American Falls Subbasin (17040206) Total Maximum Daily Load

Implementation Plan for Agriculture

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In Cooperation With: Power Soil and Water Conservation District, South Bingham Soil Conservation District, Central Bingham Soil Conservation District, and the Natural Resource Conservation Service

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Introduction

The Idaho Department of Environmental Quality (IDEQ) develops Total Maximum Daily Loads (TMDL) for pollutants that are impairing waters as described in Section 303(d) of the Clean Water Act. In Idaho the list of impaired waters are identified in category 5 of the Integrated Report and streams that have an approved TMDL in place are in category 4a. The final draft of the *American Falls Subbassin TMDL: Subbasin Assessment and Loading Analysis was* prepared by the IDEQ on March 2009 and approved by the Environmental Protection Agency (EPA) on August 2012. As the designated agency, the Soil & Water Conservation Commission (ISWCC) is responsible for preparing the implementation plan for agriculture.

Purpose

The American Falls Subbasin (Figure 1) TMDL Implementation Plan for Agriculture 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 American Falls Subbassin TMDL: Subbasin Assessment and Loading Analysis. An adaptive management approach allows for modification of resource management decisions based on current resource conditions.

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 water bodies in the American Falls Subbasin (Figure 2). DEQ identifies impaired water bodies in an Integrated Report which is compiled every two years. DEQ conducts five year reviews and updates to the Subbasin Assessments and TMDLs for all watersheds within the state. Table 1 shows the listed streams and the non-listed streams that are impaired and were given a TMDL from American Falls Subbasin Assessment and Loading Analysis (IDEQ 2012).

The objective of this plan is to provide guidance to Power Soil Conservation District, South Bingham Soil Conservation District, Central Bingham Conservation District, partnering agencies, NGO's, and agricultural producers on how to reduce pollutant loading to listed water bodies. Agricultural pollutant reductions will be achieved by on-farm conservation planning with individual operators and installation of BMPs on agricultural lands. This plan recommends BMPs to meet TMDL targets in the American Falls Subbasin and suggests alternatives for reducing surface water and groundwater quality pollutants from agriculture-related activities. This plan will focus only on the streams identified in the TMDL (DEQ 2012). When a previous version of the TMDL (DEQ 2009) was written; it included streams on the 1998 303(d) list. DEQ also identified non 303(d) listed streams that needed TMDLs due to the current loading in the water body. Table 2 shows the pollutants and beneficial uses for streams on the 1998 303(d) list that were carried over to the current TMDL.

Streams addressed in the TMDL are located within different land management areas. These are private land, tribal land, and public land. This Implementation Plan for Agriculture will identify

resource concerns and BMPs for the impaired streams on private land. Streams located on private land with approved TMDLs are Bannock Creek, Rattlesnake Creek, Knox Creek, Snake River, Danielson Creek, Hazard Creek/Little Hole Draw, Sunbeam Creek, Crystal Springs, and Spring Hollow.

There are five agricultural irrigation return drains that flow directly in to the American Falls Reservoir that have load allocations set for them, but with no reduction required. These returns are Cedar Spillway, Colburn waste way, Nash Spill, R Spill, and Sterling waste way. The Irrigation Company conducts water quality monitoring throughout the system allowing them to closely monitor the water quality in the returns. This monitoring allows them to take corrective actions when loading exceeds set allocations. Agriculture fields adjacent to the canals could have BMPs installed which would reduce sheet and rill erosion and wind erosion. This would reduce sediment input to the canal system. The canals are very highly maintained, so the erosion from banks is minimal.

TABLE 1. STREAMS LISTED AS IMPAIRED WATERS IN THE AMERICAN FALLS SUBBASIN FROM 1998 TO PRESENT

Waterbody	303(d) listed 1998	2002 IR	2008 IR	2010 IR	Non-listed	Land Management		
						Private	Tribal	Public
Bannock Creek	X	c	c	c		X	X	
Rattlesnake Creek	X	c	c	c		X	X	
Moonshine Creek	X	c	c	c			X	
West Fork Bannock Creek	X	c	c	c			X	
Mc Tucker Creek	X	c	c	c				X
Snake River	X	c	c	c		X	X	X
Knox Creek	X	c	c	c		X		X
Danielson Creek		X	c	c		X		
Hazard Creek/Little Hole Draw		X	c	c		X		
Sunbeam Creek		X				X		
Spring Hollow					X	X		
Clear Creek					X		X	
Seagull Bay Tributary					X	X		
Spring Creek					X		X	
Crystal Springs					X	X		
Cedar Spillway					X	X		
Colburn waste way					X	X		
Nash Spill					X	X		
R Spill					X	X		
Sterling waste way					X	X		

c=stream carried over from previous 303 (d) list or Integrated Report, pollutant(s) may have changed

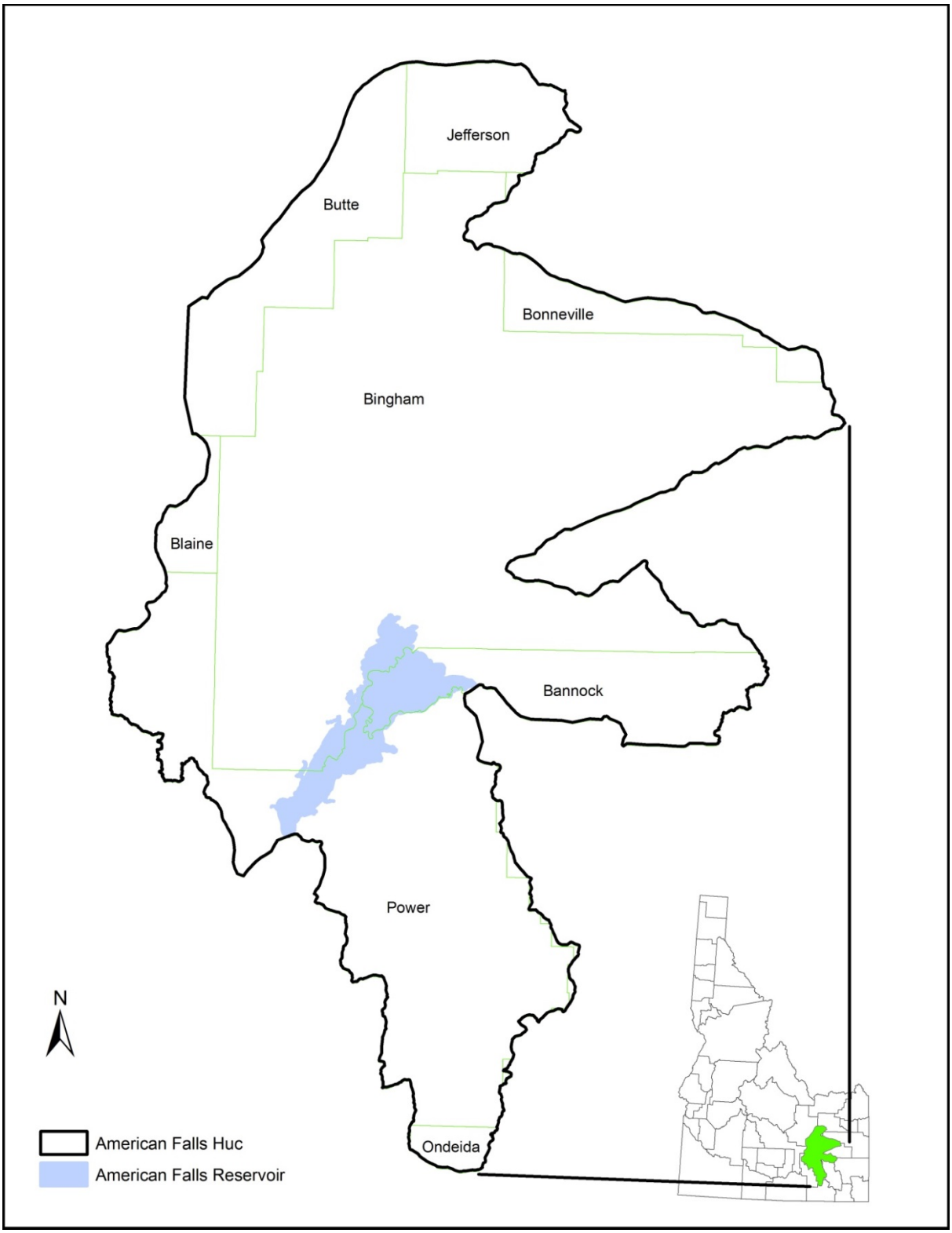

Figure 1. American Falls Subbasin Location

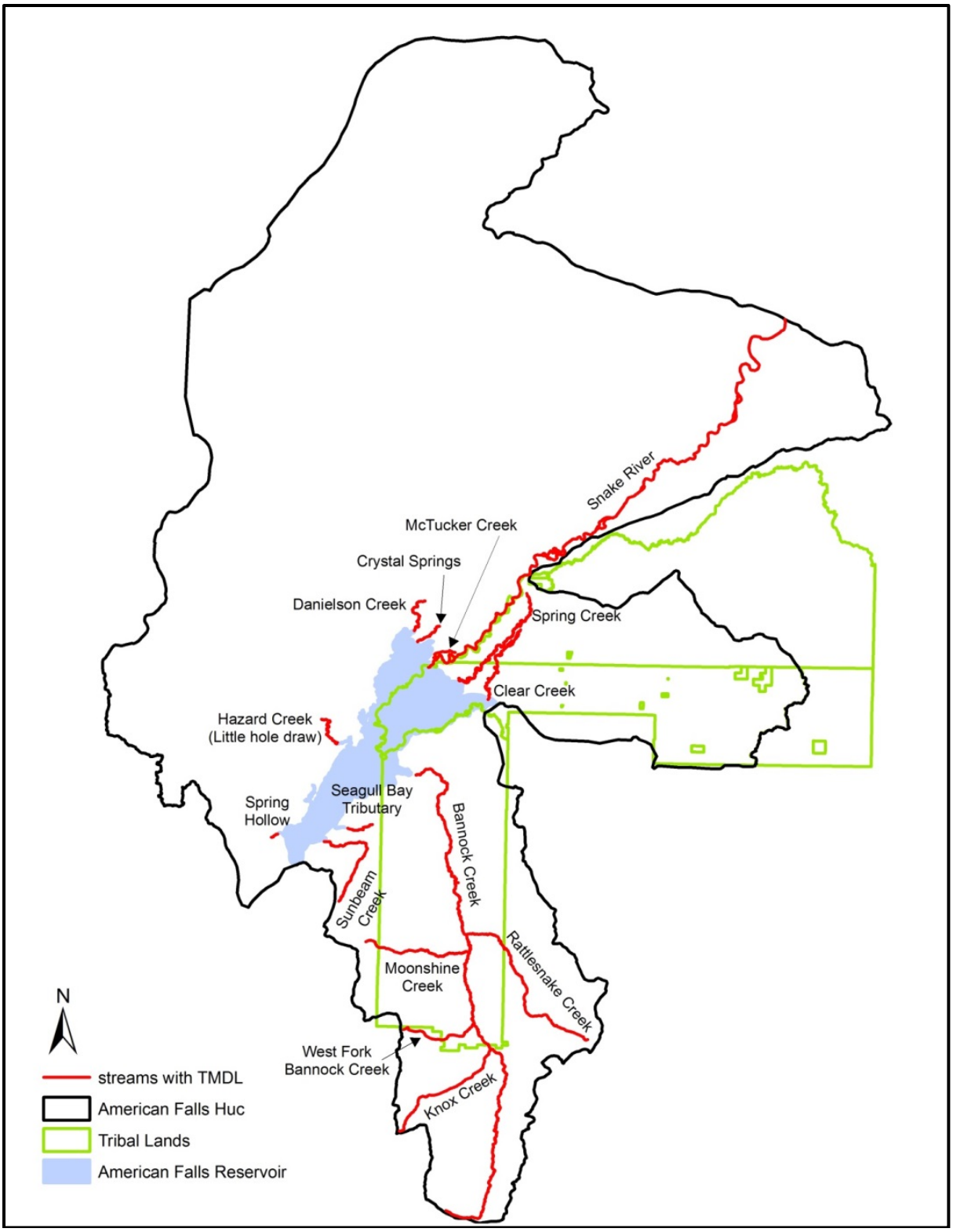

Figure 2. Streams with TMDLs in the American Falls Subbasin

Table 2. Pollutants and Beneficial Uses for Impaired Water bodies in the American Falls Subbasin (IDEQ 2012)

Waterbody	Assessment Unit(s)	Pollutants	Beneficial uses				
			Cold Water Aquatic Life	Salmonid Spawning	Contact Recreation		Domestic Water Supply
					Primary	Secondary	
American Falls Reservoir	ID17040206K001L0L	Dissolved Oxygen, Nutrients, Sediment	D		D	P	D
Snake River	ID17040206SK022_02	Dissolved Oxygen, Flow Alteration, Nutrients, Sediment	D	D	D	P	D
Mc Tucker Creek	ID17040206SK024_02,02a	Sediment	P			P	
Bannock Creek	ID17040206SK001_05 ID17040206SK002_04,05	Bacteria, Nutrients, Sediment	D	E	E	D	
	ID17040206SK002_02,03	Bacteria, Nutrients, Sediment	D	E	E	D	
Moonshine Creek	ID17040206SK006_02,03,04	Sediment	P			P	
Rattlesnake Creek	ID17040206SK010_02,03,04	Sediment	P			P	
West Fork Bannock Creek	ID17040206SK008_02	Bacteria, Sediment	P			P	
Knox Creek	ID17040206SK009_02,03	Sediment, Unknown	P			P	

Waterbody	Assessment Unit(s)	Pollutants	Beneficial uses				
			Cold Water Aquatic Life	Salmonid Spawning	Contact Recreation		Domestic Water Supply
					Primary	Secondary	
Non 303(d) listed streams							
Danielson Creek	ID17040206SK000_02a	Nutrients, Sediment	P	P		P	
Hazard Creek/Little Hole Draw	ID17040206SK025_02a	Nutrients, Sediment	P	P		P	
Sunbeam Creek	ID17040206SK005_02,03	Nutrients, Sediment	P			P	
Spring Hollow	ID17040206SK026_02	Nutrients	P			P	
Clear Creek	ID17040206SK019_02	Nutrients	P			P	
Seagull Bay Tributary	ID17040206SK001_02	Nutrients	P			P	
Spring Creek	ID17040206SK020_02	Nutrients	P			P	
Crystal Springs	ID17040206SK001_02	Nutrients	P			P	
Cedar Spillway	ID17040206SK026_03	Nutrients				P	
Colburn waste way	ID17040206SK001_02	Nutrients				P	
Nash Spill	ID17040206SK026_02	Nutrients				P	
R Spill	ID17040206SK026_02	Nutrients				P	
Sterling waste way	ID17040206SK001_02	Nutrients				P	

D=designated in State Water Quality Standards, P=use not designated so presumed to support use, E=existing use; all water bodies are considered to support agriculture and industrial water supply, wildlife habitat, and aesthetics (IDAPA58.01.02.Idaho water quality standards and wastewater treatment requirements).

Background

Project Setting

The American Falls Subbasin is very diverse in that its northern half encompasses part of the Snake River Plain and the southern half is nestled in the Basin and Range providence. This gives the subbasin many different characteristics ranging from very dry, high desert to high mountains and valleys. In addition the Snake River crosses the subbasin in a southwest direction near the center of the basin. This area along the Snake River has very fertile soil and provides water to irrigate cropland along this corridor. The southern half of the basin is dominated by high mountain valleys. These are productive for dry cropland and rangeland. The northern half of the basin on the Snake River Plain has no surface water, so no TMDLs were needed in this portion of the subbasin. It is only in the basin and range portion and along the Snake River corridor that streams needed to have TMDLs written. Many of the streams are intermittent except for the few larger streams. Of these streams most of the flowing sections are on tribal lands which will not be addressed in this plan.

The basin and range providence consists of north south trending mountains and valleys with streams entering from the east and west. The north south trending valley included in the American Falls subbasin is called Arbon Valley. This valley has a north aspect with Bannock Creek, the largest stream flowing north to the American Falls Reservoir. The valley is 40 miles long and averages 8 miles wide with the Deep Creek Mountains to the west and the Pleasant View hills and Bannock Range to the east.

Livestock grazing is the primary land use in the mountains with dry crop production the primarily land use in the valley bottoms with some grazing of wet meadows. Streams have good canopy cover and riparian vegetation in the mountains but as they enter the valleys woody vegetation decreases or is absent allowing the streams to incise very deeply. These deeply incised streams have very high vertical banks and they appear to be at a stage 2 or 3 in the channel evolution model. Many of the streams are farmed to the edge of the water eliminating any riparian vegetation. Many of these streams go interment as they enter the valley floor this has reduced the ability for the stream to support an extensive riparian area.

The climate is widely varied throughout the subbasin with precipitation ranging from 5 inches on the Snake River Plain to 20 to 30 inches in the mountains (Figure 3). Most of this is in the form of snow which drives the high runoff in the mountain streams in the spring of the year. Summer thunder storms are common in the area. These storms are localized with lightning, hail, high winds and heavy rain showers. Summers are hot with highs near 100 degrees and lows in the 50s due to the low humidity. Winters are cold with a few days each year at sub-zero or below temperatures. In the spring and fall there are late and early frosts which limit the growing season in the higher elevations of the subbasin. In the lower elevation of the subbasin southwest winds will moderate the temperature compared to the surrounding area.

There are a few livestock winter feeding areas scattered throughout the subbasin. Some of them could be contributing sediment and nutrients to nearby streams. These are small operations at

150 head or less. Along with these are ten confined animal feeding operations which have NPDES permits. These large operations are required to have waste containment to be incompliance with the NPDES permit.

There are about 349,564 acres of tribal lands within the subbasin and it is managed by the Shoshone-Bannock Tribe. Conservation improvements on this land will be done in conjunction with the Shoshone-Bannock Tribe. Most of the cropland is rented to non-tribal members.

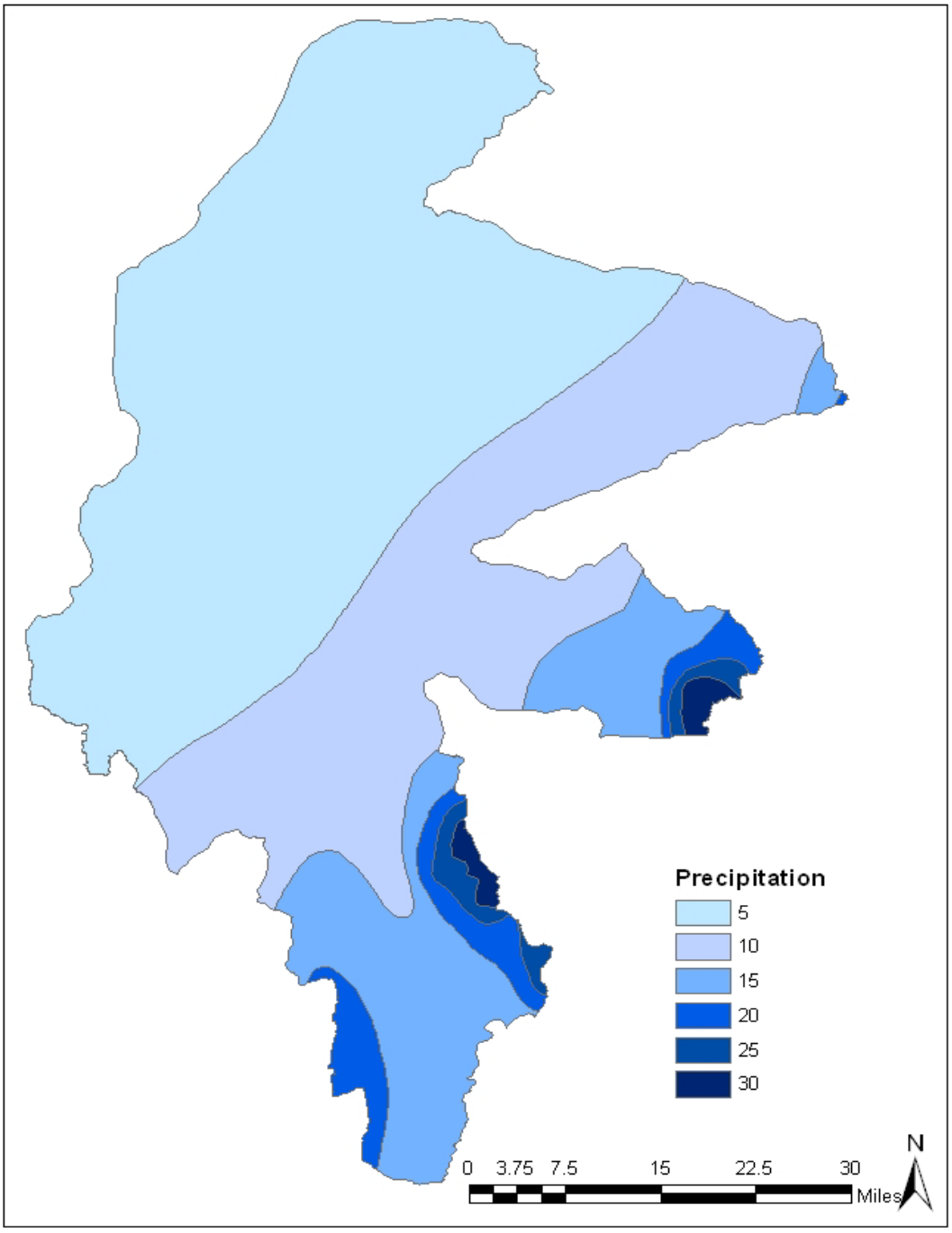

Figure 3. Precipitation Zones in the American Falls Subbasin

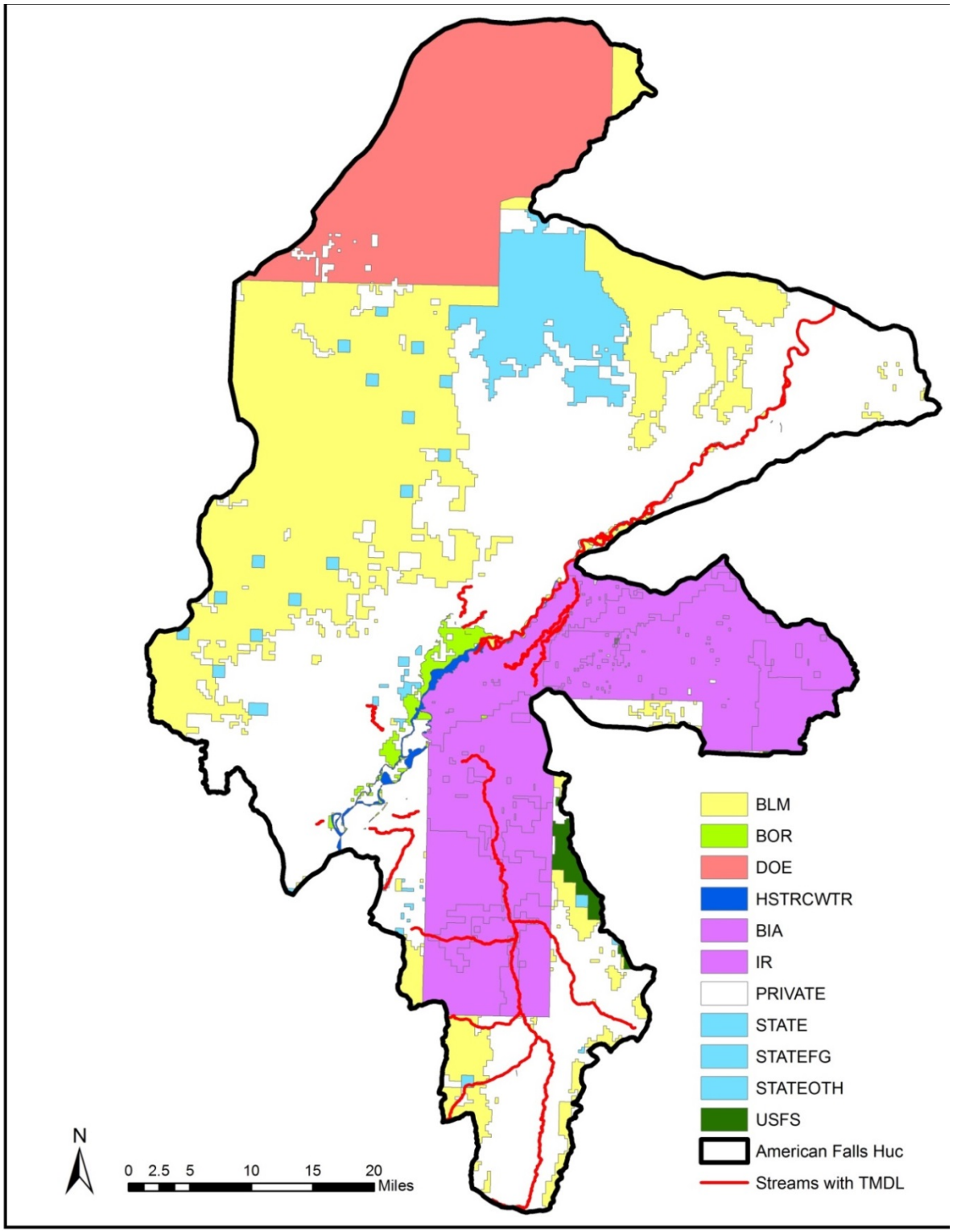

Figure 4. Land Ownership/Management in the American Falls Subbasin

Land Management

Federal and state lands make up the majority of the subbasin at 44.0%. Tribal lands comprise 19.0%. Non-private land totals 63.1%. The American Falls reservoir accounts for the largest part of the open water at 0.3% with other open water at 0.1%. This reservoir along with some uplands near the reservoir is managed by the Bureau of Reclamation as part of the Minidoka Project. The Bureau of Reclamation along with private land owners and other agencies has done a lot of work to reduce the erosion along the shoreline. Private land constitutes 36.9% of the subbasin. This is a small foot print. Much of the private land is located adjacent to surface waters could have a significant impact on them. Much of the tribal land is leased out to non-tribal land owners for cropland or rangeland. Land management for the subbasin is shown in Table 3.

Table 3. Land Management in the American Falls Subbasin

Land Ownership	Acres	Percentage
Private Land	678,167	36.9%
Bureau of Land Management	460,591	25.1%
Tribal Lands	349,005	19.0%
Department of Energy	228,868	12.5%
State of Idaho	90,789	5.0%
Bureau of Reclamation	11,207	0.6%
U.S. Forest Service	8,657	0.5%
Open Water	8,674	0.4%

Land Use

Most of the public lands are managed for wildlife and livestock grazing and other uses. These areas are typically native rangeland. The American Falls subbasin has two very distinctly different areas of land use (Figure 5). The first is the Snake River Plain which has native vegetation of grass, sagebrush, and saltbush-greasewood and the second is the Bannock Creek area which has grass, forbs, sagebrush, aspen, lodgepole pine, and Douglas-fir.

Private land use is irrigated cropland on the Snake River Plain with crops of alfalfa, small grains, potato, sugar beet, grass pasture, and some areas of native rangeland (Table 4). Within the Bannock Creek area dry cropland is the predominate use with crops of small grains, alfalfa, and some areas of native rangeland and wet meadow. Crop rotations on irrigated cropland are typical potato-small grain- alfalfa with some sugar beets. Dry land cropland rotations are annual small grains or small grain-fallow or small grain- alfalfa. Private land accounts for 678,167 acres in the subbasin, with cropland making up the majority at 523,230 acres.

Table 4. Private Land Use in the American Falls Subbasin

Cropland	523,230	Rangeland	127,950
Riparian	2,940	Urban	7,129

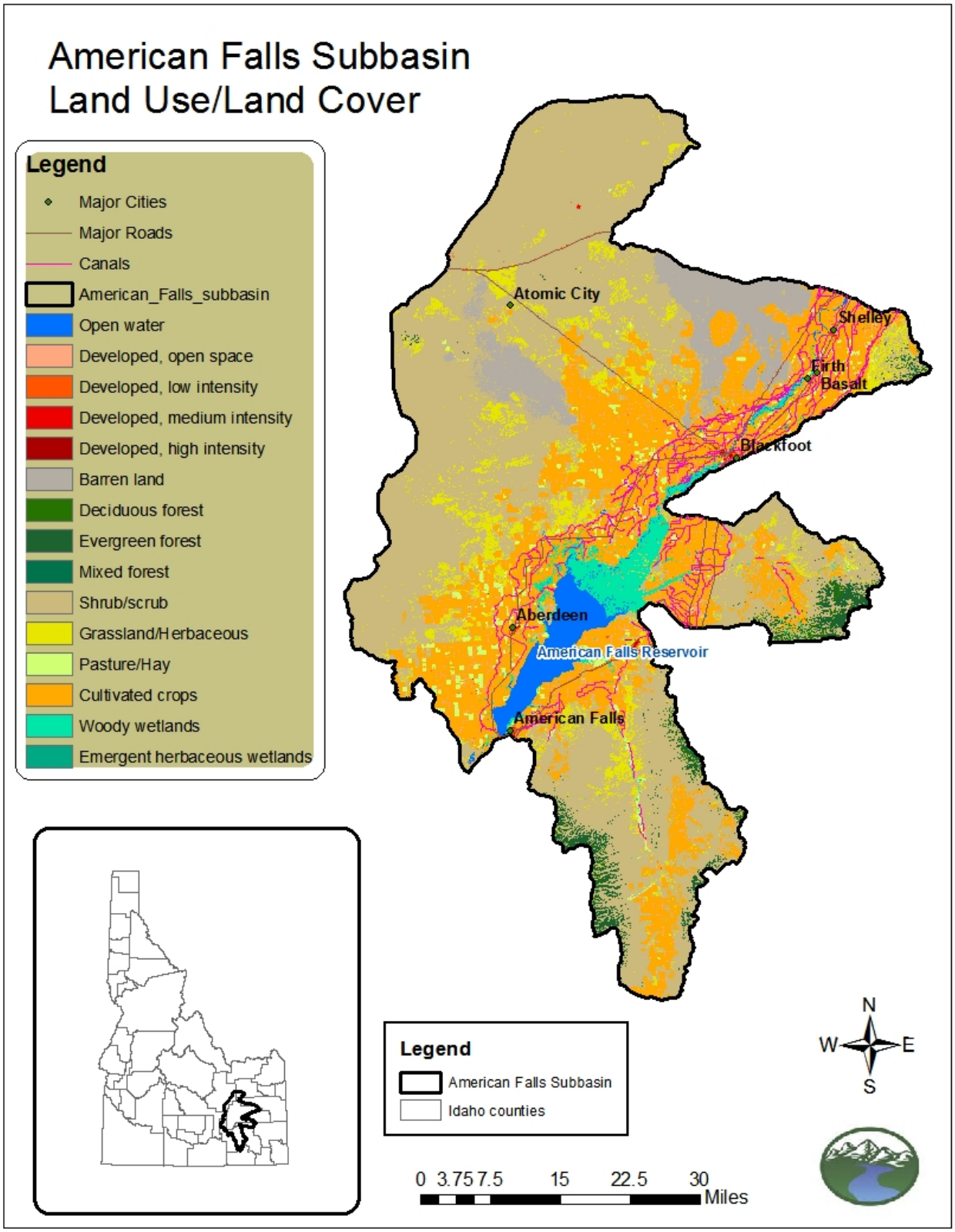

Figure 5. Land Use/ Land Cover in the American Falls Subbasin

Conservation Accomplishments

Conservation BMP's targeting private agriculture lands have been installed throughout the watershed primarily using USDA Farm Bill funds. These BMP's have focused on wind erosion, irrigation water efficiency, water quality, and rangeland health. BMP's installed using USDA funding usually cover about 50% the cost for most projects. For beginning farmers they can cover up to 75% of the cost. A summary of the installed BMP's over the past 6 years with USDA funds are listed in Table 5.

Table 5. Conservation Accomplishments in the American Falls Subbasin

Best Management Practice	units	2012	2011	2010	2009	2008	2007
Access Control	ac		2,075	339	3,733	7,672	48,118
Access Road	ft						21,194
Animal Trails And Walkways	ft						150
Brush Management	ac						3,184
Chanel Stabilization	ft						1,833
Comprehensive Nutrient Management Plan	no				2		53
Conservation Cover	ac	308	1,354	4,315	5,981	7,931	5,8457
Conservation Crop Rotation	ac	2,006	3,350	1,742	5,420	2,676	63,507
Contour Farming	ac						27,702
Cover Crop	ac					264	757
Deep Tillage	ac						1,477
Fence	ft	24,364	61,990	8,490	5,065		543,221
Field Border, Filter strip, Grass Waterway	ac						150
Firebreak	ft						532,082
Fish Passage	mi						2
Forage Harvest Management	ac				4	587	6,418
Forest Slash Treatment, Improvement, Trails and Landing	ac						2,889
Grade Stabilization	no						26
Heavy use Protection	ac	3,778					15
Irrigation Land Leveling	ac						402
Irrigation Regulating Reservoir	no	1			1		26
Irrigation System	ac	2,526	156	197	54	169	17,585
Irrigation System Tailwater Recovery	no						1
Irrigation water Conveyance	ft	17,957	6,947	28,073	56,002	92,538	708,788
Irrigation water management	ac	17	208	1,053	6,295	490	37,475
Mulching	ac			1	2		20
Nutrient Management	ac	508	906	164	203	12	53,074
Pasture & Hayland Planting	ac				169		5,291
Pest Management	ac			561	6,277	13,252	100,209

Best Management Practice	units	2012	2011	2010	2009	2008	2007
Prescribed Grazing	ac	780	152,305		6,643	1,469	157,086
Pumping Plant	no	6	3	3			246
Range Planting	ac		401			7	1,469
Residue Management	ac	49	49	417	2,239	166	54,062
Riparian Forest or herbaceous Buffer	ac						609
Rock Barrier	ft						1
Seasonal High Tunnel	sq ft	7,544					
Sediment basin	no						10
Spring Development	no				1		68
Streambank and Shoreline Protection	ft	16					56,750
Stream Crossing	no						4
Structure for water control	no	4	3	2	3	2	199
Subsurface Drain	ft						2,130
Surface Roughening	ac		320	73		7	12,594
Terrace	ft						10,257
Tree/Shrub Establishment, pruning, site prep	ac						2,484
Upland Wildlife Habitat Management	ac	45	894	24,976	5,269	4,756	125,976
Waste Storage Facility	no				1	1	21
Watering Facility	no		15	3		1	194
Water and Sediment Basin	no						209
Water Well	no				1	1	18
Wetland Creation, Enhancement, Restoration, Management	ac						2,894
Windbreak/Shelterbelt Establishment	ft		11,666	13,745	20,694	733	71,594

Water Quality

Beneficial Use Status

Idaho water quality standards require that beneficial uses of all water bodies in the state be protected. Beneficial uses can include existing uses, designated uses, and presumed existing uses. Designated uses officially recognized by the state are

- Aquatic life: bull trout, cold water, salmonid spawning, seasonal cold water, warm water, modified
- Recreation: primary contract recreation, secondary contract recreation
- Water supply: domestic, agricultural, industrial
- Wildlife Habitat
- Aesthetics

Agricultural water supply, industrial water supply, wildlife habitat, and aesthetics are designated uses for all water bodies within the state of Idaho. In cases where designated uses have not been established by the state for a given waterbody, DEQ presumes the uses of cold water aquatic life

and either primary or secondary contact recreation. Designated beneficial uses specific to the American Falls Subbasin are listed below in Table 6 (IDEQ 2010). In order for beneficial uses to be supported, water quality criteria for that beneficial use cannot be exceeded.

Table 6. Beneficial Use Status for Water bodies in the American Falls Subbasin

Waterbody	Beneficial Use Support							
	CWAL	SS	PCR	SCR	AWS	IWS	W	A
Snake River	NS	NS						
Mc Tucker Creek	NS				NA	NA	NA	NA
Bannock Creek	NS	NA			FS	FS	FS	FS
Moonshine Creek	NS							
Rattlesnake Creek	NS				NA	NA	NA	NA
West Fork Bannock Creek	NS							
Knox Creek	NS				NA	NA	NA	NA
Danielson Creek	NS	NS		NA			NA	
Hazard Creek / Little Hole Draw	NS	NS						
Sunbeam Creek	NS	NA		FS			NA	
Clear Creek	NS							
Spring Creek	NS			FS				
Crystal Springs	NS		NA				NA	
Spring Hollow	NS						NA	
Seagull Bay Tributary				NA				

CWAL: Coldwater Aquatic Life, SS: Salmonid Spawning, PCR: Primary Contact Recreation, SCR: Secondary Contract Recreation, AWS: Agriculture Water Supply, W: Wildlife Habitat, A: Aesthetics
NS: Not Supported, NA: Not assessed, FS: Fully Supported

Pollutants of Concern

The Subbasin Assessment for the American Falls subbasin specified that streams listed for sediment are Snake River, Mc Tucker Creek, Moonshine Creek, Rattlesnake Creek, West Fork Bannock Creek, and Bannock Creek. Streams listed for nutrients are Snake River and Bannock Creek. Streams listed for flow alteration include the Snake River. Streams listed for unknown pollutants are Knox Creek (IDEQ, 2009). Table 7 summarizes the streams and the required load reductions to meet the TMDL. These pollutants are degrading the water quality and the wildlife habitat in and along these §303(d) listed stream reaches. The excess sediment and nutrients added to the system along these streams is accelerating eutrophication of American Falls Reservoir and is lowering the water quality in the streams.

Table 7. Load Allocations and Reductions set in the TMDL for Streams on Private Land (DEQ 2012. Table ES-2b)

Waterbody	Total Phosphorus (tons/yr)		Suspended Sediment (tons/yr)	
	Allocation	Reduction	Allocation	Reduction
Bannock Creek	3.6	3	948	99
Rattlesnake Creek	0	0	307	327
Moonshine Creek	0	0	168	218
West Fork Bannock Creek	0	0	55	0
Mc Tucker Creek	6.5	0	1,439	0
Snake River	484	0	282,757	0
Knox Creek	This allocation and reduction is included in Bannock Creek			
Danielson Creek	1.92	0	548	0
Hazard Creek/Little Hole Draw	1.16	2.95	164	0
Sunbeam Creek	0.31	0.77	261	153
Spring Hollow	0.37	0.38	0	0
Clear Creek	1.07	0	0	0
Seagull Bay Tributary	0.38	0.78	0	0
Spring Creek	8.62	0	0	0
Crystal Springs	2.34	0	0	0
Cedar Spillway	0.49	0	0	0
Colburn Wasteway	0.26	0	0	0
Nash Spill	0.009	0	0	0
R Spill	0.003	0	0	0
Sterling Wasteway	0.38	0	0	0

Surface Water

This subbasin has three distinct areas regarding surface water. 1: along the northern edge there is no surface water and is classified as desert. This area has large irrigation canals providing irrigation water to this very fertile cropland. There are some very short and small tributaries entering the American Falls Reservoir and Snake River from the north side. They are Danielson Creek, Spring Hollow, Hazard Creek/Little Hole Draw, and Mc Tucker Creek. These are spring feed streams and have very constant flows. 2: Flowing through the middle of the subbasin from the northeast to the south west is the Snake River. The Snake River has dense cottonwood stands along the river. The American Falls Dam regulates the Snake River flow based on Irrigation demands downstream and for power generation. The Snake River runs in to the American Falls Reservoir where there are many springs which create short streams that flow into the Snake River or directly into the reservoir. 3: Within the American Falls subbasin most of the tributaries entering the Snake River flow from the East and south. Three of the largest are Blackfoot River, Portneuf River, and Bannock Creek. Only Bannock Creek originates within the subbasin and flows north through Arbon Valley.

Ground Water

The subbasin includes two large aquifers, Arbon Valley and Snake River. The Arbon Valley aquifer is made of unconsolidated material which can be as deep as 3,000 feet thick which produces many high yielding wells. The recharge zones for this aquifer are near the valley margins. This is mainly due to faults that run along these margins. The Snake River aquifer lies under the northern portion of the subbasin. This aquifer is fractured basalt with interbedded clay layers which cause local confined layers. This aquifer is one of the largest aquifers in Idaho and extends from Island Park to the Twin Falls area. This aquifer is estimated to extend up to 5,500 feet below the surface (http://geology.isu.edu/Digital_Geology_Idaho/Module15/mod15.htm).

Animal feeding Operations

There are 15 dairies located within the watershed based on data compiled by (ISDA 2014). These dairies are scattered throughout the watershed. All licensed dairies are required to have a nutrient management plan and waste storage for 180 days according to Idaho law, *I.C. §37-401, Title 37, Chapter 4, Sanitary Inspections of Dairy Products* (http://www.agri.state.id.us/Categories/Animals/Dairy).

There are 10 approved CAFOs within the watershed and 42 AFOs (ISDA 2014). Cattle feedlots are governed by IDAPA 02.04.15, Rules Governing Beef Cattle Animal Feeding Operations. CAFOs must have wastewater storage and confinement facilities to control runoff. ISDA is responsible for regulation of beef and dairy CAFOs.

Invasive Species

Invasive species are plants, animals, fish, and invertebrates, which are not native to Idaho. Seeds, eggs, spore or larvae which have ability to propagate are managed under the Idaho Invasive program. These species have an ability to cause economic and environmental harm to Idaho. The Idaho Department of Agriculture keeps a current list of invasive species and noxious weeds that would have a negative effect on Idaho if they were brought in to the state (http://www.agri.idaho.gov/Categories/Environment/InvasiveSpeciesCouncil/InvasiveSpProblem.php).

Threatened and Endangered Species

The following species are listed as candidate, endangered, threatened and listed by county (Table 8). Each county is listed separately because some counties have very small areas within the American Falls subbasin.

Table 8. Threatened, Endangered, and Candidate Listings for Species by County

County	Common Name	Listing
Bannock	Greater Sage-Grouse	Candidate
	Yellow-billed Cuckoo	Candidate
	Wolverine	Candidate
Bingham	Greater Sage-Grouse	Candidate
	Yellow-billed Cuckoo	Candidate
	Wolverine	Candidate
	Ute Ladies'-tresses	Threatened
Blaine	Greater Sage-Grouse	Candidate
	Yellow-billed Cuckoo	Candidate
	Wolverine	Candidate
	Canada Lynx	Threatened
	Bull Trout	Threatened
	Whitebark Pine	Candidate
Bonneville	Greater Sage-Grouse	Candidate
	Yellow-billed Cuckoo	Candidate
	Wolverine	Candidate
	Canada Lynx	Threatened
	Grizzly Bear	Threatened
	Ute Ladies'-tresses	Threatened
	Whitebark Pine	Candidate
Butte	Greater Sage-Grouse	Candidate
	Wolverine	Candidate
	Canada Lynx	Threatened
	Bull Trout	Threatened
	Whitebark Pine	Candidate
Jefferson	Greater Sage-Grouse	Candidate
	Yellow-billed Cuckoo	Candidate
	Wolverine	Candidate
	Canada Lynx	Threatened
	Ute Ladies'-tresses	Threatened
Power	Greater Sage-Grouse	Candidate
Oneida	Greater Sage-Grouse	Candidate

Treatment

Critical Areas

Critical areas are those areas having the most significant impact on the quality of the receiving waters. These critical areas include pollutant source and transport areas. Proximity to streams, soils erodibility, steepness of the ground, crops produced, and tillage operations were used to determine the critical areas and areas to target for BMP implementation. These include cropland

with areas of wind, sheet and rill or gully erosion; unstable, incised, and erosive streambanks; and rangeland with areas of overutilization.

Treatment Units

The following Treatment Units (TUs) describe areas in the American Falls 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 they 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 each treatment unit. The treatment units are Riparian, Cropland, Rangeland, and Animal Facility Waste Management.

Agriculture Inventory and Evaluation

Riparian

Bannock Creek was inventoried by ISWCC during the summer of 2013 using SVAP and SECI protocols. The stream was divided up into two reaches (Reach 1: head waters to Bowen Ln, Reach 2: Bowen Ln to Fort Hall Reservation boundary). These two reaches had similar characteristics which were evaluated separately. Upon completion of the inventory, each reach was given a separate score and then the stream was assigned an overall score. Bannock Creek received a SVAP aquatic habitat score of fair, with good stream bank stability and moderate stream bank erosion. The lack of a diverse riparian vegetation community was a factor for the low habitat score.

Upstream of Lindley Rd, Bannock Creek is a wet meadow with very good riparian vegetation. It lacks woody vegetation which would provide more shading. Downstream of Lindley Rd, the riparian area narrows to about ½ of bankfull or channel forming flow width. The channel is slightly incised through most of the reach. At the Fort Hall Reservation boundary the channel is 12 to 15 feet deep and 50 to 75 feet wide with very good floodplain within this very deep channel. Riparian vegetation was about ½ of bankfull made up of sedges and rushes. This deep channel has caused head cuts to form on the tributary streams. The tributaries have incised or have active head cuts due to this extreme lowering of Bannock Creek. This has caused a lowering of the water table which is drying up the wet meadows and is reducing riparian vegetation along the stream corridor.

Rattlesnake Creek was assessed by ISWCC in the spring of 2013. It was divided into 5 reaches. Permission was not granted for reaches 1 and 2. Reach 3 is a narrow rock canyon with the county road next to the stream. There is good woody vegetation and a step pool channel. Reach 4 has mixed land uses and has a SVAP aquatic habitat score of fair to poor, with moderate stream bank stability and moderate stream bank erosion. The upper and lower sections of the reach are in poor condition and the middle section is in fair condition. Reach 5 is just above the Reservation boundary. It has good woody vegetation at the beginning to about ¼ of the way of the reach where some springs add flow to Rattlesnake. The stream channel is deeply incised with many vertical banks. Most all of Rattlesnake Creek is lacking woody vegetation. Small pockets of good woody vegetation exist. Erosion has led to reduced bank stability because upland vegetation can't hold the banks together during high flows. The channel is moderately incised and would

only access the floodplain during flood events. There are some irrigation diversions which reduce the flows. These could have a negative effect on getting woody vegetation established.

Knox Creek was dry from the Forest Service boundary to Bannock Creek during the spring of 2013 when the stream assessments were conducted by ISWCC. The TMDL did not set a load allocation for Knox Creek but instead included it with Bannock Creek. This stream is dry for much of its length before it enters the valley, so all the woody vegetation has died and in many places the channel is no longer evident.

Danielson Creek is a low gradient spring fed tributary that flows directly in to the American Falls Reservoir; it is about five miles long and flows through a small reservoir that is used for recreation and irrigation. ISWCC and the South Bingham Soil Conservation District conducted a stream survey in 2007 to determine sources of pollution and identify BMPs that would address the impacts found. Above the reservoir the SVAP rating was fair and below it was rated as good.

Hazard Creek (Little Hole Draw) flows through the city of Aberdeen and through the golf course so the majority of the stream is not in agriculture land. Within the cropland sections, the riparian zone is nonexistent with farming practices occurring to the edge of the bank. No woody vegetation occurs along the banks where cropland is adjacent to the stream. The stream is moderately incised with no sinuosity until closer to the reservoir.

Sunbeam Creek was flowing in the spring of 2014. The runoff was extreme during the spring of 2014. The deeply incised channel over flowed out in the adjacent cropland. Cropland did not have excessive erosion. The stream channel was scoured down to the gravel or bedrock in places. Where there is adjacent cropland there is no woody vegetation and a narrow, deeply incised channel. Areas with adjacent rangeland have good woody vegetation with many large willow trees and other shrubs.

Spring Hollow originates from the two diversions on a canal which conveys water to the American Falls Reservoir. Because of the artificial nature of the water, SVAP was not conducted. Visual observations during the spring of 2014 indicate that the streambanks have minimal erosion with good vegetation cover.

Seagull Bay Tributary was evaluated during the spring of 2014. It is dry. There is a canal overflow that provides additional water during the irrigation season. Because the stream was dry and looked like it was artificially supplied with water from an irrigation canal, SVAP was not conducted. If this stream continues to have high nutrients further evaluation of the irrigation system needs to be performed.

Crystal Springs is out flow from a fish hatchery so the flow is very constant which creates a fine sediment substrate. Streambanks are in a stable condition with good woody vegetation cover, but it is predominately Russian olive. There is no load reduction for phosphorus, so no further evaluations are needed.

Cropland

Most of the cropland in Bannock Creek, Knox Creek, and Rattlesnake Creek watersheds is non-irrigated (dry land) with rotations of wheat, barley, and alfalfa. When these fields are in low residue crops, sheet and rill erosion is above "T" (soil loss tolerance) which leads to the formation of classic gulley's and excessive fine sediment in nearby streams. There have been some structural BMPs installed consisting of water and sediment basins, grass waterways, terraces, and contour farming.

Many of the steeper areas in the subbasin have been enrolled in CRP which establishes a permanent grass cover for 10 years. This conversion to permanent cover reduces sheet and rill erosion to 1 to 2 tons per year. These BMPs have done a great job reducing sheet and rill erosion in the limited areas where they have been installed. Many farmers are using some form of reduced tillage this leaves more residue on the surface. This protects the soil from rain impact this reduces soil crusting and erosion as well.

Rangeland

Private rangeland within the American Falls Subbasin is limited to areas between cropland and public lands. These areas are typically used in the spring and fall as the livestock are moving onto and off the public lands. Rangeland vegetation consists of grasses, forbs, rabbitbrush, sagebrush, bitterbrush, snowberry, serviceberry, aspen, conifers, and juniper. The summer months are hot and dry with afternoon thunder storms that bring various amounts of rain. Range health indicates a slight to moderate departure from what should be there historically.

Animal Facility Waste Management

These are areas where animals are contained for over 45 days and the area is less than 80% vegetated. They have mixed soils, rainfall, slope, number of animals, frequency of cleaning and spreading of waste, and aspect which all affect the amount of waste that could leave the site. Sites that do not have containment structures allow waste to leave the animal facility which can have a negative effect on the surrounding area and if water is nearby it could reduce water quality. Runoff could contain nutrients and pathogens which can cause eutrophication of water bodies which can cause many negative effects. These are scattered throughout the watershed. ISDA has identified each of the facilities. If the livestock have access to live water then corrective action will occur to eliminate any discharge to any live water.

Implementation

Strategy for BMP Implementation

The TMDL implementation planning process included assessing impacts to water quality in the American Falls subbasin from agricultural sources on 303(d) listed streams. This information was used in recommending priorities for installing BMPs to meet water quality objectives stated in the American Falls Subbasin Assessment and TMDL.

Data from water quality monitoring, field inventory, SVAP, DEQ Protocol #8, Rosgen classification, and SECI evaluations were used to identify critical agricultural land uses affecting water quality and set priorities for treatment. Bannock Creek and its tributaries have the highest

load reductions and the lowest scores on the stream inventories, so Bannock Creek would be a good place to target implementation.

The Idaho Agricultural Pollution Abatement Plan lists BMPs by land use that benefit surface and ground water (ISWCC 2003). NRCS has added some new BMPs since the Agricultural Pollution Abatement Plan was last updated in 2003, so BMPs will not be limited to those listed in the Plan. As funding is secured then detailed farm planning will indicate the best BMPs and installation locations. At that point, a time line for the implementation to occur will be developed.

Implementation Alternatives

Implementation alternatives were developed that focused on the identified units. The following alternatives were developed for consideration.

1. No Action
2. Land treatment with structural and management BMPs
3. Riparian and stream channel restoration
4. Animal facility waste management

Description of Alternatives

Alternative 1 - No action

This alternative continues the existing conservation programs without additional project activities or voluntary landowner participation. The identified problems would continue to negatively impact beneficial uses in the subbasin.

Alternative 2 - Land treatment with BMPs on crop, pasture & rangelands

This alternative would reduce accelerated sheet and rill, gully, and irrigation-induced soil erosion. It would also reduce nutrient runoff from animal waste and fertilizer applications. This will improve water quality and reduce pollutant loading to listed stream. Beneficial uses would be sustained or improved with implementation of this alternative. This alternative includes voluntary participation.

Alternative 3 - Riparian and stream channel restoration

This alternative would reduce accelerated streambank and channel erosion. It would also reduce nutrient runoff from animal waste and fertilizer applications. This alternative would improve water quality, riparian vegetation, aquatic habitat, and fish passage and reduce pollutant loading to listed streams. Beneficial uses would be improved with implementation of this alternative. This alternative includes voluntary participation.

Alternative 4 - Animal facility waste management

This alternative would reduce sediment, nutrients, and bacteria from animal waste storage and application areas. This will improve water quality and reduce pollutant loading to listed streams. Beneficial uses will be sustained or improved with implementation of this alternative. This alternative includes voluntary and mandatory participation.

Funding

Financial and technical assistance for installation of BMPs is needed to ensure success of this implementation plan. The local soil conservation districts along with technical assistance from IASCD, ISWCC, and NRCS, will actively pursue 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 State of Idaho. The Idaho Department of Environmental Quality (DEQ) administers the Clean Water Act §319 Non-point Source Management Program. Funds focus on projects to improve water quality and are usually related to the TMDL process.
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 SWC for implementation of agricultural and rangeland best management practices or loans to purchase equipment to increase conservation.
http://www.scc.state.id.us/programs.htm
State Revolving Loan Funds (SRF) –These funds are administered through the SWC.
http://www.scc.state.id.us/programs.htm
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. http://www.nrcs.usda.gov/programs/crp/
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.
http://www.nrcs.usda.gov/programs/cta/
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. http://www.glci.org/
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. http://fishandgame.idaho.gov/cms/wildlife/hip/default.cfm
Partners for Fish and Wildlife Program in Idaho – This is a U.S. Fish and Wildlife program providing funds for the restoration of degraded riparian areas along streams, and shallow wetland restoration. http://www.fws.gov/partners/pdfs/ID-needs.pdf
2014 Farm Bill Programs
Financial Assistance
Environmental Quality Incentives Program (EQIP) - The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland.

Conservation Stewardship Program (CSP) - The Conservation Stewardship Program helps agricultural producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources concerns.

Easements

Agriculture Conservation Easement Program (ACEP) - Agricultural Land Easements protect the long-term viability of the nation's food supply by preventing conversion of productive working lands to non-agricultural uses. Land protected by agricultural land easements provides additional public benefits, including environmental quality, historic preservation, wildlife habitat and protection of open space.

Healthy Forests Reserve Program (HFRP) - The Healthy Forests Reserve Program (HFRP) helps landowners restore, enhance and protect forestland resources on private lands through easements and financial assistance. Through HRFP, landowners promote the recovery of endangered or threatened species, improve plant and animal biodiversity and enhance carbon sequestration.

Partnership

Regional Conservation Partnership Program (RCPP) - RCPP encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales. Through RCPP, NRCS and its partners help producers install and maintain conservation activities in selected project areas. Partners leverage RCPP funding in project areas and report on the benefits achieved.

Other Programs

Conservation Innovation Grants (CIG) - Conservation Innovation Grants (CIG) are competitive grants that stimulate the development and adoption of innovative approaches and technologies for conservation on agricultural lands.

Emergency Watershed Protection Program (EWP) - The purpose of the Emergency Watershed Protection Program (EWP) was established by Congress to respond to emergencies created by natural disasters. The EWP Program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, drought, windstorms, and other natural occurrences.

Outreach

Outreach will be a very fundamental part of this Implementation Plan in order to identify potential audiences. Once audiences are identified then efforts will be made by the districts to contact the audiences. As projects are secured and implemented then displays, tours, and other activities will be used to inform audiences of the success of the project.

Monitoring and Evaluation

Field Level

BMP effectiveness monitoring is part of the conservation planning process. The monitoring is conducted to determine how the BMP is installed, operated and maintained. Conservation planning establishes a benchmark for the resource concerns using several methods. The resources are inventoried and their condition is assessed with tools including but not limited to

the following. RUSLE II and SISL are models 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 measure sheet and rill, irrigation-induced and gully erosion. SVAP version 2 and SECI are indexes that are used to assess aquatic habitat and stream bank erosion. Stream channel cross sections and stream bank profile measurements are done to determine stream bank erosion and lateral recession rates. CAFO/AFO assessment is used to document problems with livestock feeding and waste storage areas.

After BMPs are installed, these same methods are applied to determine the effectiveness of the practice and the associated pollutant reduction. BMP effectiveness monitoring and field evaluations may be conducted by ISWCC and ISDA personnel. BMP effectiveness monitoring typically consists of a visual inspection and participant record keeping.

Watershed Level

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. In addition, DEQ conducts five-year TMDL reviews to update implementation and monitoring efforts.

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