

LITTLE WILLOW CREEK

(17050122SW018)

AGRICULTURE TMDL IMPLEMENTATION PLAN



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IN COOPERATION WITH: PAYETTE SOIL AND WATER CONSERVATION DISTRICT AND THE
LOWER PAYETTE RIVER WATERSHED ADVISORY GROUP
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Original Plan: IDEQ. 2003. Lower Payette Total Maximum Daily Load Implementation Plan and Addendum to the Lower Payette River Subbasin Assessment and Total Maximum Daily Load. Boise, ID.

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INTRODUCTION

The Federal Clean Water Act, Section 303(d), requires that states develop Total Maximum Daily Loads (TMDLs) for impaired waters. An addendum to the Lower Payette River Subbasin Assessment (SBA) and TMDL was written by the Idaho Department of Environmental Quality (DEQ) in 2013 to include the Little Willow Creek watershed. The SBA-TMDL was approved by the Environmental Protection Agency (EPA) in December 2013 (IDEQ 2013). The Idaho Soil & Water Conservation Commission (ISWCC) is the agency responsible for preparing the implementation plan for agriculture. Agriculture is considered a non-point pollutant source, therefore implementation efforts are completed on a voluntary basis.

The Little Willow Creek watershed is located northwest of New Plymouth in Payette and Washington counties. Idaho DEQ has identified two stream segments (assessment units) on Little Willow Creek that are not meeting water quality standards for pollutants (Table 1 and Figure 1).

Table 1 - Assessment Unit Description for the Little Willow Creek watershed

Assessment Unit #	Location
<i>ID17050122SW018_03</i>	<i>Includes the third order of Little Willow Creek from Paddock Valley Reservoir to Indian Creek and is located in Washington and Payette Counties.</i>
<i>ID17050122SW018_04</i>	<i>Includes the fourth order of Little Willow Creek from Indian Creek to the mouth at the confluence with Big Willow Creek and Payette Irrigation Canal and is located in Payette County.</i>

Little Willow Creek (from Indian Creek to the confluence with Big Willow Creek and Payette ditch) was originally given a load allocation for fecal coliform and *E. coli* in the Lower Payette River Subbasin Assessment and Total Maximum Daily Load (IDEQ 1999). Several years later DEQ produced the Lower Payette River 5-year Subbasin Assessment and TMDL Review (IDEQ 2010). In this review, DEQ mentioned, “numerous dams and channel modifications to facilitate grazing and agriculture, no water quality data”. AU # ID17050122SW018-03 was listed as fully supporting beneficial uses in the 2008 Integrated Report. AU# ID17050122SW018-04 was listed as unassessed in the 2008 Integrated Report. It was listed for sediment in the 2010 Integrated Report and subsequently listed for sediment in the 2012 Integrated Report. Assessment Units 03 and 04 were not listed for temperature or bacteria in the 2010 Integrated Report. However, water quality data collected by Idaho DEQ and the Idaho State Department of Agriculture (ISDA) suggested that beneficial uses for these units were impaired by temperature and *E. coli*. Four TMDLs were developed for the following pollutants (Table 2).

Table 2 - Assessment Units and Associated Pollutants in the Little Willow Creek watershed

Assessment Unit #	Pollutant	Integrated Report Listing
ID17050122SW018_03	Temperature (PNV)	Unlisted, but impaired
ID17050122SW018_04	Sediment (TSS)	2010, 2012
ID17050122SW018_04	Bacteria (E.coli)	Unlisted, but impaired
ID17050122SW018_04	Temperature (PNV)	Unlisted, but impaired

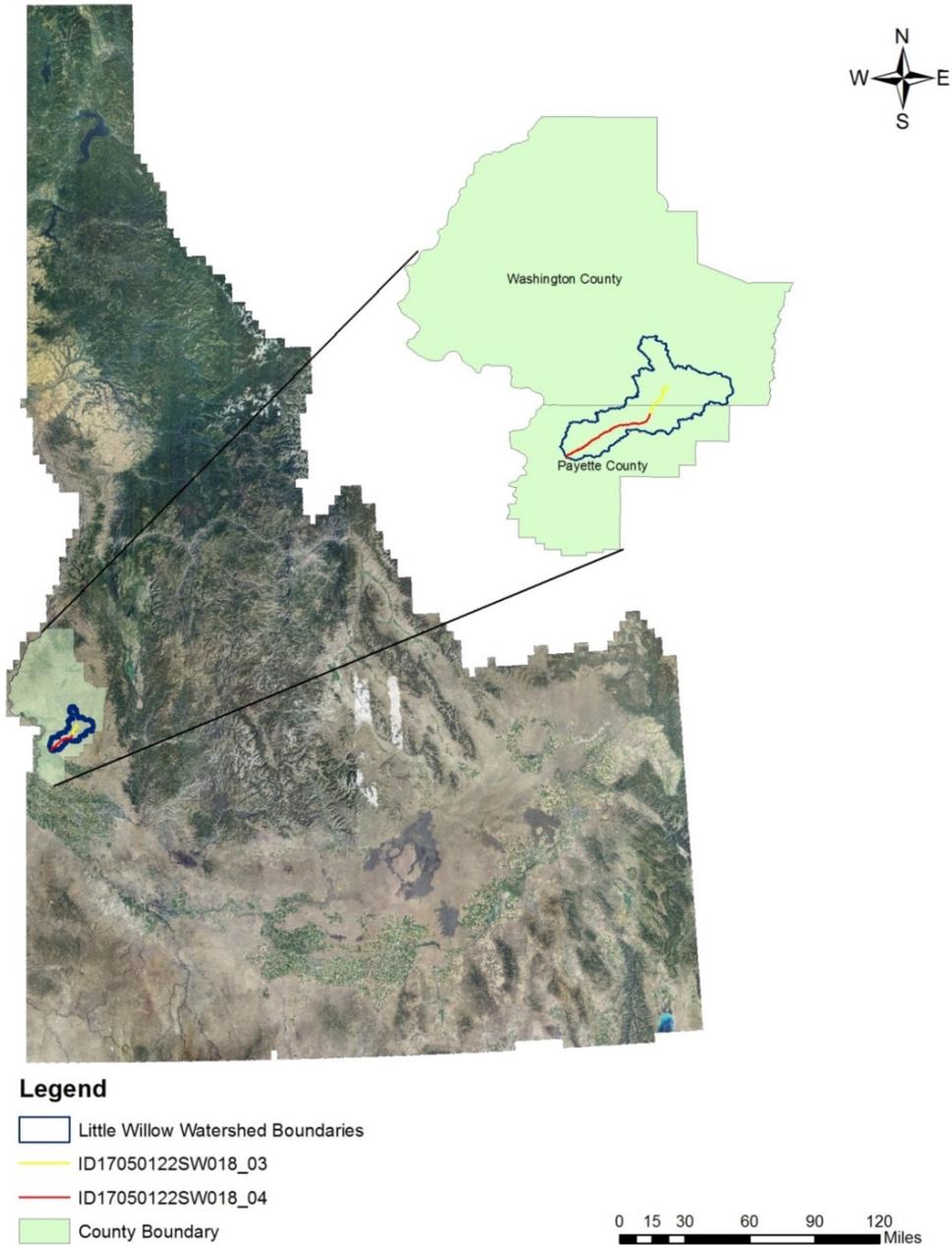


Figure 1. Location Map of Little Willow Creek watershed

Purpose

The purpose of this TMDL Implementation Plan for Agriculture is to provide a prioritization strategy for implementing conservation improvements on privately owned agricultural and grazing lands. Implementation will mainly focus on *ID17050122SW018_04* in Payette County, which is served by the Payette Soil and Water Conservation District (SWCD). This AU is mainly private land.

The intent of this plan is to provide guidance and recommendations for the Payette SWCD; partnering agencies such as the Natural Resource Conservation Service (NRCS); and agricultural producers for the implementation of Best Management Practices (BMPs) that will reduce sediment and bacteria loads and increase shading along the stream corridor where feasible.

Goals and Objectives

The goal of this plan is to restore and protect beneficial uses on the impaired segments of Little Willow Creek by reducing the amount of pollutants from non-point agricultural sources. Beneficial uses are discussed in more detail later in this document. The objectives of this plan are to identify critical areas along Little Willow Creek and to recommend BMPs that will reduce sediment and bacteria loading, and increase shade canopy.

BACKGROUND

Project Setting

The Little Willow Creek watershed is located in the northwestern portion of the Lower Payette River subbasin and flows south toward the Lower Payette River. Little Willow Creek, which originates in the foothills approximately 18 miles east of the town of Weiser, is impounded along with other unnamed tributaries by Paddock Valley Reservoir in Washington County. The dam was constructed by the Little Willow Irrigation District for flood control and irrigation water storage. Beyond Paddock Valley Reservoir, Little Willow Creek is managed to irrigate approximately 2700 acres. Irrigation water is diverted into four small canals, two on each side of Little Willow Creek. The fields irrigate towards the creek and most of the irrigation water is returned to the creek. At the bottom of the watershed, a portion of Little Willow Creek is diverted into the Lower Payette Canal. The water that remains in the stream is then returned to the Lower Payette River.

Flow in Little Willow Creek is mainly influenced by irrigation withdrawals and returns. The Lower Payette River TMDL Five-Year Review cites that there are 15 dams in AU# *ID17050122SW018_04*. Flow is also impacted by snow pack and precipitation events. In drought years, irrigation water is limited and it is common for the stream to go dry.

For more information regarding climate, hydrology, soils, vegetation and other watershed characteristics refer to the Lower Payette River Subbasin Assessment and TMDL (1999) and the

Lower Payette TMDL Implementation Plan and Addendum to the Lower Payette River Subbasin Basin Assessment and TMDL (2003).

Land Use

The watershed is comprised primarily of rangeland located above the irrigation canals and is privately managed. Approximately 6% of the watershed is irrigated cropland located between the canals in the flat areas adjacent to Little Willow Creek. The primary crops grown include alfalfa, grain, and corn. Land use/land cover is shown in Table 3 and Figure 2.

Table 3 - Land Use/Land Cover in the Little Willow Creek Watershed

Land Use Category	Acres	% of Subbasin
<i>Agriculture</i>	<i>6,311</i>	<i>6.42%</i>
<i>Forest</i>	<i>6</i>	<i>0.1%</i>
<i>Range</i>	<i>90,722</i>	<i>92.23%</i>
<i>Riparian</i>	<i>1,307</i>	<i>1.33%</i>
<i>Water</i>	<i>16</i>	<i>0.02%</i>
Total	98,362	100%

Land Ownership

Land ownership in the watershed is roughly half private and half public. Table 4 describes the type of land owner or manager, the total acres, and the percent of watershed in use by each of the land owners/managers. Figure 3 shows where the state and private land occurs.

Table 4 - Land Ownership in the Little Willow Creek Watershed

Land Owner/Manager	Acres	% of Watershed
<i>Private</i>	<i>57,399.00</i>	<i>58.36%</i>
<i>BLM</i>	<i>36,589.00</i>	<i>37.20%</i>
<i>State</i>	<i>4,368.00</i>	<i>4.44%</i>
<i>Historic Center</i>	<i>0.86</i>	<i>.00%</i>
Total	98,356.90	100%

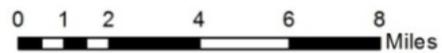
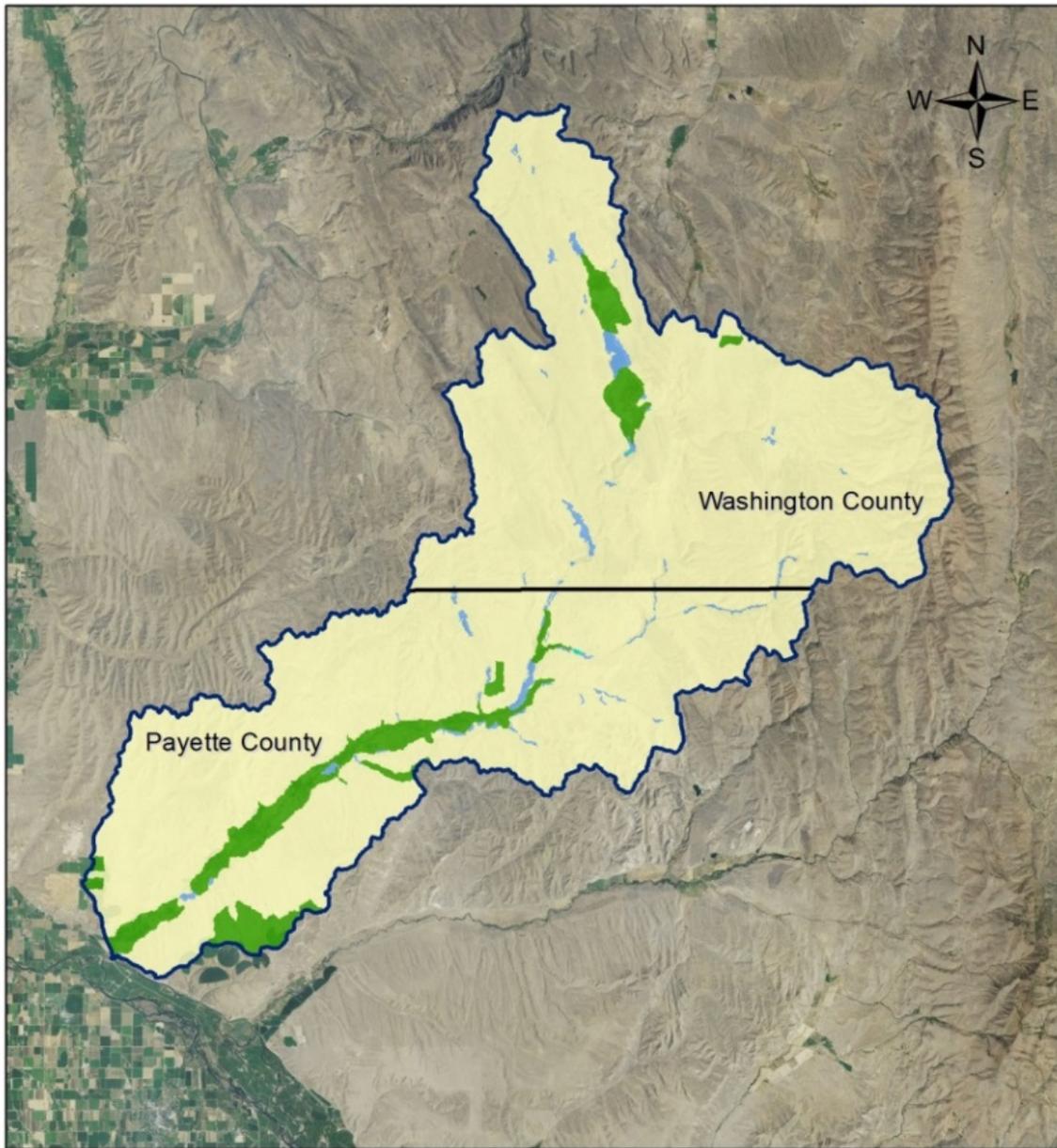
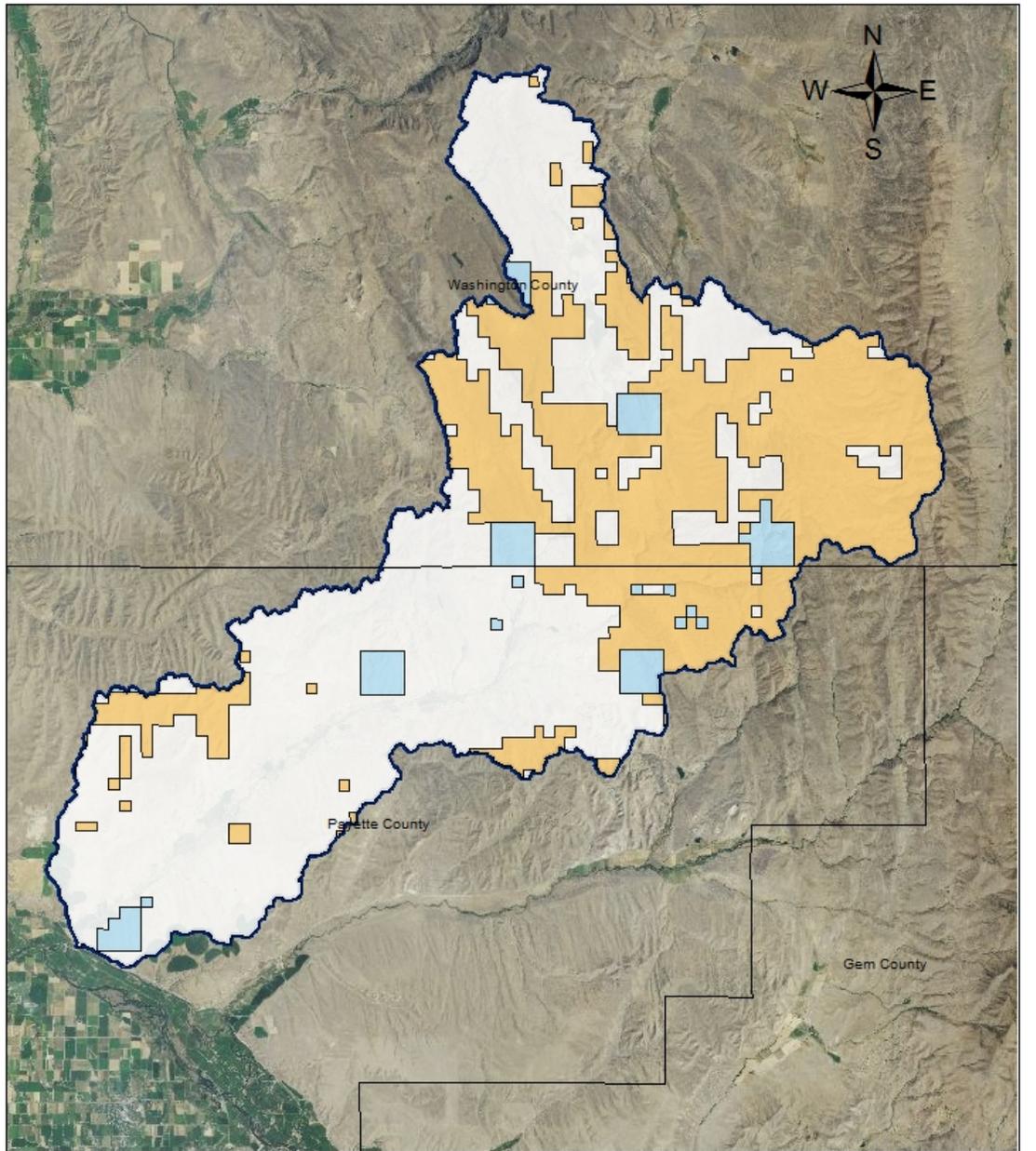


Figure 2. Land Use/Land Cover in the Little Willow Creek Watershed



Legend

Land Management

- BLM
- PRIVATE
- STATE
- Little Willow Watershed Boundaries
- Counties

0 1 2 4 6 8 Miles

Figure 3. Land Ownership in the Little Willow Creek Watershed

Accomplishments

Most of the implementation has focused on the upland area and includes fence, prescribed grazing and pest management. NRCS has used the Environmental Quality Incentive Program (EQIP) to implement the projects shown in Table 5 and Figure 4.

Table 5. Completed Federal BMPs installed in the Little Willow Creek Watershed

Practice Applied	Practice Code	Unit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Access Control	472	acre		50.1		8.4		8.4						66.9
Fence	382	feet		8513										8513
Forage Harvest Management	511	acre							145.1					145.1
Integrated Pest Management	595	acre		3614		3550.9	64	3614	593.1	162				11598
Irrigated Water Conveyance, Pipeline, High Pressure, Underground Plastic	430DD	feet						6300						6300
Irrigated Water Conveyance, Pipeline, Low Pressure, Underground Plastic	430EE	feet						35						35
Irrigation Water Management	449	acre							85					85
Nutrient Management	590	acre								162				162
Prescribed Grazing	528	acre		939.6			240		412.9					1592.5
Pumping Plant	533	no						1				1		2
Range Planting	550	acre							72.2				189.1	261.3
Sprinkler System	442							139.4						139.4
Upland Wildlife Habitat Management	645	acre		5544			240		180.2					5964.2
Wetland Wildlife Habitat Management	645	acre		2										2

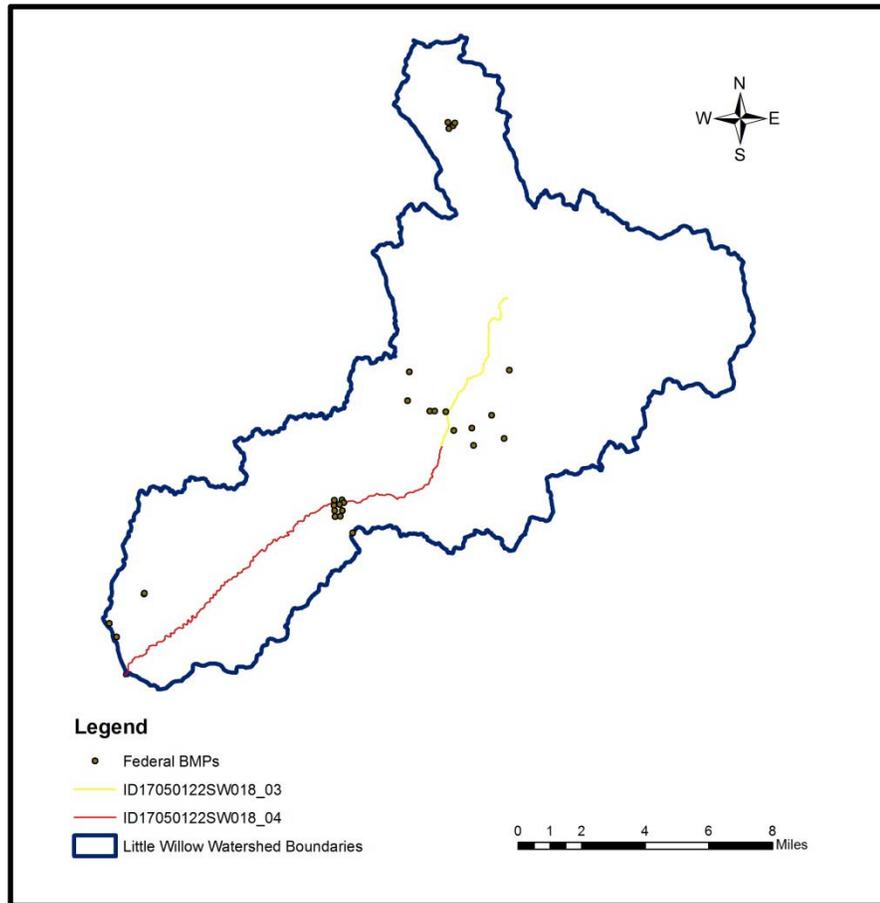


Figure 4. Federal BMPs implemented in the Little Willow Creek Watershed 2003-2013

WATER QUALITY PROBLEMS

Beneficial Use Status

Idaho DEQ designates beneficial uses on rivers, creeks, lakes and reservoirs to meet the requirements of the Federal Clean Water Act. For a complete definition and explanation of beneficial uses, refer to the Lower Payette River Subbasin TMDL 2013 Addendum. The presumed beneficial uses for Little Willow Creek are cold water aquatic life and secondary contact recreation. In order for beneficial uses to be fully supported, the following water quality criteria must not be exceeded:

- Cold water aquatic life: <22° C daily maximum or <19° C daily average
- Secondary Contact Recreation: < 126 *E.coli*/100 ml (geometric mean)

Past Water Quality Monitoring

Water quality monitoring on Little Willow Creek was conducted by the ISDA and Idaho DEQ before and during the TMDL process. In 2007, the ISDA collected water samples on Little Willow Creek from April through October at three sites: (1) LWC-3 – located where the Little Willow crosses Dry Creek Road, (2) LWC-2 – located where Little Willow Creek crosses Stone Quarry Road and (3) LWC-1 – located approximately 2.5 miles upstream from the mouth of Little Willow. The samples were tested for total phosphorus (TP), dissolved phosphorus (DP), suspended sediment concentration (SCC), and Escherichia bacteria (*E.coli*). Additional data was collected for temperature, dissolved oxygen, discharge, conductivity, total dissolved solids, and pH. The complete report on the ISDA monitoring on Little Willow Creek can be accessed at www.agri.idaho.gov/Categories/Environment/water/swReports.

The 2007 ISDA data collected for *E. coli* did not follow DEQ protocol for *E. coli* sampling, though the samples collected indicated impairment. In 2012, Idaho DEQ performed additional monitoring for *E. coli* following their *E. coli* monitoring protocol. Idaho DEQ monitoring locations included a site above the confluence with the Payette River and LWC-2 (the same location used by ISDA in 2007). Idaho DEQ also recorded temperature at the monitoring location. Results of the 2012 *E. coli* monitoring can be found in the Lower Payette River Subbasin TMDL 2013 Addendum.

Pollutants of Concern

Based on the information from water quality monitoring, four TMDLs were developed for the Lower Payette River Subbasin TMDL 2013 Addendum:

- AU# ID17050122SW018_04 – Sediment (TSS)
- AU# ID17050122SW018_04 – Bacteria (*E. coli*)
- AU# ID17050122SW018_03 – Temperature (PNV)
- AU# ID17050122SW018_04 – Temperature (PNV)

Sediment

Monitoring results showed that suspended sediment concentrations tended to increase from LWC-3 to LWC-1, correlating with the increased number of row crop acres. Reported suspended sediment concentration values ranged from 3.3 to 165 mg/L (ISDA 2008). The required load reduction for AU# ID17050122SW018_04 is 70.5%. Load reductions are set to zero for other AUs, however, no additional sediment should be discharged in the other AU's.

Bacteria

Idaho DEQ monitoring results collected in 2012 for *E. coli* showed that both sites exceeded the water quality standard and target of 126 cfu/mL. The geometric mean of both sites was 906.7 cfu. The required load reduction for AU# ID17050122SW018_04 is 87%. A summary of the data collected can be found in the Lower Payette River Subbasin TMDL 2013 Addendum.

Temperature

Idaho DEQ monitoring information collected in 2012 for temperature showed that Little Willow Creek exceeded the water quality standard for temperature (<22° C daily maximum or <19° C daily average). The temperature TMDLs for AU# ID17050122SW018_03 and AU# ID17050122SW018_04 follow a potential natural vegetation approach (PNV) (Shumar and De Varano 2009). A more in depth discussion of the PNV can be found in the Lower Payette River Subbasin TMDL 2013 Addendum. A shade analysis of Little Willow Creek showed that the majority AU# ID17050122SW018_04 has a 41-60% shade deficit or lack of shade. Some of the segments in AU# ID17050122SW018_03 are meeting shade targets, however the average lack of shade is 20%. The required load reduction for AU# ID17050122SW018_04 is 56% and for AU# ID17050122SW018_03 it is 23% (IDEQ 2013).

Identified Problems

Potential bacteria sources cited in the Lower Payette TMDL Implementation Plan and Addendum to the Lower Payette River Subbasin Basin Assessment and TMDL (2003) included livestock grazing, concentrated livestock feeding areas, improper application of manure on irrigated cropland, faulty septic systems and wildlife.

Sediment sources may include streambank erosion accelerated by soil type and spring flood events. Irrigation return can also contain excessive sediment depending on the crop grown and the management of irrigation water. Additionally, conventional tillage methods can impact soil health and contribute to the loss of soil stability.

Temperature sources may be contributed to the lack of riparian canopy.

AGRICULTURAL WATER QUALITY INVENTORY AND EVALUATION

Riparian

In 2013 a riparian assessment was conducted by the ISWCC and Idaho DEQ. Stream Visual Assessment Protocol (SVAP), Stream Erosion Condition Inventory, Solar Pathfinder, Wolman Pebble Count, Riparian Vegetation Inventory and Riparian Photo Inventory were used to assess private property in AU# ID17050122SW018_04.

Stream Visual Assessment Protocol (SVAP) Results:

SVAP is a qualitative assessment of the stream's health based on a score from 1 to 10, with 1 being the most impaired. Stream health is ranked based on categories in Table 2. Overall the reaches assessed in AU# ID17050122SW018_04 rated "fair" due to areas of streambank failure, very turbid water and limited quantity and quality of riparian plant community and cover. SVAP ratings for each reach are shown below in Table 6. Reach numbers correspond to the order in which they were assessed and not the order from downstream to upstream.

Table 6. SVAP Results for Little Willow Creek

Reach	Length (ft)	Channel Condition	Hydraulic Alteration	Bank Condition	Riparian Area Quantity	Riparian Area Quality	Canopy Cover	Water Appearance	Nutrient Enrichment	Manure or Human Waste	Pools	Barriers To Movement	Fish Habitat Complexity	Aquatic Invertebrate Habitat	Rating
LW1	8,350	3	6	6	1	1	2	1	7	8	9	10	6	6	Fair
LW2	7,500	5	6	8	4	2	2	3	6	8	9	10	7	6	Fair
LW3	2,700	6	7	8	6	2	2	1	5	8	8	3	8	7	Fair

Stream Erosion Condition Inventory (SECI)

SECI is a qualitative assessment of the sediment producing capability of the stream based on a score of -1 to 3, with 3 being the most erosive and unstable. Streambank condition is ranked based on evidence of bank erosion, bank stability, bank cover, channel stability, and in channel deposition. Our assessment found that these reaches have areas of high, unprotected banks and an unstable channel bottom. The numeric SECI rating is shown below in Table 7. Reaches 1 and 2 show signs of moderate erosion while reach 3 has slight erosion. Some of the eroded banks were beginning to show signs of recovery.

Table 7. SECI Results for the Little Willow Creek

Reach	Bank Erosion Evidence	Bank Stability Condition	Bank Cover/ Vegetation	Lateral Channel Stability	Channel Bottom Stability	In-Channel Deposition	Total
LW1	3	1	1	1	0.5	1	7.5
LW2	3	0.5	1	1.5	1	-1	6
LW3	3	0.5	1	0	0.5	-1	4

Solar Pathfinder

A solar pathfinder is used to determine the percentage of the sun’s path that is covered by shade producing objects, characterizing the effective shade on the stream reach. Solar pathfinder photos for tracing are taken at systematic intervals along the length of the stream assessed. Solar pathfinder data was collected by Idaho DEQ during the assessment. When the difference in existing shade and target shade is greater than 20%, BMPs such as riparian herbaceous cover and channel bank vegetation are recommended to increase stream shading and improve bank stability. Table 8 displays the current percent lack of shade.

The majority of shade for the assessed sites is being provided by cattails. There are trace amounts of the expected and potential natural vegetation, which includes black cottonwoods and yellow willow, and varieties of rushes and sedges. The trend for desirable natural vegetation is downward. Noxious weeds such as poison hemlock, scotch thistle and perennial pepperweed are abundant.

Table 8. Solar Pathfinder Results and Shade Targets for Little Willow Creek

Stream Reach	Average % Unshaded	Average % Shaded	Target Shade (%)	Current Lack of Shade
<i>Little Willow 1 Site 1</i>	79.5	20.5	59	38.5
<i>Little Willow 1 Site 2</i>	91.3	8.7	59	50.3
<i>Little Willow 1 Site 3</i>	88.0	12.0	59	47.0
<i>Little Willow 2 Site 4</i>	94.7	5.3	53	47.7
<i>Little Willow 2 Site 5</i>	89.8	10.2	53	42.8
<i>Little Willow 2 Site 6</i>	91.2	8.8	53	44.2
<i>Little Willow 3 Site 7</i>	91.5	8.5	54	45.5
<i>Little Willow 3 Site 8</i>	84.2	15.8	54	38.2

Crop and Pasture Lands

The majority of irrigated crops include alfalfa, wheat and corn. Crops are primarily flood irrigated with the tail water returning to Little Willow Creek. There are some hand lines, wheel lines and pivots. Fertilizers and pesticides are typically applied.

Rangeland

The foothills are used for open range grazing of cattle. Most of the range is privately owned and managed. Roughly 40% of the rangeland is public land, managed by the Bureau of Land Management. Grazing on public lands is based on federal allotments and are under prescribed grazing plans. Grazing on the private upper rangelands can occur all year long with winter feeding and calving areas located in the lower valley.

In June 2013, NRCS and ISWCC personnel evaluated an upland stretch adjacent to one of the assessed reaches (Table 9). The NRCS Rangeland Health Evaluation form was used to evaluate the health of the range based on how closely it matches the corresponding Ecological Site Description (ESD) (NRCS 2009). ESD's are NRCS Technical Guides that provide detailed ecological information and data about a particular site type. Site Stability, Hydrologic Function and Biotic Integrity are rated based on the departure from expected. The ratings for this site ranged from "none to slight" (meaning site closely matches the ESD) to "extreme to total" (meaning the site differs extremely from the ESD). The plant community has shifted from native, perennial grasses to annual, invasive grasses such as cheatgrass and medusahead.

Table 9. Range Health Evaluation Rating

Reach	Soil - Site Stability	Hydrologic Function	Biotic Integrity
<i>Little Willow Reach 2</i>	<i>none to slight</i>	<i>none to slight</i>	<i>extreme</i>

Animal Feeding Operations

The Lower Payette Subbasin TMDL 2013 Addendum identified two dairies and seven feedlots in the watershed adjacent to or in close proximity to Little Willow Creek. Only one of the operations is classified as a large operation (>1000 head) and required to have a nutrient management plan. The other operations are classified as small to medium.

There are no point source discharge permits in the watershed (IDEQ 2013).

Ground water Concerns

The Lower Payette Nitrate Priority Area takes in the lower portion of the Little Willow Creek watershed, with one of the Little Willow well samples exceeding the state drinking water standard. The Lower Payette Nitrate Priority area was #11 out of 32 high nitrate priority areas identified in 2008 in the state (IDEQ 2008). An area is considered a high nitrate priority area if

25% of the wells sampled in the area have at least 5 mg/L, which is one-half the drinking water standard of 10 mg/L. (<http://www.deq.state.id.us/water-quality/ground-water/nitrate.aspx>)

Threatened and Endangered Species

There are no known threatened or endangered species listings in the Little Willow Creek watershed.

The Southern Idaho ground squirrel, *Spermophilus brunneus endemicus*, is listed as candidate species and it is located in the Payette River subbasin in Adams, Gem, and Washington counties.

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 those areas in which treatment is considered necessary to address resource concerns affecting water quality.

Critical areas are prioritized for treatment based on their location relative to a water body of concern and the potential for pollutant transport and delivery to the receiving water body. Critical areas in this plan are surface irrigated cropland and pasture land adjacent to Little Willow Creek that serve as a direct pathway for pollutant entry into Little Willow Creek.

Treatment Units

The Little Willow watershed is divided into four treatment units that have similar land uses, productivity, resource concerns and treatment needs.

Treatment Unit #1 - Riparian

This treatment unit covers the land adjacent to the stream found within cropland, pasture, and rangeland units. Unstable banks and noxious weeds are a major concern along riparian corridors of Little Willow Creek. There is an overabundance of poison hemlock, houndstongue, thistle, and whitetop. Most of the treatment needed involves pest management and planting vegetation to stabilize the streambank; however, we acknowledge that high/low flow regimes limit the success of planting efforts. High water velocity and volume during spring runoff can scour the banks making plant establishment difficult. In addition, low flows as a result of water withdraws during the irrigation season also prevent plant growth and establishment. Consistent water levels are needed in order to establish vegetation along Little Willow Creek.

Treatment Unit #2 – Cropland (irrigated)

This treatment unit lies between the riparian and rangeland areas. Major crops raised are alfalfa, wheat and corn under surface irrigation. Some fields are sprinkler irrigated. Practices that may

be applied to cropland include irrigation system improvements, irrigation water management, tailwater recovery systems, filter strips and sediment basins. Outreach and education efforts regarding reduced tillage and crop residue management practices would attribute to improved soil health and reduce soil loss from crop fields.

Treatment Unit #3 – Pasture (irrigated)

This treatment unit lies between the riparian and rangeland areas. There are a few irrigated pastures that are used year round. However, some of the other crop fields and riparian areas may be used for seasonal grazing. Practices that may be applied to irrigated pasture would include fencing, offsite water, irrigation system improvements and irrigation water management.

Treatment Unit #4 - Rangeland

The rangeland in this assessment unit has a great need for improvement; however, major challenges exist in trying to restore perennial grasses to rangeland in this watershed. A majority of the rangeland is in poor condition, in part due to infestation with annual, introduced species, such as cheat grass, medusahead rye, and bulbous bluegrass.

Water developments and cross fencing may improve range productivity and condition by managing livestock distribution. Some other practices that may be applied to rangeland include range planting/seeding, prescribed grazing and pest management to control noxious weeds. Prescribed grazing may be difficult to implement because quality forage is not available throughout most of the watershed

Implementation Priority

Site specific BMPs will be chosen based on a variety of factors, but typically reflect the landowner's objectives in conjunction with the resource concerns identified by the assisting agency. Implementation priority should focus on the critical areas that have the greatest potential for pollutant transport. However, implementation priority will likely be based on landowner interest and available funding.

Estimated BMP Implementation Costs

BMPs that would be appropriate for the Little Willow watershed include, but are not limited to, the practices and associated costs identified in Table 10. The extent of BMPs listed would not treat the entire watershed but proper implementation of BMPs on agriculture fields within the Little Willow watershed will improve the quality of surface water in the project area and reduce pollutant loading. Individual conservation planning with interested landowners will determine the most appropriate BMPs to install on a case by case basis. Once a conservation plan is developed with the landowner, a more precise cost estimate of recommended BMPs will be determined.

Table 10. Suggested BMPs and estimated costs.

Practice	Unit	Cost/Unit	Extent Each Treatment Unit				Total Amount	Total Cost
			Riparian	Cropland	Pasture	Rangeland		
Access Control-Animal Exclusion	ac	\$ 23.30	45				45	\$ 1,048.50
Fence- barbed/smooth wire	ft	\$ 1.90	4600		1250		5850	\$ 11,115.00
Filter Strips	ac	\$ 158.00		4			4	\$ 632.00
Heavy Use Area Protection	sqft	\$ 2.00	16050				16050	\$ 32,100.00
Irrigation Pipeline - CMP	ft	\$ 11.80		480			480	\$ 5,664.00
Irrigation Pipeline - PVC	ft	\$ 5.20		4500			4500	\$ 23,400.00
Irrigation System - Gated Pipe	ft	\$ 5.00		1620			1620	\$ 8,100.00
Irrigation System - Pivot	ft	\$ 66.20		1750			1750	\$ 115,850.00
Irrigation System - Pods	ac	\$ 440.00			52		52	\$ 22,880.00
Irrigation System - Surge Valves	ea	\$ 2,650.00		4			4	\$ 10,600.00
Irrigation System - Wheel Line	ft	\$ 19.30		8900			8900	\$ 171,770.00
Livestock Pipeline	ft	\$ 2.30			1350	2600	3950	\$ 9,085.00
Pest Management - Crop/Riparian	ac	\$ 40.40	15				15	\$ 606.00
Pest Management - Range	ac	\$ 14.30				1250	1250	\$ 17,875.00
Prescribed Grazing - Irrigated	ac	\$ 8.70			150		150	\$ 1,305.00
Prescribed Grazing - Range	ac	\$ 3.20				1250	1250	\$ 4,000.00
Pumping Plant	hp	\$ 330.00		80			80	\$ 26,400.00
Range Planting	ac	\$ 220.00				1250	1250	\$ 275,000.00
Sediment Basin	cuyd	\$ 4.00		3500			3500	\$ 14,000.00
Streambank Protection- Willow Poles	ft	\$ 4.10	12250				12250	\$ 50,225.00
Streambank Protection- Bioengineered	ft	\$ 53.70	7600				7600	\$ 408,120.00
Structure for Water Control	ft	\$ 400.00		50			50	\$ 20,000.00
Underground Outlet	ft	\$ 7.80		1600			1600	\$ 12,480.00
Watering Facility	gal	\$ 2.30			1500	3000	4500	\$ 10,350.00
TOTAL								\$ 1,179,125.50

Funding

Financial and technical assistance for installation of BMPs is needed to ensure success of this implementation plan. The Payette Soil and Water Conservation District, with the technical assistance from ISWCC and NRCS, will actively pursue 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 – 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 Idaho ISWCC 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>

Water Quality Program for Agriculture (WQPA) –The WQPA is administered by the Idaho Soil and Water Conservation Commission (ISWCC) and is coordinated with the TMDL process. The program is currently not funded. <http://www.scc.state.id.us/programs.htm>

Conservation Improvement Grants – These grants are administered by the ISWCC. The program is currently not funded. <http://www.scc.state.id.us/programs.htm>

Environmental Quality Incentives Program (EQIP): EQIP provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.

<http://www.nrcs.usda.gov/programs/eqip/>

Regional Conservation Partnership Program (RCPP) - RCPP promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements.

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/farmland/rcpp/>

The Agricultural Conservation Easement Program (ACEP) – ACEP 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.

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/easements/acep/>

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/>

National Grazing Lands Coalition (NatGLC) –The National Grazing Lands Coalition promotes ecologically and economically sound management of grazing lands. Grants are available that facilitate the following: (1) demonstration of how improved soil health affects grazing lands sustainability (2) establishment of conservation partnerships, leadership and outreach, (3) education of grazing land managers, professionals, youth and the public (4) enhancement of technical capabilities, and (5) improvement in the understanding of the values and multiple services that grazing lands provide. <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>

Outreach

Conservation partners in the Little Willow Creek watershed will use their combined resources to provide information about BMPs to agricultural landowners and operators within Little Willow Creek watershed. 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 may:

- Provide information about the TMDL planning and implementation process
- Inform the public about water quality projects and monitoring results
- Accelerate the development of conservation plans and program participation
- Increase public understanding of agriculture's contribution to conserve and enhance natural resources and commitment to meeting the TMDL challenge

- Organize an informational tour bringing together irrigation districts' Board of Directors and Soil Conservation Districts' Board of Supervisors.
- Identify and encourage the adoption of BMPs for land uses in the watershed

Monitoring and Evaluation

Field Level

During the conservation planning process with individual participants, planned BMPs will be evaluated for effectiveness in addressing water quality. Erosion is predicted using the *Revised Universal Soil Loss Equation (RUSLE)* to estimate sheet and rill erosion and the *Surface Irrigation Soil Loss (SISL)* model to estimate irrigation-induced erosion. The *Water Quality Indicators Guide* is utilized to assess nitrogen, phosphorus, sediment, and bacteria contamination from agricultural land.

Participants who install BMPs in conjunction with a state or federal cost-share incentive program will be responsible for following NRCS standards and specifications and for maintaining the installed BMPs for the practice life span. The contract and/or conservation plan will outline the responsibility of the participant regarding operation and maintenance (O&M) for each BMP. Annual status reviews of contracts will be conducted to insure the contract is on schedule and BMPs are being installed as planned.

BMP effectiveness monitoring will be conducted following installation to determine the relative effectiveness of implemented BMPs in reducing water quality impacts. These BMP effectiveness evaluations will be conducted according to the protocols outlined in the *Agriculture Pollution Abatement Plan* and the *ISWCC Field Guide for Evaluating BMP Effectiveness*.

Idaho's *OnePlan CAFO/AFO Assessment Worksheet* can be used by participants to evaluate and manage livestock waste, feeding, storage, and application areas. Landowners may also use Imhoff Cones to directly measure the volume of sediment in their wastewater.

Watershed Level

At the watershed level, there are many governmental and private groups, such as the ISDA, IDEQ and Payette SWCD involved with water quality monitoring. Water quality monitoring is a key component in determining the results of implementation efforts and tracking progress towards achieving water quality standards is essential when dealing with timeframes that stretch over many years. Trends are an important factor in determining whether or not standards are achievable given the level of effort expended.

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

The ISWCC use the *Stream Visual Assessment Protocol (SVAP)* and *Streambank Erosion Condition Inventory (SECI)* to assess aquatic habitat, stream bank erosion, and lateral recession rates.

References

Idaho Code § 39.3611. Development and implementation of total maximum daily load or equivalent processes.

IDAPA 58.01.02. Idaho water quality standards and wastewater treatment requirements.

[IDEQ] Idaho Department of Environmental Quality. 2013. Lower Payette River Subbasin Assessment and Total Maximum Daily Loads, 2013 Addendum (Hydrologic Unit Code 17050122). IDEQ. Boise, Idaho.

[IDEQ] Idaho Department of Environmental Quality. 2010. Lower Payette River, TMDL Five-Year Review (HUC 17050122). IDEQ. Boise, Idaho.

[IDEQ] Idaho Department of Environmental Quality. 2008. 2008 Nitrate Priority Area, Delineation and Ranking Process. IDEQ. Boise, Idaho.

[IDEQ] Idaho Department of Environmental Quality. 2003. Lower Payette Total Maximum Daily Load Implementation Plan and Addendum to the Lower Payette River Subbasin Assessment and Total Maximum Daily Load. IDEQ/SWC. Boise, Idaho.

[IDEQ] Idaho Department of Environmental Quality. 1999. Lower Payette River Subbasin Assessment and Total Maximum Daily Load. IDEQ. Boise, Idaho.

[ISDA] Idaho State Department of Agriculture. 2008. Little Willow Creek Water Quality Monitoring Report April through October 2007. Boise, ID: ISDA. <http://www.agri.idaho.gov/Categories/Environment/water/waterPDF/swreports/Little%20Willow%202007%20report.pdf>

Rasmussen, Lawrence M. 1976. Soil Survey of Payette County, Idaho. Natural Resource Conservation Service and Soil Conservation District. Boise, Idaho.

Shumar, M.L. and J. DeVarona. 2009. The Potential Natural Vegetation (PNV) Temperature Total Maximum Daily Load (TMDL) Procedures Manual. Boise, ID: DEQ.

[USDA] United States Department of Agriculture, NRCS. 2009. Ecological Site Descriptions. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/ecoscience/desc/>

[USDA] ID-NRCS FY 2012 EQIP General Payment Schedule