediment (DEQ 1999)			
McDevitt Creek - Upper Middle ID17060204SL007b_03	Sediment (DEQ 1999)			
McDevitt Creek - Upper ID17060204SL007b_03	Sediment (DEQ 1999)			
Eighteenmile Creek - Lower ID17060204SL042_03	Sediment (DEQ 1999)	14 (t/yr)	77 %	
Eighteenmile Creek - Middle ID17060204SL043_03	Sediment (DEQ 1999)			
Eighteenmile Creek - Upper ID17060204SL045_02	Sediment (DEQ 1999)			
Sandy Creek - ID17060204SL062b_02	Sediment (DEQ 1999)	4 (t/yr)	20%	
Wimpy Creek - ID17060204SL063b_02	Sediment (DEQ 1999)	1.5 (t/yr)	76%	
Bonham Creek - Upper	Sediment (DEQ 1999)	124 (t/yr)	69%	

Water Body	*303(d) Listed Pollutants*	*Load Allocation*	*Required Reduction to meet TMDL*	*Agricultural Concerns*
ID17060204SL064b_02				
Bonham Creek - Middle ID17060204SL064b_02	Sediment (DEQ 1999)			
Bonham Creek – Upper ID17060204SL064b_02	Sediment (DEQ 1999)			
Geertson Creek - ID17060204SL065b_02	Sediment (DEQ 1999)	110 (t/yr)	62%	
Kirtly Creek - ID17060204SL066b_02	Sediment (DEQ 1999)	109 (t/yr)	67%	
Temperature TMDLs Summary				
Lemhi River	Temperature	5,100,000 (kWh/day	33%	
Eighteenmile Creek	Temperature	560,000 (kWh/day	36%	
Kirtley Creek*	Temperature	23,000 (kWh/day	94%	
Bohannon Creek	Temperature	71,000 (kWh/day	70%	
Little Eight Mile Creek	Temperature	35,000 (kWh/day	69%	
Sandy Creek	Temperature	12,000 (kWh/day	83%	

The sediment and bacteria load allocation in Table 7 was from the Lemhi River Watershed TMDL: An Allocation of Nonpoint Source Pollutants in the Water Quality Limited Watershed of the Lemhi River Valley DEQ 1999. There is an existing implementation plan already (SWCC 2001) for the sediment and bacteria reductions listed in the that document so they will not be addressed here.

In Appendix A: There are tables showing IDEQ's summarized PNV goals by assessment unit for meeting the temperature TMDLs for the Lemhi Subbasin on private lands.

WATER QUALITY MONITORING

Idaho Department of Environmental Quality (DEQ) is responsible for assuring that the state's surface, ground, and drinking water resources meet state water quality standards. Part of their duties to meet this responsibility is to monitor and assess the levels of pollutants in surface waters such as rivers and streams and

report on surface water quality. DEQ uses water quality standards to know if it is adequately protecting Idaho's water. A water quality standard defines the goals that have been set for a water body by designating the uses for the water, sets criteria necessary to protect those uses, and prevents degradation of water quality[4]. Beneficial uses are the desired uses that water bodies should support[4]. Beneficial uses include water supply (domestic, agricultural, and industrial); recreation (such as swimming, boating, and fishing); and aquatic life. Each beneficial use has a unique set of water quality requirements or criteria that must be met for the use to be supported. Most water bodies have multiple beneficial uses. A water body is considered impaired when it does not meet the water quality criteria needed to support one or more of its beneficial uses[4].

DEQ uses a combination of biological monitoring and habitat assessment to determine the quality of Idaho's waters. This combined monitoring approach is done by the DEQ's Beneficial Use Reconnaissance Program (BURP). Each summer, BURP technicians go out and collects information on multiple sites on a region wide basis. BURP data is evaluated against Idaho's water quality standards to determine if the water body is meeting standards and supporting beneficial uses[5].

When water bodies do not meet water quality standards, DEQ develops total maximum daily loads, or TMDLs, to improve water quality. A TMDL establishes the maximum amount of a pollutant that a water body can receive and still meet water quality standards[4].

A combination of BURP data and water quality study data collected as part of a subbasin assessment are used to develop the TMDL. Other data collected by or in cooperation with other entities can also be used for TMDL development if it meets DEQ's data collection quality control protocols.

THREATENED AND ENDANGERED SPECIES

There are seven threatened, endangered, or canidate species in the Lemhi River subbasin. They include Bull Trout (*Salvelinus confluentus*), Steelhead (*Oncorhyncus mykiss*), Chinook Salmon (*Oncorhyncus tshawytscha*), Yellow Billed Cuckoo (*Coccyzus americanus*), North American Wolverine (*Gulo gulo luscus*), the Canada Lynx (*Lynx canadensis*) and the Whitebark Pine (*Pinus albicaulis*). Many factors caused their decline of these species. For the fish some of which are loss of spawning habitat due to excessive fine sediment. This fine sediment can abrade and or suffocate the eggs, trapping fry in the gravels. Dewatering of tributary streams isolates fish populations and fry from the main stem, which provides critical summer and winter habitat needed for sustainable fish populations.

Table 7. Threatened and Endangered species in the Lemhi River subbasin, which is in Lemhi County.

Species	Status	Habitat affected by water quality OR distribution
Yellow Billed Cuckoo (*Coccyzus americanus*)	Threatened species	No
Canada Lynx (Lynx canadensis)	Threatened species	No
North American Wolverine (*Gulo gulo luscus*)	Proposed species	No
Bull Trout (Salvelinus confluentus)	Threatened species	Yes
Chinook Salmon (Oncorhynchus tshawtscha)	Threatened species	Yes
Steelhead (Oncorhynchus mykiss)	Threatened species	Yes
Whitebark Pine (*Pinus albicaulis*)	Candidate species	No

Source: US Fish and Wildlife Service Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) search https://ecos.fws.gov/ipac/ and Idaho Governor's Office of Species Conservation https://species.idaho.gov/listed-species-in-idaho/

There are seven federally listed aquatic plants and animals that will be influenced by actions suggested in this TMDL implementation plan. Agricultural conservation planning will be coordinated with other species recovery and protection efforts in the subbasin to improve listed species' habitats and address any potential impacts from BMP implementation. Improvements in water quality, achieved from BMPs installed on agricultural lands, are not expected to adversely affect these listed species and should improve or enhance their habitat. Any BMP implementation that will affect T&E species or habitat will follow Endangered Species Act (ESA) consultation requirements.

ANIMAL FEEDING OPERATIONS AND DAIRIES

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).

As of 2005, new and existing operations must have Nutrient Management Plans (NMP) in place. Cattle in winter feeding or grazing areas or pastures–those areas that are not confined–are not regulated under the AFO/CAFO regulations. Attempts are made to provide technical assistance, and improvements to winter feeding areas, or even relocating some operations away from live water sources.

TREATMENT

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 of concern and the potential for pollutant transport and delivery to the receiving water body. Accordingly, the following is a general rule that applies to the prioritization of critical acres within in each watershed.

Agricultural critical areas with the Lemhi River subbasin include:

- Surface irrigated cropland and pastureland
- Unstable and erosive stream banks
- Areas of severe gully erosion
- Areas where livestock have unlimited or direct access to streams
- Animal Feed Operations (AFOs) and Confined Animal Feeding Operations (CAFOs) impacting surface or irrigation waters

In addition to the above, consideration is given to proximity to higher pollutant reduction goals and willingness of landowners to implement BMPs. Each operation and location is unique, and individual farm planning is needed to optimized BMP implementation and load reductions.

TREATMENT UNITS (TU)

The following Treatment Units (TUs) describe areas in the Lemhi subbasin with similar land uses, soils, productivity, resource concerns, and treatment needs. These TUs 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 water quality problems. BMPs to improve water quality are suggested for critical areas within each treatment unit.

- Riparian Areas
- Pasture
- Irrigated Cropland or Hayland/Pasture
- Rangeland
- Livestock Feeding Operations

RECOMMENDED BMPS

BMPs appropriate for the reduction of agricultural impacts to water quality in the Lemhi subbasin subwatersheds are listed below in following tables. Individual conservation planning for willing landowners will determine the most appropriate BMPs to install on a case by case basis. The information included in Tables 8-11

provides an suggestion of the BMPs recommended for critical acres in the subbasin. A more precise estimate of quantities of each BMP recommended to install will be determined at the time of conservation planning for a particular landowner.

Tables 8 through 11 provide types of voluntary BMPs that are available to producers with the subbasin that will improve site specific water quality concerns with proper design, installation, and/or implementation based applicable NRCS standards and specifications, as appropriate. Only those combination of BMPs necessary for water quality improvement that are also feasible to the participant will be voluntarily implemented.

Agricultural conservation and soil erosion practices are designed to control, reduce, or prevent soil erosion and sedimentation on agricultural land uses are listed in Tables 8 - 11 below. Recommended BMPs are selected to reduce irrigation-induced and streambank erosion, contain and filter sediment, nutrients, and bacteria from irrigation wastewater, contain and properly dispose of animal wastes, and reduce leaching of nutrients and pesticides.

Temperature

Typically, the longer a body of water is exposed to high ambient temperatures, such as >90º F, the more likely that the water body is going to warm up as it flows downstream. Additional inflows from tributaries and natural springs may help maintain lower water temperatures, but if those inflows are warmer than the receiving water, temperatures will increase. Grazing management in riparian areas can help maintain water temperatures but cannot lower them. Ambient temperatures typically drive water temperatures, even more so than does direct infrared solar radiation. Reflected radiation is important, as it can increase air temperatures, especially within narrow canyon areas.

Planting and/or maintaining vegetation, especially woody species, seem to be the most successful method for decreasing water temperatures. Again, it's actually only about reducing the "increase of temperature". Woody species are generally thought of as the only vegetative species tall enough to cast shadows over waters, to reduce infiltration infrared. They can do that, as well as reduce the adjacent microclimate temperatures, helping reduce ambient temperatures surrounding the water body. In very low gradient streams, with high water tables, woody species may not be appropriate. Herbaceous riparian species, such as sedge, rush, and other like varieties, can tolerate and thrive on saturated or nearly saturated soils. If this vegetation can be increased where stream channels are dish-shaped, channels can narrow, converting to more trapezoid-shaped channels with undercut banks. These channel shapes generally coincide with deeper water depths, narrower bankfull widths, and greater contact to subsurface ground water flow, which is cooler than ambient air temperatures. Depending on the stream type (gradient, soils, existing vegetation, or water availability), reducing the increase of stream water temperature can be achieved through

woody or non-woody vegetation. Channel shape is also very important, which follows with the change in increase of riparian vegetation. The less surface exposure air and a greater contact to soil water, regardless of sunlight penetration (infrared to approx. 0.5 cm), temperatures are not as likely to increase dramatically in summer months. Regardless of the TMDL objectives, these rules apply to riparian areas.

Bacteria

Where streams are designated as Primary or Secondary Contact Recreation (PCR and SCR) and have load allocations under a TMDL for bacteria, reducing a host's access to the stream may help reduce the chance for in-stream exceedances. However, overland flows, especially within irrigated pasture systems, need to be addressed as well. If irrigation occurs while grazing is taking place, the chance for bacteria movement to the stream increases. Therefore, grazing and irrigation schedules should be coordinated. If a stream has no flow at certain locations for a period of time, then Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), and other designated uses are not supported. Grazing management and other land uses may then be adjusted to occur within that period of time to reduce the chance of standards being exceeded. Typically, though, grazing management is not as dependent on stream flows as on forage availability. Regardless, planners must be cognizant of such flow characteristics and actual PCR and SCR uses of the stream when planning with landowners to help meet TMDL requirements. Acknowledging other non-agricultural bacterial sources during planning, such as concentrated wildlife sources, is important.

In summary, to reduce the risk of bacterial contamination to a stream, landowners must reduce the chance for direct or indirect bacteria entry to the stream. This will generally include fencing, which may not be required for streambank stability. If timing and/or control of grazing and pasture irrigation can be accomplished within the critical period for PCR and SCR, then TMDL objectives can be met. The management and conservation measures necessary to meet bacterial TMDLs seem to be the most difficult of all pollutant TMDLs in the following situations:

- where land uses adjacent to streams need radical adjustment
- where livestock grazing and confinement is removed from the stream (which may simply mean capturing all storm and irrigation runoff prior to entering the stream)

Many times, perception of potential contamination may be more important than actual risk of contamination. Planners and landowners should incorporate social aspects into conservation plans.

Sediment – Total suspended solids and substrates

Many streams' sediment-related problems, originating from stream bank erosion caused by grazing activities, could be improved by simply adjusting time and duration of grazing. Adjustments that allow for existing riparian vegetation to increase in quantity and improve in vigor, increased stream bank stability generally follows. If soils are adequate to support multiple species for vegetation, along with adequate water supply, then improvements can be dramatic with grazing adjustments. Willows, alder, cottonwood and other appropriate riparian species should be managed to increase numbers and root densities along the stream channels, which in turn will generally convert a dish-shaped channel to a trapezoid-shaped channel, which increases the flood plain as well. Increasing woody species within the floodplain also increases roughness to dissipate storm flows. In low gradient streams, such as below 1%, water tables may be higher and woody species may not be as tolerable to saturated soils. Other herbaceous wetland plants, such as sedge and rushes, may be all that is necessary for adequate stream bank stability.

Total suspended solid (TSS) and substrate TMDL objectives may not fully coincide. Agricultural related stream bank damage and erosion can contribute to both TSS and substrate problems, but not necessarily at the same time or for similar lengths of time. High percentages of fine material, causing an increase of embedded gravels, may not only be sourced back to stream bank erosions but cropland, pasture, and ditch erosion. Typically, in surface-irrigated cropland, TSS exceedence is caused by in-field erosion and sedimentation. In riparian pasture areas where little commercial cropland exists, irrigated pasture waste runoff ditches may also be contributing to TSS and substrate problems. The timing of irrigation and pasture conditions, however, needs to be compared to in-stream TSS data to make that conclusion. Channel conditions and activities, such as stream gradient, channelization, and beaver activity will also cause pockets of increased percent fines and embeddedness. During the conservation planning process, pasture-by-pasture inventory and planning will generally identify actual and potential sources of substrate and TSS problems. The landowner will appropriate conservation measures associated to each pasture and associated riparian area.

Numerous techniques are available to the landowner to improve stream bank and pasture conditions, but each pasture and riparian area is generally managed differently and requires individual attention. Fencing, grazing management, water facilities, water gaps, protein supplements, pasture irrigation water management, erosion controls, and other practices should all be considered during the development of an individual Conservation Plan. BMPs include, but are not limited to, the following:

Table 8: Recommended BMPs in riparian areas.

Recommended BMPs: Water Quality Degradation - Riparian	NRCS Code
Watering Facility	614
Tree/Shrub Establishment	612
Structure for Water Control	587
Streambank and Shoreline Protection	580
Stream Habitat Improvement and Management	395
Riparian Herbaceous Cover	390
Restoration and Management of Rare or Declining Habitats	643
Prescribed Grazing	528
Channel Bed Stabilization	584
Aquatic Organism Passage	396
Access Control	472

Table 9: Recommended BMPs for rangeland areas.

Recommended BMPs: Water Quality Degradation -- Rangeland	NRCS Code
Watering Facility	614
Water Well	642
Pumping Plant	533
Spring Development	574
Pipeline	516
Range Planting	550
Prescribed Grazing	528A
Fence	382
Brush Management	314
Pest Management	595
Heavy Use Area Protection	561

Table 10: Recommended BMPs for cropland and hayland.

Recommended BMPs: Water Quality Degradation – Surface Irrigated Cropland and Hayland	NRCS Code
Conservation Crop Rotation	328
Irrigation System, Sprinkler	442
Irrigation System, Surface and Subsurface	443
Irrigation Water Management	449
Nutrient Management	590
Upland Wildlife Management	645
Pest Management	595
Residue Management, Mulch Till	329B
Residue Management, Seasonal	344
Filter Strips	393

Table 11: Recommended BMPS for irrigated pasture.

Recommended BMPs: Water Quality Degradation – Irrigated Pasture	NRCS Code
Fencing	382
Heavy Use Area Protection	561
Filter Strips	393
Spring Water Development	574
Irrigations Systems	442, 447
Pasture and Hayland Planting	512
Livestock Water Facility	614
Irrigation Water Management	449
Stream Channel Stabilization	584
Prescribed Grazing System	528A
Pest Management	595

IMPLEMENTATION PRIORITY

The TMDL implementation planning process included assessing impacts to water quality in the Lemhi subbasin from agricultural lands on 303(d) listed streams and recommending a priority for installing BMPs to meet water quality objectives stated in *Lemhi River Subbasin Total Maximum Daily Loads and Five-Year Review: Addendum to the Lemhi River Subbasin Assessment and TMDL 2112.*

Lemhi SWCD has multiple conservation priorities including: Fish and Wildlife population and habitat improvement for Salmonids and Sage Hen, District Operations, Public and Producer Information and Education, Cropland Irrigation Water Management and Soil Health, Water Quality Enhancement, and to promote Holistic Rangeland Conservation Efforts. Lemhi 5 year plan.

The AUs list in the Lemhi River Subbasin Total Maximum Daily Loads and Five-Year Review: Addendum to the Lemhi River Subbasin Assessment and TMDL 2112 should be considered in any conservation project in the corresponding watershed.

TREATMENT ALTERNATIVES

All BMPs are voluntary. All BMPs need to be site specific according to the conservation needs of the location and the land management goals of the cooperating landowner. Innovative approaches to conservation could include:

- Beaver Mimicry Structures
- Flow Enhancement
- Ground water well sources
- Reconnecting streams to their receiving waters
- Water Right Diversion Consolidation and Relocation

Because of the complexity of land use in this large watershed, ongoing efforts from the Soil Conservation District will be critical in providing direction and guidance to local landowners who strive to optimize implementation of BMPs that will achieve the goals of the TMDL. Implementation of BMPs at this large scale may take up to 20 years to accomplish. On-site monitoring and BMP effectiveness evaluations will be performed as part of the feedback loop, to assure agricultural-related activities are achieving the desired results

FUNDING

Financial and technical assistance for installation of BMPs is needed to ensure success of this implementation plan. The Lemhi Soil and Water Conservation District actively pursues multiple potential funding sources to implement water quality improvements on private agricultural and grazing lands. Many of these programs can be used in combination with each other to implement BMPs.

These sources include (but are not limited to):

CWA 319 –These are Environmental Protection Agency funds allocated to the Nez Perce Tribe and the State of Idaho. The Idaho Department of Environmental Quality (DEQ) administers 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. The Nez Perce tribe has CWA 319 funds available for projects on Tribal lands on a competitive basis. Source: DEQ *http://www.deq.idaho.gov/water/prog_issues/surface_water/nonpoint.cfm#management*

Resource Conservation and Rangeland Development Program (RCRDP) –The RCRDP is a loan program administered by the ISCC for implementation of agricultural and rangeland best management practices or loans to purchase equipment to increase conservation. Source: ISWCC *https://swc.idaho.gov/what-we-do/conservation-loans/*

PL-566 –This is the Small Watershed Rehabilitation Program administered by the USDA Natural Resources Conservation Service (NRCS).

Agricultural Management Assistance (AMA) –The 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. Source: NRCS *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ama/*

Conservation Reserve Program (CRP) –The 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. Source: NRCS *https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index*

Conservation Technical Assistance (CTA) –The 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. Source: Local Conservation District and NRCS: *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/*

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. Source: NRCS *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/*

Agricultural Conservation Easement Program (ACEP) – The ACEP program provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements component, NRCS helps Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-

agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands. *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/*

Conservation Security Program (CSP) –CSP is a voluntary program that rewards the Nation's premier farm and ranch land conservationists who meet the highest standards of conservation environmental management. Source: NRCS *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/*

Grazing Land Conservation Initiative (GLCI) –The GLCI's 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. *https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/people/partners/glci/*

Habitat Improvement Program (HIP) – This is an Idaho Department of Fish and Game program to provide technical and financial assistance to private landowners and public land managers who want to enhance upland game bird and waterfowl habitat. Funds are available for cost sharing on habitat projects in partnership with private landowners, non-profit organizations, and state and federal agencies. Source: IDFG *https://idfg.idaho.gov/conservation/habitat/hip*

Partner's Program in Idaho – The goal of the U.S. Fish and Wildlife Service's Partners Program is to work with private and Tribal landowners who want to voluntarily improve fish, wildlife, and plant habitat on their lands. Source: USFWS *https://www.fws.gov/idaho/articles.cfm?id=149489623*

Sage Grouse Initiative (SGI) - A highly targeted and science-based landscape approach to proactively conserve sage-grouse and sustain the working rangelands that support western ranching economies. Source: NRCS *https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/plantsanimals/fishwildlife/?cid=steldevb1027671*

Working Lands for Wildlife (WLFW) - Target conservation efforts to improve agricultural and forest productivity which enhance wildlife habitat on working landscapes. Target species are used as barometers for success because their habitat needs are representative of healthy, functioning ecosystems where conservation efforts benefit a much broader suite of species. Source: NRCS *https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/fishwildlife/?cid=stelprdb1046975*

OUTREACH

Conservation partners in the Lemhi subbasin will use their combined resources to provide information about BMPs to improve water quality to agricultural landowners and operators within the Lemhi subbasin. A local outreach plan may be developed. Newspaper articles, district newsletters, watershed and project

tours, landowner meetings and one-on-one personal contact may be used as outreach tools.

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 recreation activities on the subbasin

MONITORING AND EVALUATION

Field Level

At the field level, annual status reviews will be conducted to ensure 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 ISCC Field Guide for Evaluating BMP Effectiveness.

The Revised Universal Soil Loss Equation (RUSLE) and Surface Irrigation Soil Loss (SISL) Equation are used to predict sheet and rill erosion on non-irrigated and irrigated lands. The Alutin Method, Imhoff Cones, and direct-volume measurements are used to determine sheet and rill irrigation-induced and 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 OnePlan'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 bacteria 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 five-year TMDL reviews. A list of DEQ BURP monitoring in the Lemhi River subbasin is shown in Table 12.

Table 12: DEQ BURP Monitoring in the Lemhi Subbasin since 2010.

Site ID	Year	Stream Name	AU (ID17040217SK)	Notes
2011SIDFA012	2011	Meadow Lake Creek	039_02	Sampled
2011SIDFA011	2011	Frank Hall Creek	051b_02	Sampled
2011SIDFA035	2011	Bear Valley Creek	016_04	Sampled
2011SIDFA008	2011	Basin Creek	010_04	Sampled
2011SIDFA009	2011	Basin Creek	011_04	Sampled
2011SIDFA007	2011	Agency Creek	058_04	Sampled
2011SIDFA011	2011	Flume Creek	058_03	Sampled
2013SIDFA013	2013	Eighteenmile Creek	043_03	Dry
2013SIDFA012	2013	Hawley Creek	050b_03	Sampled
2013SIDFA011	2013	Big Timber Creek	033_03	Sampled
2013SIDFA010	2013	Canyon Creek	051b_03	Sampled
2013SIDFA009	2013	Mill Creek	026a_02	Dry
2013SIDFA018	2013	Little Eightmile Creek	052b_02	Other Conditions
2013SIDFA008	2013	McDevitt Creek	007b_03	Sampled
2013SIDFA007	2013	Pattee Creek	059b_03	Sampled
2013SIDFA017	2013	Wimpey Creek	063_02	Other Conditions
2015SIDFA029	2015	Tenmile Creek	048_02	Other Conditions
2015SIDFA028	2015	Big Bear Creek	050b_02	Sampled
2015SIDFA030	2015	Basin Creek	033_02	Sampled
2015SIDFA035	2015	Hayden Creek	020_03	Sampled
2015SIDFA034	2015	Wright Creek	018_03	Sampled
2015SDEQA239	2015	Agency Creek	058_04	Sampled
2015SIDFA033	2015	UNT to Whithington Creek	003b_02	Sampled
2015SIDFA031	2015	Pratt Creek	001_02	Sampled
2015SIDFA032	2015	Bohannon Creek	064b_02	Sampled
2016SIDFA031	2016	Texas Creek	036_03	Sampled
2016SIDFA030	2013	Eighteenmile Creek	041_04	Sampled
2016SIDFA032	2016	UNT to Lemhi River	030_04	Sampled
2016SIDFA029	2016	Little Eightmile Creek	052b_02	Sampled
2016SIDFA028	2016	McDevitt Creek	007b_02	Sampled

2016SIDFA027	2016	Kenney Creek	061_02	Sampled
2016SIDFA026	2016	Kirtley Creek	066b_02	Sampled
2017SIDFA046	2017	Meadow Lake Creek	039_02	Sampled
2017SIDFA043	2017	Cruikshank Creek	051b_02	Sampled
2017SIDFA044	2017	Flume Creek	058_03	Sampled
2017SIDFA045	2017	Bear Valley Creek	016_04	Sampled
2017SDEQA0370	2017	Haynes Creek	004_02	Sampled
2019SIDFA037	2019	Hawley Creek	050b_03	Sampled
2019SIDFA040	2019	Big Timber Creek	033_03	Sampled
2019SIDFA041	2019	Canyon Creek	051b_03	Sampled
2019SIDFA038	2019	Big Eightmile Creek	029b_03	Sampled
2019SIDFA039	2019	Stroud Creek	028_02	Other Conditions

Source: https://mapcase.deq.idaho.gov/wq2016/ DEQ Final 2016 §305(b) Integrated Report

Annual reviews for funded projects will be conducted to ensure the project is kept on schedule. With many projects being implemented across the state, SWCC 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 ensure 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.

REFERENCES

DEQ. (Idaho Department Environmental Quality). 1999. Lemhi River Watershed TMDL: An Allocation of Nonpoint Source Pollutants in the Water Quality Limited Watershed of the Lemhi River Valley. Idaho Falls, ID: DEQ Regional Office. 130 p.

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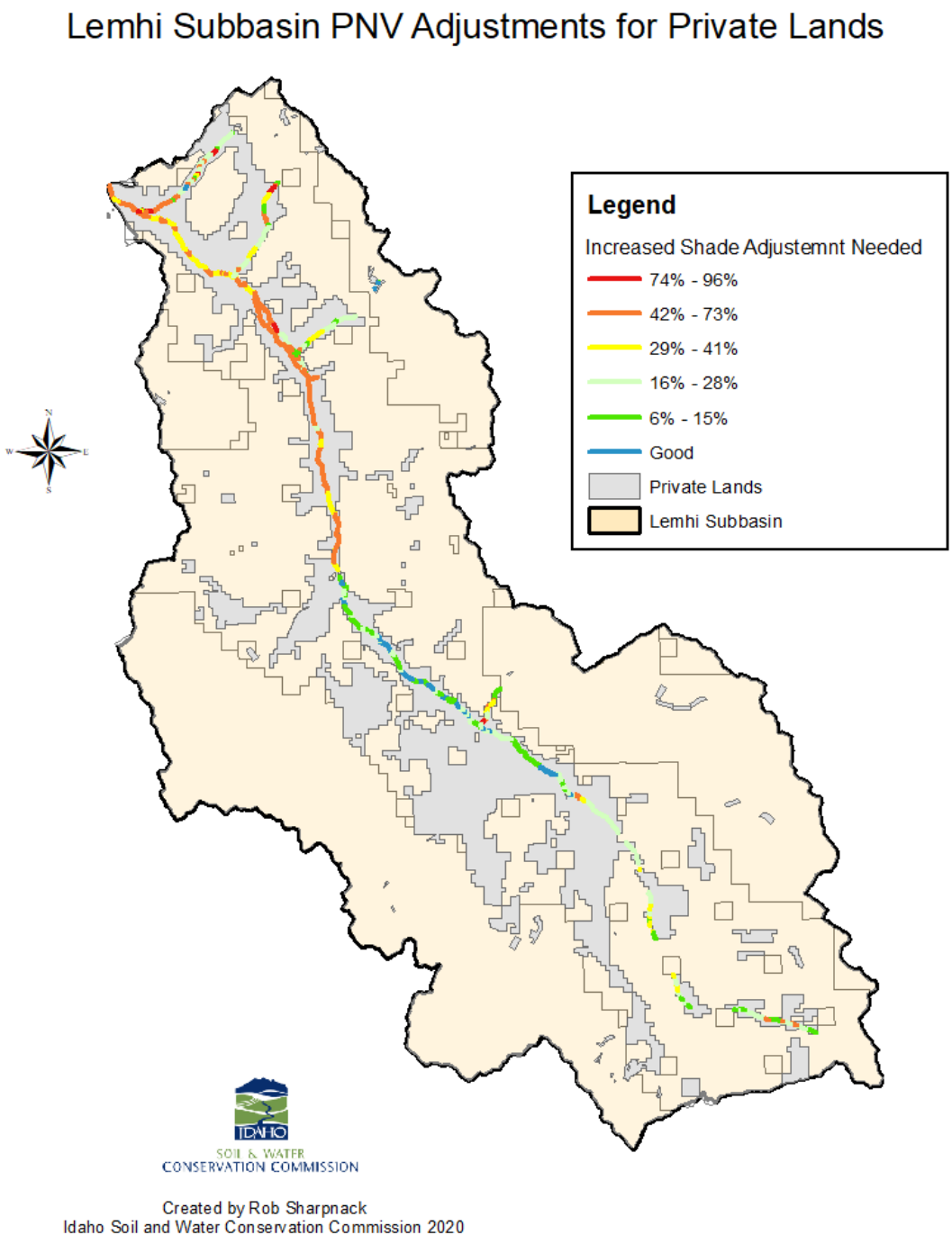
Idaho Soil and Water Conservation Commission. September 2001. Lemhi River Subbasin Total Maximum Daily Load (TMDL) Agricultural Implementation Plan. The Idaho Soil and Water Conservation Commission, The Lemhi Soil and Water Conservation District and the USDA Natural Resource Conservation Service. 40 p.

Lemhi Soil and Water Conservation District Five Year Resource Conservation Plan July 1, 2020 – June 30, 2025 and Annual Work Plan July 1, 2019 – June 30, 2020. 13 p.

APPENDICES

APPPENDIX A

Figure 5: Lemhi Subbasin PNV Adjustments for Private Lands.



Private Land Shade Evaluations and Targets Summaries for the Lemhi River Subbasin Temperature TMDLs.

Table 13: Assessment Unit ID17060202SL001_06 Lemhi River Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
80	92	-12	580	0.4
70	92	-22	3,170	2.0
10	44	-34	10,810	6.7
50	92	-42	4,490	2.8
0	44	-44	9,500	5.9
10	56	-46	7,730	4.8
0	56	-56	2,280	1.4
30	92	-62	410	0.3
10	92	-82	780	0.5
		Total	**39,750**	**24.8**

Table 14: Assessment Unit ID17060202SL005_06 Lemhi River Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
30	56	-26	460	0.3
20	56	-36	3,120	2.5
50	92	-42	840	0.5
10	56	-46	10,870	6.8
40	92	-52	140	0.1
0	56	-56	5,090	3.2
		Total	**20,520**	**13.4**

Table 15: Assessment Unit ID17060202SL024_05 Lemhi River Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
20	19	Good	5,440	3.4
10	19	-9	6,870	3.7
0	19	-19	3,280	2.0
		Total	**15,590**	**9.1**

Table 16: Assessment Unit ID17060202SL025_05 Lemhi River Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
30	19	Good	440	0.3
30	21	Good	850	0.5
20	21	-1	2,320	1.4
10	19	-9	840	0.5
10	21	-11	2,380	1.5
0	21	-21	2,600	1.6
		Total	**9,430**	**5.8**

Table 17: Assessment Unit ID17060202SL030_04 Lemhi River Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
20	21	-1	380	0.2
10	21	-11	600	0.4
0	21	-21	780	0.5
		Total	**1,760**	**1.1**

Table 18: Assessment Unit ID17060202SL030_05 Lemhi River Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
20	21	-1	3,310	2.1
10	21	-11	5,750	3.6
0	21	-21	5,140	3.2
		Total	**14,200**	**8.9**

Private Land Shade Evaluations and Targets Summaries for the Lemhi Subbasin Tributaries which have Temperature TMDLs.

Table 19: Assessment Unit ID17060202SL041_04 Little Eighteenmile Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
0	17	-17	1,510	0.9
20	43	-23	490	3.0
10	43	-33	370	0.2
0	43	-43	1,180	0.7
		Total	**3,550**	**4.8**

Table 20: Assessment Unit ID17060202SL042_03 Little Eighteenmile Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
10	43	-33	1,470	0.9
20	43	-23	2,720	1.7
0	17	-17	4,560	2.8
		Total	**8,750**	**5.4**

Table 21: Assessment Unit ID17060202SL043_03 Little Eighteenmile Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
10	17	-7	160	0.1
30	43	-13	1,400	0.9
20	43	-23	1,120	0.9
10	43	-33	1,970	0.9
		Total	**4,500**	**3.2**

Table 22: Assessment Unit ID17060202SL045_02 Little Eighteenmile Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
70	79	-9	790	0.5
40	50	-10	2,190	1.4
50	61	-11	1,170	0.7
10	21	-11	320	0.2
0	17	-17	690	0.4
60	79	-19	1,060	0.7
0	21	-21	350	0.2
40	61	-21	2,770	1.7
10	61	-51	780	0.5
0	61	-61	320	0.2
		Total	**10,440**	**6.5**

Table 23: Assessment Unit ID17060202SL052a_02 Little Eightmile Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
70	92	-22	265	0.2
0	92	-92	430	0.3
		Total	**430**	**0.4**

Table 24: Assessment Unit ID17060202SL052b_02 Little Eightmile Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
80	94	-14	1,050	0.7
70	92	-22	480	0.3
60	92	-32	880	0.5
40	92	-52	730	0.5
30	92	-62	330	0.2
		Total	**3,470**	**2.2**

Table 25: Assessment Unit ID17060202SL062a_02 Sandy Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
80	94	-14	520	0.3
70	94	-24	580	0.4
60	94	-34	1,840	1.1
50	94	-44	410	0.3
		Total	**3,350**	**2.1**

Table 26: Assessment Unit ID17060202SL062b_02 Sandy Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
90	94	-4	160	0.1
90	96	-6	570	0.4
80	96	-16	3,210	2.0
80	99	-19	40	0.0
		Total	**3,980**	**2.5**

Table 27: Assessment Unit ID17060202SL064a_02 Bohannon Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
70	86	-16	840	0.5
60	86	-26	2,000	0.7
40	86	-46	250	0.2
		Total	**3,090**	**1.4**

Table 28: Assessment Unit ID17060202SL064b_02 Bohannon Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
80	92	-12	800	0.5
80	94	-14	260	0.2
70	86	-16	80	0.1
70	89	-19	2,330	1.4
60	89	-29	910	0.6
60	92	-32	1,250	0.8
50	86	-36	370	0.2
50	92	-42	190	0.1
40	92	-52	1,040	0.6
40	94	-54	170	0.1
0	94	-94	850	0.5
		Total	**8,250**	**5.2**

Table 29: Assessment Unit ID17060202SL066a_03 Kirtley Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
80	92	-12	480	0.3
60	92	-32	130	0.1
50	92	-42	800	0.5
10	92	-82	2,250	1.4
		Total	**3,660**	**2.3**

Table 30: Assessment Unit ID17060202SL066b_02 Kirtley Creek Private Land Shade Evaluation and Targets Summary. Based on DEQ PNV Assessment.

Existing % Shade	Target / Goal (%)	Adjustment (%)	Segment Length (m)	Segment Length (mi)
90	94	-4	300	0.2
90	96	-6	440	0.3
80	94	-14	310	0.2
80	96	-16	1,280	0.8
70	92	-22	1,000	0.6
70	94	-24	910	0.6
70	96	-26	2,030	1.3
60	94	-34	340	0.2
40	92	-52	550	0.3
40	94	-54	250	0.2
40	96	-56	530	0.3
30	94	-64	140	0.1
20	94	-74	110	0.1
20	96	-76	530	0.3
0	96	-96	35	0.0
		Total	**8,755**	**5.6**

APPENDIX B

The USDA Natural Resource Conservation Service (NRCS) is one of the primary agencies involved with developing and implementing BMPs in the Lemhi Subbasin. The NRCS has been very active in the Subbasin installing conservation measures to help man and the environment. Below is a list of accomplishments for the Subbasin. Practices are organized by watershed (HUC10).

This information was condensed from the PRS database and contains all records available for applied practices approved from 2003 to spring 2016.

Table 31: HUC 1706020401 Applied Practices

Practice Name	Amount Installed	Units
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	28,873	feet
Enhancement - Grazing Management	1,946.5	acres or acre-ft
Enhancement - Habitat Management	1,946.5	acres or acre-ft
Enhancement - Nutrient Management	1,414.1	acres or acre-ft
Enhancement - Pest Management	1,946.5	acres or acre-ft
Enhancement - Soil Management	1,137	acres
Comprehensive Nutrient Management Plan	1	
Fence	1,800	feet
Sprinkler System	480.8	acres
Irrigation Water Management	131.8	acres
Forage and Biomass Planting	131.8	acres
Livestock Pipeline	3,206.7	feet
Structure for Water Control	5	
Nutrient Management	131.8	acres
Watering Facility	5	

Table 32: HUC 1706020402 Applied Practices

Practice Name	Amount Installed	Units
Range Planting	876	acres
Upland Wildlife Habitat Management	876	acres

Table 33: HUC 1706020403 Applied Practices

Practice Name	Amount Installed	Units
Enhancement - Energy Management	759.5	acre-ft
Enhancement - Grazing Management	1,313.7	acre-ft
Enhancement - Habitat Management	1,211.9	acre-ft
Enhancement - Nutrient Management	554.2	acre-ft
Enhancement - Pest Management	554.2	acre-ft
Enhancement - Soil Management	1,083.9	acre-ft
Fence	6,750	feet
Irrigation Pipeline	5,872	feet
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	11,600	feet
Irrigation Water Management	676.8	acres
Livestock Pipeline	3,235	feet
Prescribed Grazing	2,743	acres
Pumping Plant	2	
Sprinkler System	124	acres
Structure for Water Control	3	
Upland Wildlife Habitat Management	6,262.3	acres
Watering Facility	3	

Table 34: HUC 1706020404 Applied Practices

Practice Name	Amount Installed	Units
Enhancement - Grazing Management	1299.3	acre
Enhancement - Habitat Management	1299.3	acre
Enhancement - Pest Management	1299.3	acre
Livestock Pipeline	100	feet
Pumping Plant	1	
Water Well	1	
Watering Facility	1	

Table 35: HUC 1706020405 Applied Practices

Practice Name	Amount Installed	Units
Comprehensive Nutrient Management Plan	2	
Enhancement - Air Resource Management	217	acre-ft
Enhancement - Energy Management	1,449.4	acre-ft
Enhancement - Grazing Management	42,16.6	acres or acre-ft
Enhancement - Habitat Management	2,790.5	acres or acre-ft
Enhancement - Nutrient Management	1,414	acres or acre-ft
Enhancement - Pest Management	3,582.2	acres or acre-ft
Enhancement - Soil Management	2,000.4	acres or acre-ft
Enhancement - Water Management	319.8	acre-ft
Fence	4591.4	feet
Forage and Biomass Planting	55.3	acres
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	42733	feet
Irrigation Water Management	458.8	acres
Livestock Pipeline	15,511	feet
Nutrient Management	309.4	acres
Prescribed Grazing	775.4	acres
Pumping Plant	2	
Range Planting	350.1	acres
Spring Development	3	
Sprinkler System	1,043.7	acres
Structure for Water Control	8	
Upland Wildlife Habitat Management	674.1	acres
Waste Storage Facility	2	
Water Well	1	
Watering Facility	15	

Table 36: HUC 1706020406 Applied Practices

Practice Name	Amount Installed	Units
Access Control	14	
Comprehensive Nutrient Management Plan	1	
Conservation Completion Incentive First Year	1	
Enhancement - Energy Management	1,191.2	acre-ft
Enhancement - Grazing Management	2,897.3	acre-ft
Enhancement - Pest Management	2,897.3	acre-ft
Enhancement - Soil Management	813.7	acre-ft
Fence	10,765	feet
Irrigation Pipeline	1,949	feet
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	20,855	feet
Nutrient Management	90.8	acres
Sprinkler System	237.3	acres
Structure for Water Control	4	
Structures for Wildlife	1	

Table 37: HUC 1706020407 Applied Practices

Practice Name	Amount Installed	Units
Comprehensive Nutrient Management Plan	1	
Enhancement - Energy Management	1,044.2	acre-ft
Enhancement - Grazing Management	1,773.8	acre-ft
Enhancement - Habitat Management	1,559.4	acre-ft
Enhancement - Nutrient Management	1,284.7	acre-ft
Enhancement - Pest Management	1,773.8	acre-ft
Enhancement - Soil Management	994.7	acre-ft
Fence	1,0449	feet
Forage Harvest Management	195.8	acres
Integrated Pest Management (IPM)	17.6	acres
Irrigation Pipeline	5,976	feet
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	3,253	Feet
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic	300	feet
Irrigation Water Management	471.3	acres
Livestock Pipeline	16582	feet
Nutrient Management	396.9	acres
Pond	1	
Prescribed Grazing	474.4	acres
Pumping Plant	5	
Seasonal High Tunnel System for Crops	2160	sq ft
Spring Development	1	
Sprinkler System	155.7	acres
Streambank and Shoreline Protection	278.6	feet
Structure for Water Control	4	
Waste Storage Facility	1	
Watering Facility	11	

Table 38: HUC 1706020408 Applied Practices

Practice Name	Amount Installed	Units
Access Control	1.3	acres
Comprehensive Nutrient Management Plan	4	
Critical Area Planting	0.5	acres
Enhancement - Air Resource Management	1,113.6	acre-ft
Enhancement - Energy Management	1,828	acre-ft
Enhancement - Grazing Management	4,057.5	acre-ft
Enhancement - Habitat Management	631.3	acre-ft
Enhancement - Nutrient Management	2,439.1	acre-ft
Enhancement - Pest Management	4,374.7	acre-ft
Enhancement - Soil Management	1,615.5	acre-ft
Fence	11,008	feet
Forage and Biomass Planting	14	acres
Forage Harvest Management	244.6	acres
Integrated Pest Management (IPM)	72	acres
Irrigation Pipeline	4,406.9	feet
Irrigation System, Tailwater Recovery	1	
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic	44,927.1	feet
Irrigation Water Management	422.3	acres
Livestock Pipeline	1,017	feet
Nutrient Management	220.6	acres
Prescribed Grazing	1,139.2	acres
Pumping Plant	4	
Sprinkler System	381.7	acres
Stream Habitat Improvement and Management	8	
Structure for Water Control	10	
Tree/Shrub Establishment	0.5	acres
Waste Storage Facility	1	
Watering Facility	10	
Wetland Enhancement	6	acres
Wetland Wildlife Habitat Management	1.3	acres

NRCS programs used to fund these projects include Conservation Stewardship Program (CSP), Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentive Program (WHIP), General Conservation Technical Assistance, and Grazing Lands Initiative Conservation Technical Assistance