

Middle Fork Payette River Subbasin TMDL Five Year Review



Final



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**Middle Fork Payette River Subbasin
TMDL Five Year Review**

February 2009

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Abbreviations, Acronyms, and Symbols

§303(d)	Refers to section 303 subsection (d) of the Clean Water Act	INFISH	the federal Inland Native Fish Strategy
§	Section (usually a section of federal or state rules or statutes)	km²	square kilometer
AU	assessment unit	m	meter
AWS	agricultural water supply	mi²	square miles
BMP	best management practice	MOS	margin of safety
BURP	Beneficial Use Reconnaissance Program	NB	natural background
CFR	Code of Federal Regulations	NFS	not fully supporting
CWA	Clean Water Act	NRCS	Natural Resources Conservation Service
CWAL	cold water aquatic life	SBA	subbasin assessment
DEQ	Department of Environmental Quality	SFI	DEQ's Stream Fish Index
DWS	domestic water supply	SHI	DEQ's Stream Habitat Index
EIS	environmental impact statement	SMI	DEQ's Stream Macroinvertebrate Index
EPA	United States Environmental Protection Agency	SS	salmonid spawning
FPA	Idaho Forest Practices Act	TMDL	total maximum daily load
GIS	Geographical Information Systems	USCOE	U.S. Army Corps of Engineers
HUC	Hydrologic Unit Code	USDA	United States Department of Agriculture
I.C.	Idaho Code	USFS	United States Forest Service
IDAPA	Refers to citations of Idaho administrative rules	WAG	Watershed Advisory Group
IDL	Idaho Department of Lands	WQS	water quality standard

Executive Summary

This document presents a five-year review of the Middle Fork Payette River SBA/TMDL(s). This review addresses the water bodies in the Middle Fork Payette River Subbasin that are in Idaho's current and most recent draft Section 4(a) of the Integrated Report, waters with TMDLs completed. This five-year review has been developed to comply with Idaho Statute 39-3611 (7). The review describes current water quality status, pollutant sources, and recent pollution control efforts in the Middle Fork Payette River Subbasin, located in southwestern Idaho.

The purpose of this document is to review the sediment TMDL that was approved in 2000 for the Middle Fork Payette River watershed (Figure A), for which an implementation plan was written in 2003. In 2007, a temperature TMDL was developed for the Middle Fork Payette River, for which the implementation plan will be finished in early 2009, and the five-year review cycle will begin in 2012. Thus, this review document focuses specifically on the sediment TMDL and the progress made toward reaching the sediment TMDL targets. Figure B shows all streams or stream segments in the watershed that are impaired by sediment only or temperature and sediment.

The sediment target was translated into number of pools per kilometer in the lower reaches of the Middle Fork Payette River below Big Bulldog Creek. This target was developed because the cold water aquatic life beneficial use impairment by sediment is due to a loss of adequate winter cover and migration habitat that is provided by deep pools. The target is an average of two pools with a residual depth greater than or equal to 1.3 meters per kilometer (km), with a minimum of three such pools in any 3-km stretch. The Middle Fork Payette River does not meet the pools target set in the 1998 TMDL.

Implementation of the sediment TMDL has started and is ongoing, but many scheduled activities are still in process or slated to begin in the future. Additionally, this watershed has burned in 2006 and 2007, in the Rattlesnake Complex, Cascade Complex (2,444 acres burned in the upper Middle Fork Payette watershed) and Middle Fork Complex Fires.

The TMDL subject to five-year review is shown in Table A. The Subbasin Assessment and Total Maximum Daily Load for the Middle Fork Payette River (DEQ 1998) found that excess sediment was delivered to the Middle Fork Payette River downstream of Big Bulldog Creek through natural processes (i.e., fire-related disturbances), activities related to roads, timber harvest, and, to a much lesser extent, agriculture.

Table A. Existing TMDLs for Five-Year Review

STREAM	POLLUTANT(S)
Middle Fork Payette River below Big Bulldog Creek (ID17050121SW001_04)	Sediment

The Middle Fork Payette River temperature TMDL (DEQ 2007), which determined shade targets for the Middle Fork Payette River and its larger tributaries, in order to reduce in-stream temperature, will be reviewed in 2012. Implementation has not started for this TMDL and no changes in status for the streams in section 4a for temperature have occurred.

Watershed at a Glance

The watershed, at a glance, is as shown in Figure A, with TMDL-related information provided in Table B.

Table B. Middle Fork Payette River Watershed at a Glance.

Approved TMDLs	Pollutants Within Watershed
Middle Fork Payette River below Big Bulldog Creek (ID17050121SW001_04) (sediment) Middle Fork Payette River ID17050121SW001_04 (temperature) Middle Fork Payette River ID17050121SW005_03 (temperature) Middle Fork Payette River ID17050121SW005_04 (temperature) Middle Fork Payette River ID1705121SW005_02 (temperature)	Sediment Temperature
Implementation Plans	Implementation Actions
Final Total Maximum Daily Load Implementation Plan for the Middle Fork Payette River and Addendum to the Subbasin Assessment and Total Maximum Daily Load for the Middle Fork Payette River (DEQ, 2003)	Sediment load reduction through: road improvements, riparian improvements

This analysis of the Middle Fork Payette River subbasin assessment (SBA) and TMDL have been developed to comply with Idaho’s five-year TMDL Review schedule. The assessment describes the physical, biological, and cultural setting; water quality status; pollutant sources; and recent pollution control actions in the Middle Fork Payette River.

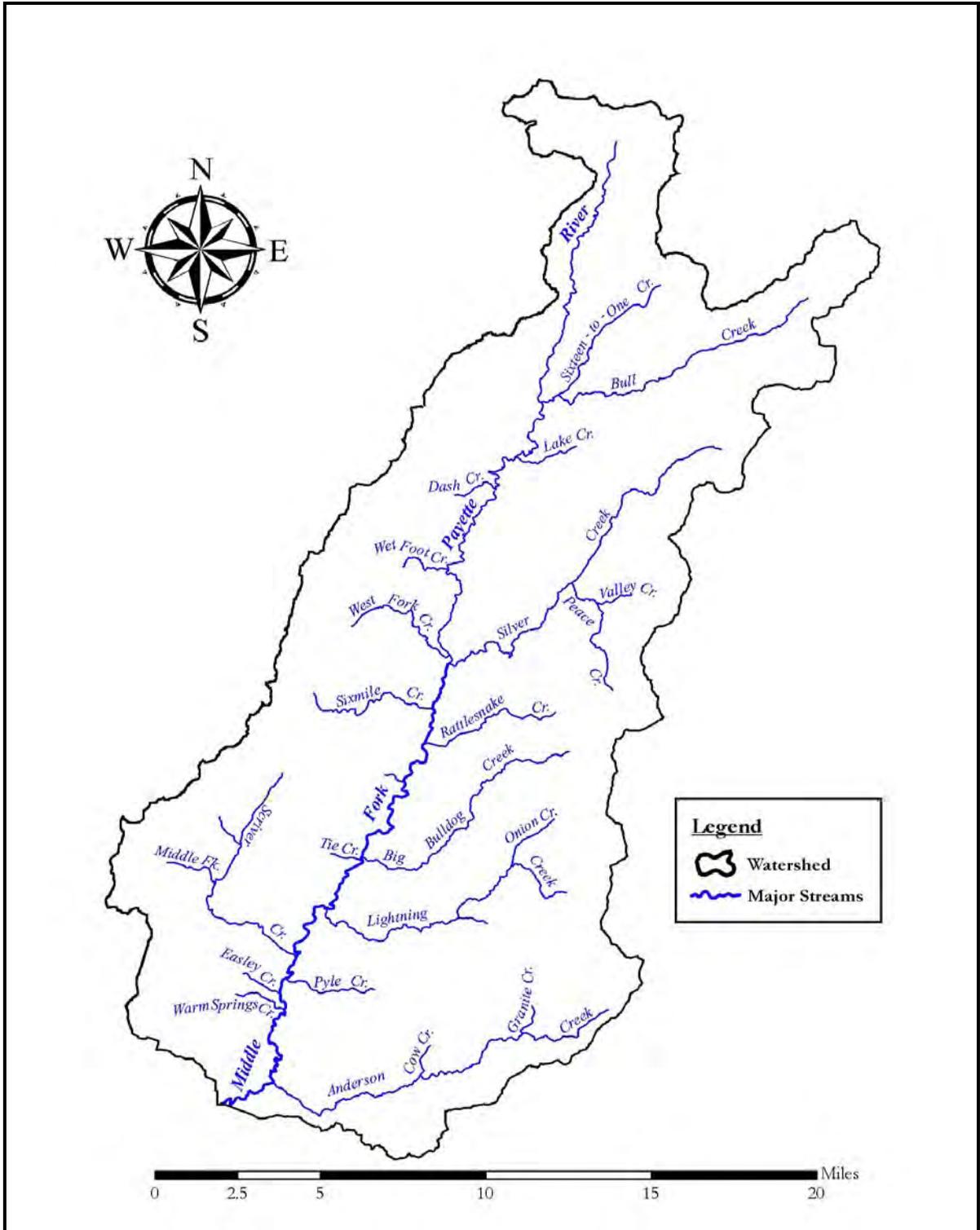


Figure A. Middle Fork Payette River Watershed Map

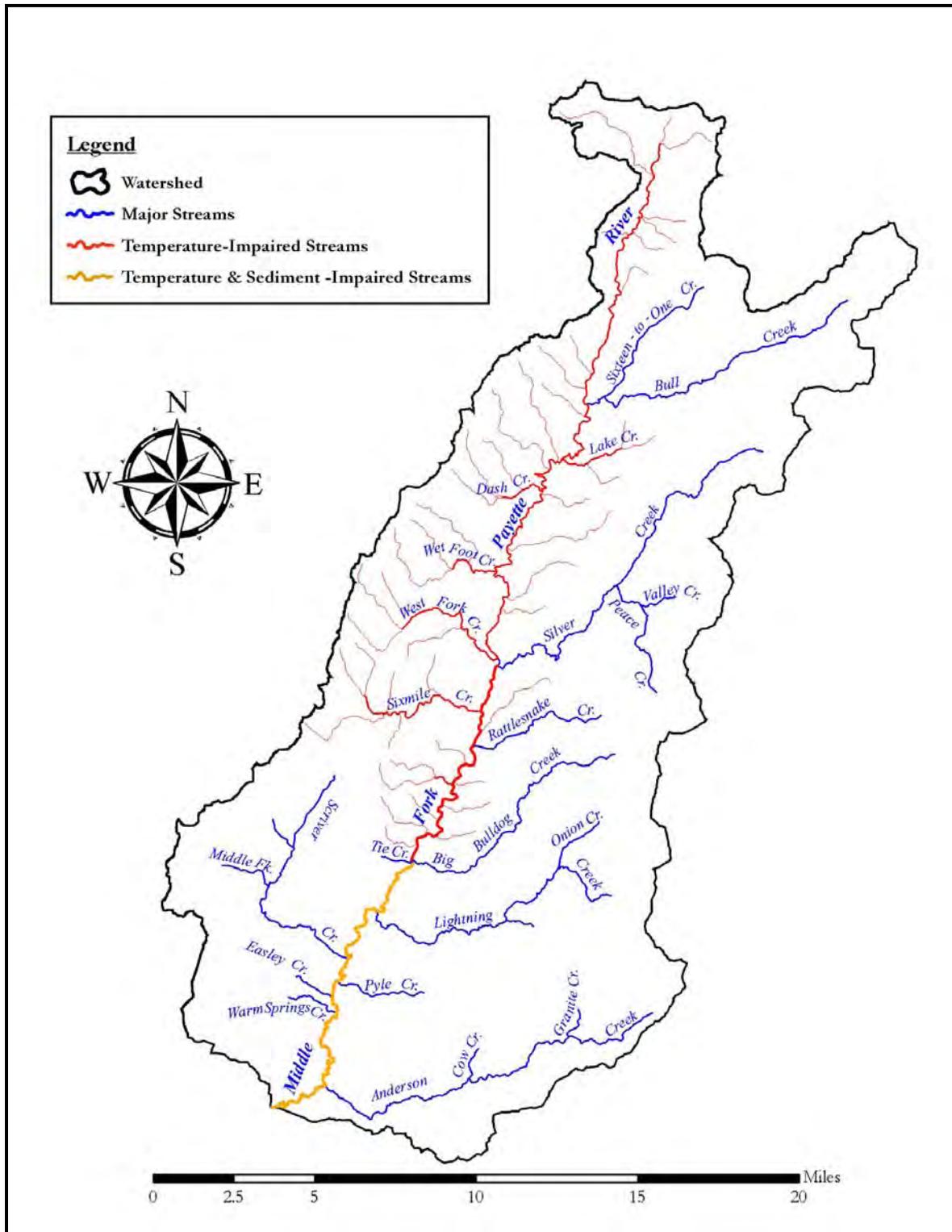


Figure B. Impaired Streams in the Middle Fork Payette River Watershed
(sediment-impaired streams in yellow represent AU ID17050121SW001_04)

1. Introduction

Section 303 of the CWA requires the Idaho Department of Environmental Quality (DEQ) to monitor waters to identify those not meeting water quality standards. Once identified, they are placed on the list of such waters known as the §303(d) list. For those waters not meeting standards (§303(d)-listed waters), DEQ must establish a total maximum daily load (TMDL) for each pollutant impairing the waters. The agency must set appropriate controls to restore water quality and allow the water bodies to meet their beneficial uses. The TMDL contains the allowable pollutant load capacity of the water body, the allowable pollutant loads allocated to permitted point source dischargers and nonpoint sources within the watershed, and the supporting analyses with explanation of the water quality standards criteria applied and the pollutant concentration target used.

Idaho Statute 39-3611(7) established a five-year cyclic review process for Idaho TMDLs. Reviews are to include the assessment of beneficial uses, applicability of water quality criteria, TMDL pollutant targets and allocations, and consultation with the designated watershed advisory group for the watershed. Measures to assess beneficial uses include water quality criteria in conjunction with biological or aquatic habitat measures.

This report is intended to meet the intent and purpose of Idaho Statute 39-3611. The report documents the review process of an established Idaho TMDL and provides recommendations for continued implementation of the TMDL after consideration of the most current and applicable information available, appropriateness of the TMDL to current watershed conditions, and consultation with the watershed advisory group. An evaluation of the recommendations presented is provided. Recommendations considered applicable, achievable and appropriate are identified and will be proposed for scheduled completion with DEQ's next strategic plan and budget. Final decisions for TMDL modifications will be made by the DEQ Director. The U.S. Environmental Protection Agency (EPA), with consultation by DEQ, will decide whether to approve TMDL modifications.

Several DEQ documents exist that summarize watershed characteristics, water quality problems, and implementation strategies for the watershed. The Middle Fork Payette River TMDL (DEQ 1998) addresses general watershed characteristics and describes water quality impairment due to sediment, the Middle Fork Payette River Implementation Plan (DEQ 2003) addresses reducing sediment delivery to the Middle Fork Payette River, and the Middle Fork Payette River Temperature TMDL Addendum describes water quality impairment due to temperature (DEQ 2007). An implementation plan for temperature will be completed in 2009. The five-year review of the temperature TMDL is slated for 2012. Thus, temperature will not be discussed in this five-year review report.

About Assessment Units

Prior to 2002, impaired waters were defined as stream segments with geographical descriptive boundaries. In 2002, DEQ modified the structure and format of Idaho's list of impaired waters, 303(d) list, by combining it with the 305(b) report, required by the CWA to inform Congress of the state of Idaho's waters. This modification included identifying stream segments by assessment units (AUs) instead of non-uniform stream segments. This modification also included defining the use support of each stream AU as belonging in one of five categories, each of which is published as a sections in the Integrated Report where section 5 lists impaired

waters. Assessment units (AUs) now define all the waters of the state of Idaho. These units and the methods used to describe them can be found in the Water Body Assessment Guidance, second edition (WBAG II) (Grafe, et al., 2002). AUs are groups of similar streams that have similar land use practices, ownership, or land management. Stream order, however, is the main basis for determining AUs— even if ownership and land use change significantly, an AU remains the same. Because AUs are an extension of water body identification numbers, there is now a direct tie to the WQS for each AU, so that beneficial uses defined in the WQS are clearly tied to streams on the landscape.

To facilitate comparisons between the 1998 303 (d) list and the 2002 Section 5 “impaired waters” category in the Integrated Report, a crosswalk from the 1998 303 (d) list to the new AUs was included in the 2002 Integrated Report. A copy of the report is available from the DEQ website at http://www.deq.state.id.us/water/data_reports/surface_water/monitoring/2002.cfm#2002final. The boundaries from the 1998 303(d)-listed segments have been transferred to the new AU framework using an approach quite similar to how DEQ has been writing SBAs and TMDLs. All AUs contained in any listed segment were carried forward to the 2002 303(d) listings in Section 5 of the integrated report (DEQ, 2005). Any AU not wholly contained within a previously listed segment, but partially contained (even minimally), was also included on the 303(d) list. This was necessary to maintain the integrity of the 1998 303(d) list and continuity with the TMDL program. The *Middle Fork Payette River* subbasin water bodies listed on the 2002 303 (d) list are included in this report, but the review is focused on the draft 2008 status lists.

When assessing new data that indicate full support, only the AU that the monitoring data represents will be removed (de-listed) from the 303(d) list (Section 5 of the integrated report).

2. TMDL Review and Status

The TMDLs and implementation plan for the Middle Fork Payette Watershed can be found online at: http://www.deq.idaho.gov/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm

These documents include :Subbasin Assessment and Total Maximum Daily Load for the Middle Fork Payette River (DEQ 1998); Final Total Maximum Daily Load Implementation Plan for the Middle Fork Payette River and Addendum to the Subbasin Assessment and Total Maximum Daily Load for the Middle Fork Payette River (DEQ 2003); and Middle Fork Payette River Temperature Total Maximum Daily Loads: Addendum to the Middle Fork Payette River Subbasin Assessment and TMDL (DEQ 2007).

These documents provide additional background on the watershed's physical and biological characteristics.

Subbasin at a Glance

The Middle Fork Payette River is located in central Idaho, about 40 miles north of Boise, and is dominated by forest vegetation. The Middle Fork Payette River generally flows south-southwest, and flows through the town of Crouch, Idaho. The South Fork Payette joins the Middle Fork Payette downstream of the town of Crouch, to form the main stem of the Payette River. The Middle Fork Payette River basin is located in the Northern Rocky Mountain physiographic province at the western edge of the Salmon River Mountains in the southern Idaho batholith. The Middle Fork Payette River drains 292 square miles, and is nearly 46 miles long, excluding numerous tributaries within the subbasin.

Sediment TMDL Review

This section summarizes the sediment TMDL approved in 2000.

As documented in the Middle Fork Payette River TMDL, DEQ determined that sediment was reducing pool quality in the reach of the Middle Fork Payette River from below Big Bulldog Creek to the mouth of the river (see Figure A), which is assessment unit (AU) ID17050121SW001_04 .

The loss of deep pools reduces overwintering and migration habitat. A target for pool quality in that reach of the Middle Fork Payette River was established and is shown in Table 2.1. The pool target is a sediment surrogate that was derived to provide a better linkage between the hillslope erosion and its effect on aquatic life. In addition, the bulk of sediment was identified as being delivered from hill-slopes upstream, primarily from roads, and TMDL loads were expressed in terms of tons per year of sediment. The TMDL loads were derived from sediment modeling of hillslope erosion using the SEDMOD model. These loads are summarized in Table 2.2.

Table 2.1 Applicable TMDLs for the Middle Fork Payette River

Water Body	Pollutant	Target	Critical Period
Middle Fork Payette River below Big Bulldog Creek (ID17050121SW001_04)	Sediment	Average of 2 pools/kilometer (≥ 1.3 meters deep), with a minimum of no less than 3 such pools in any 3-km stretch	Year round

Pollutant Targets

Average of 2 pools per kilometer (each pool greater than or equal to 1.3 meters deep), with a minimum of three such pools in any 3-km stretch

Control/Monitoring Points

The pools in the Middle Fork Payette River from Big Bulldog Creek to the mouth were measured in 2001 and 2007 for comparison to the pools target.

Load Capacity and Load Allocation

Load capacity was determined by estimating the natural background load of hillslope erosion (hillslope erosion also includes sediment delivery from roads). Using best professional judgment and consultation with Forest Service hydrologists, DEQ determined that the load capacity was 50% greater than background conditions. At this level, DEQ determined that improvements to the lower reaches would occur. However, DEQ also cautioned that the improvements might not be sufficient on their own to result in achievement of the TMDL target and in-stream measures would need to be considered if, over time, pool frequency and quality did not reach target levels. The derivation of natural background loads and the margin of safety are discussed in detail in the TMDL (DEQ 1998). The load capacity of the system is 3,601 tons/year of sediment. The allocation is shown in Table 2.2

Table 2.2 TMDL Sediment Load Allocations for the Middle Fork Payette River

Water Body	Pollutant	Point Sources	Nonpoint Sources	Load Allocation
Middle Fork Payette River below Big Bulldog Creek (ID17050121SW001_04)	Sediment	0	3,601 tons/year	3,601 tons/year

Margin of Safety

This TMDL used a 10% margin of safety in the loading estimates

Seasonal Variation

This TMDL applies year round.

Reserve

No reserve for future growth was included in this TMDL.

Other Water Quality-Limited Assessment Units Occurring in the Subbasin

Temperature TMDLs were developed in 2007 for ID17050121SW005_04, SW005_03, and SW001_04. This information can be found in the Middle Fork Payette River Temperature TMDL (DEQ 2007).

Table 2.3 Assessment Units with approved temperature TMDLs

Water Body Segment/AU	Pollutant	TMDL(s) Completed
Middle Fork Payette River ID17050121SW001_04	Temperature	2007
Middle Fork Payette River ID17050121SW005_03	Temperature	2007
Middle Fork Payette River ID17050121SW005_04	Temperature	2007
Middle Fork Payette River ID17050121SW005_02	Temperature	2007

3. Beneficial Use Status

Idaho water quality standards require that surface waters of the state be protected for beneficial uses, wherever attainable (IDAPA 58.01.02.050.02). These beneficial uses are interpreted as existing uses, designated uses, and presumed uses. The WBAG II (Grafe et al. 2002) gives a detailed description of beneficial use identification for use assessment purposes.

Existing uses under the CWA are “those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards”. Designated uses are specifically listed for water bodies in Idaho in tables in the Idaho water quality standards (see IDAPA 58.01.02.003.27 and .02.109-.02.160 in addition to citations for existing and presumed uses).

Undesignated uses are to be designated. In the interim, and absent information on existing uses, DEQ presumes that most waters in the state will support cold water aquatic life and either primary or secondary contact recreation (IDAPA 58.01.02.101.01). To protect these so-called “presumed uses,” DEQ will apply the numeric cold water aquatic life criteria and primary or secondary contact recreation criteria to undesignated waters

Beneficial Uses

Beneficial uses are protected by a set of criteria, which include *narrative* criteria for pollutants such as sediment and nutrients and *numeric* criteria for pollutants such as bacteria, dissolved oxygen, pH, ammonia, temperature, and turbidity (IDAPA 58.01.02.250). Table 3.1 includes the most common numeric criteria used in TMDLs; Figure 3.1 provides an outline of the stream assessment process for determining support status of the beneficial uses of cold water aquatic life, salmonid spawning, and contact recreation.

Table 3.1 Common numeric criteria supportive of designated beneficial uses in Idaho water quality standards.

Designated and Existing Beneficial Uses				
Water Quality Parameter	Primary Contact Recreation	Secondary Contact Recreation	Cold Water Aquatic Life	Salmonid Spawning (During Spawning and Incubation Periods for Inhabiting Species)
Water Quality Standards: IDAPA 58.01.02.250				
Bacteria, ph, and Dissolved Oxygen	Less than 126 E. coli/100 ml ^a as a geometric mean of five samples over 30 days; no sample greater than 406 E. coli organisms/100 ml	Less than 126 E. coli/100 ml as a geometric mean of five samples over 30 days; no sample greater than 576 E. coli/100 ml	pH between 6.5 and 9.0 DO ^b exceeds 6.0 mg/L ^c	pH between 6.5 and 9.5 Water Column DO: DO exceeds 6.0 mg/L in water column or 90% saturation, whichever is greater Intergravel DO: DO exceeds 5.0 mg/L for a one day minimum and exceeds 6.0 mg/L for a seven day average
Temp. ^d			22 °C or less daily maximum; 19 °C or less daily average	13 °C or less daily maximum; 9 °C or less daily average Bull trout: not to exceed 13 °C maximum weekly maximum temperature over warmest 7-day period, June – August; not to exceed 9 °C daily average in September and October
			Seasonal Cold Water: Between summer solstice and autumn equinox: 26 °C or less daily maximum; 23 °C or less daily average	
EPA Bull Trout Temperature Criteria: Water Quality Standards for Idaho, 40 CFR Part 131				
Temp.				7 day moving average of 10 °C or less maximum daily temperature for June - September

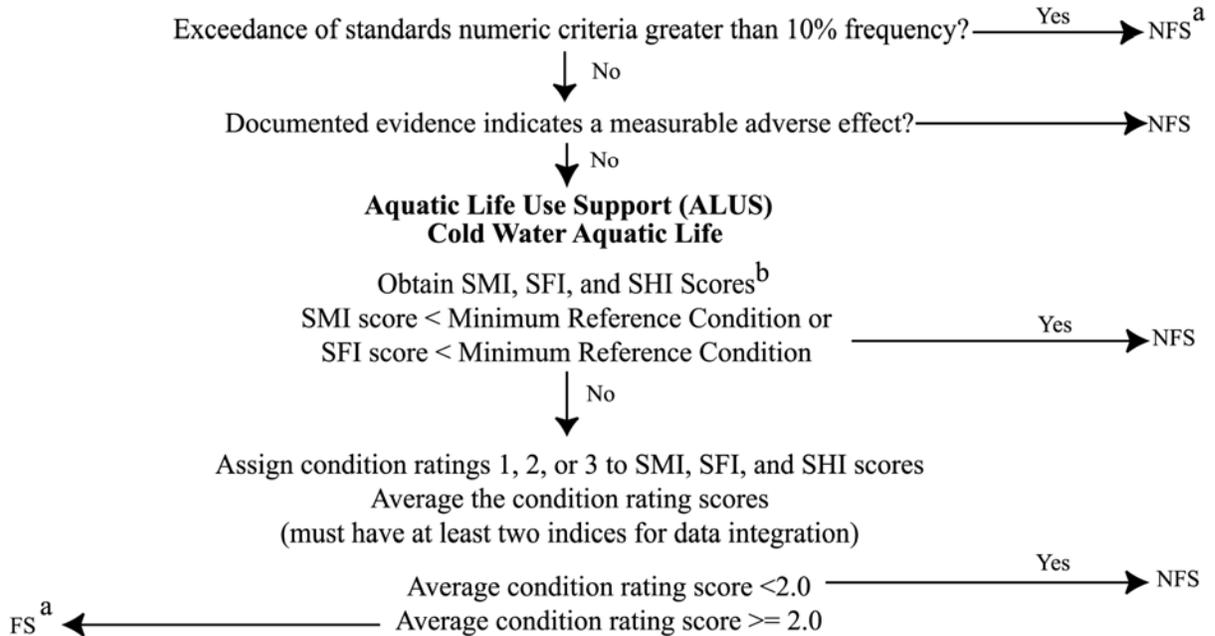
^a *Escherichia coli* per 100 milliliters

^b dissolved oxygen

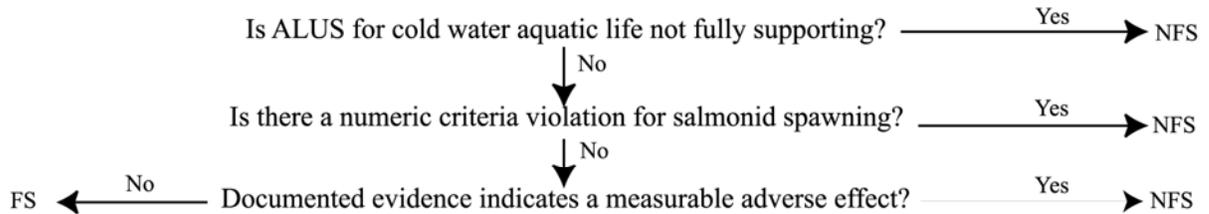
^c milligrams per liter

^d Temperature Exemption - Exceeding the temperature criteria will not be considered a water quality standard violation when the air temperature exceeds the ninetieth percentile of the seven-day average daily maximum air temperature calculated in yearly series over the historic record measured at the nearest weather reporting station.

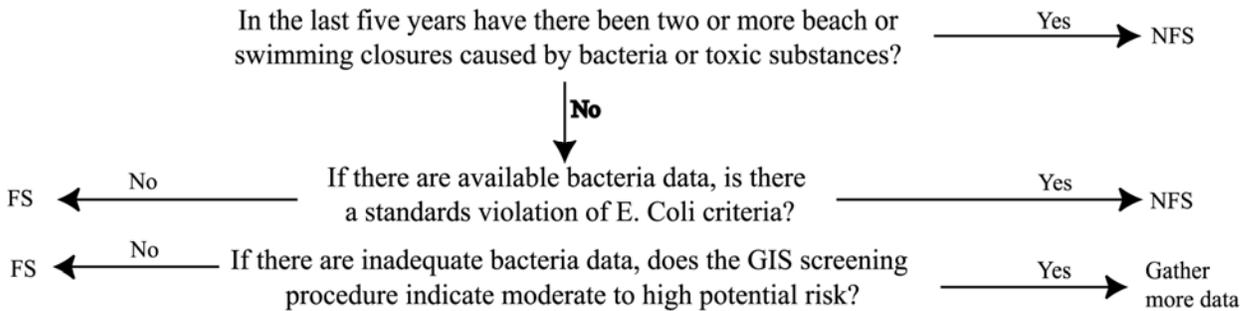
Idaho Water Quality Standards Numeric Criteria for Water Temperature, Dissolved Oxygen, pH, and Turbidity



Salmonid Spawning



Contact Recreation



^a FS = fully supporting, NFS = not fully supporting

^b SMI = Stream Macroinvertebrate Index, SFI = Stream Fish Index, SHI = Stream Habitat Index

Figure 3.1 Determination Steps and Criteria for Determining Support Status of Beneficial Uses in Wadeable Streams: Water Body Assessment Guidance, Second Addition (Grafe et al. 2002)

Idaho water quality standards require that surface waters of the state be protected for beneficial uses, wherever attainable (IDAPA 58.01.02.050.02). These beneficial uses are interpreted as existing uses, designated uses, and presumed uses. The WBAG II (Grafe et al. 2002) gives a detailed description of beneficial use identification for use assessment purposes. Table 3.2 lists the designated beneficial uses for the Middle Fork Payette River reach that has a sediment TMDL.

Table 3.2 Middle Fork Payette River Subbasin beneficial uses of §303(d)-listed streams.

Water Body	Uses	Type of Use
Middle Fork Payette River (ID17050121SW001_04)	Cold water aquatic life, salmonid spawning, agriculture water supply, domestic water supply, industrial water supply, primary and secondary contact recreation	Designated

Subbasin Changes

The major subbasin change that occurred was that the Middle Fork Payette watershed burned in 2006 and 2007, in the Rattlesnake Complex, Cascade Complex (2,444 acres burned in the upper Middle Fork Payette watershed), and Middle Fork Complex Fires. These fires resulted in reduced vegetation and destabilized hillslopes, which can lead to mass wasting events and higher overland flow of sediment during runoff.

Summary and Analysis of Existing Water Quality Data

This section contains new data for gauging TMDL progress toward meeting the TMDL target as well as data from the DEQ Beneficial Use Reconnaissance Program (BURP) for all streams in the watershed.

Assessment Unit ID17050121SW001_04 MF Payette River Data

DEQ surveyed pools in the reach of the Middle Fork Payette River with a sediment TMDL, to determine whether the TMDL targets were being met. DEQ also surveyed bank stability to determine whether in-stream bank erosion was contributing to excess sediment delivery in those reaches.

Pool Results

In 2007, 18 pools with residual depth greater than 1.3 m were found. In general, pools were far more frequent in the lower reaches. The pool locations are identified in Figure 3.2.

The total length of the study reach was 20 km, which results in an average of 0.9 pools per kilometer. The target is 2 pools per kilometer. There were only two stretches of river in the surveyed reach that did not meet the minimum threshold of at least three pools per 3-km stretch. These two stretches were both at the top of the study reach, near Lightning Creek.

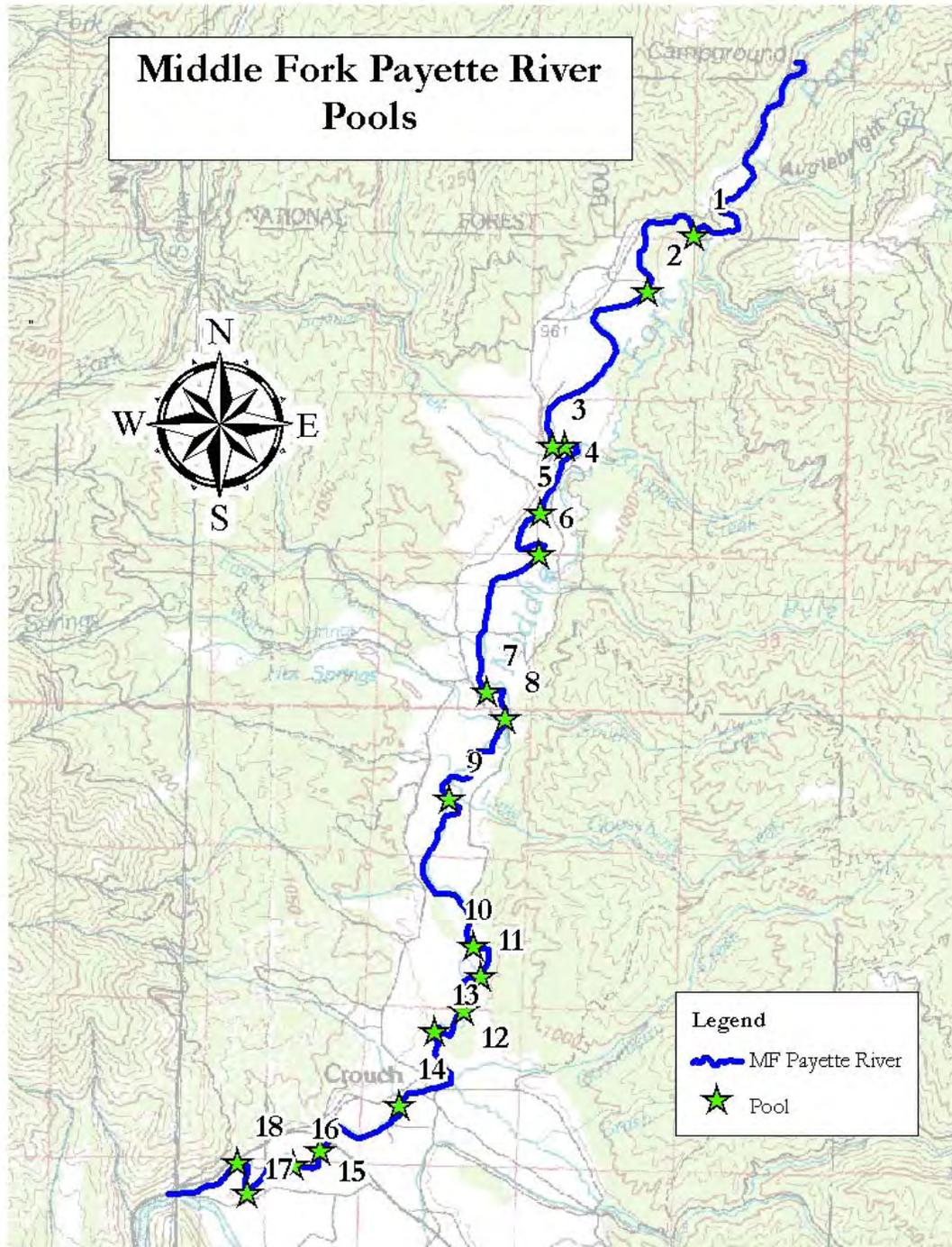


Figure 3.2 Pools in the Middle Fork Payette River below Big Bulldog Creek (2007)

Bank Stability Results

The 2007 bank stability surveys (Table 3.3) indicate that the banks are in the same condition as they were in 2001 with no major improvements or declines in stability and coverage. Overall, in-stream bank erosion is not a significant source of sediment to this section of river. Figures 3.3 and 3.4 show the locations of the unstable banks.

Table 3.3 Bank stability results for the Middle Fork Payette River below Big Bulldog Creek

TOTALS	2007	2001
Covered, Stable	79%	80%
Covered, Unstable	11%	9%
Uncovered, Stable	5%	4%
Uncovered, Unstable	5%	7%

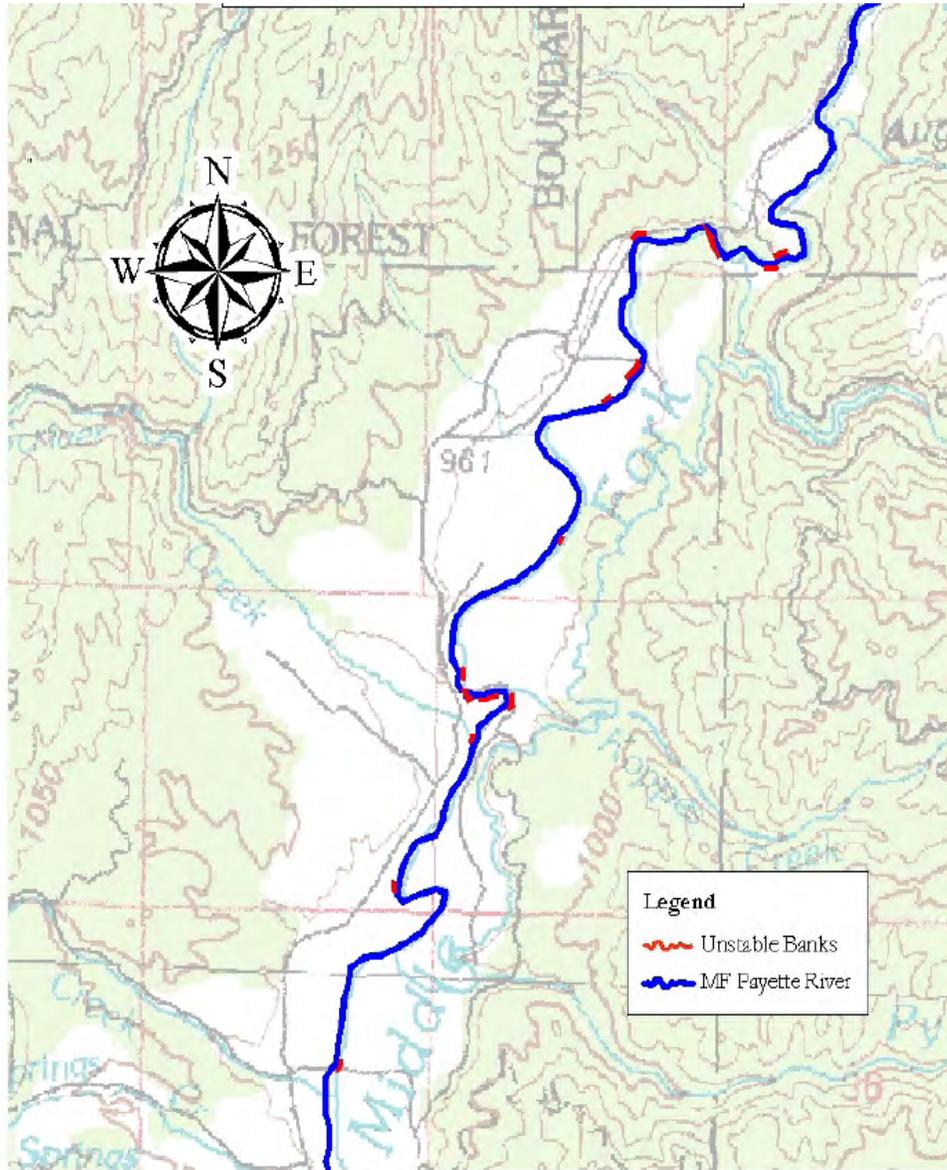


Figure 3.3 2007 Upper Section Middle Fork Payette River Bank Stability Survey Results

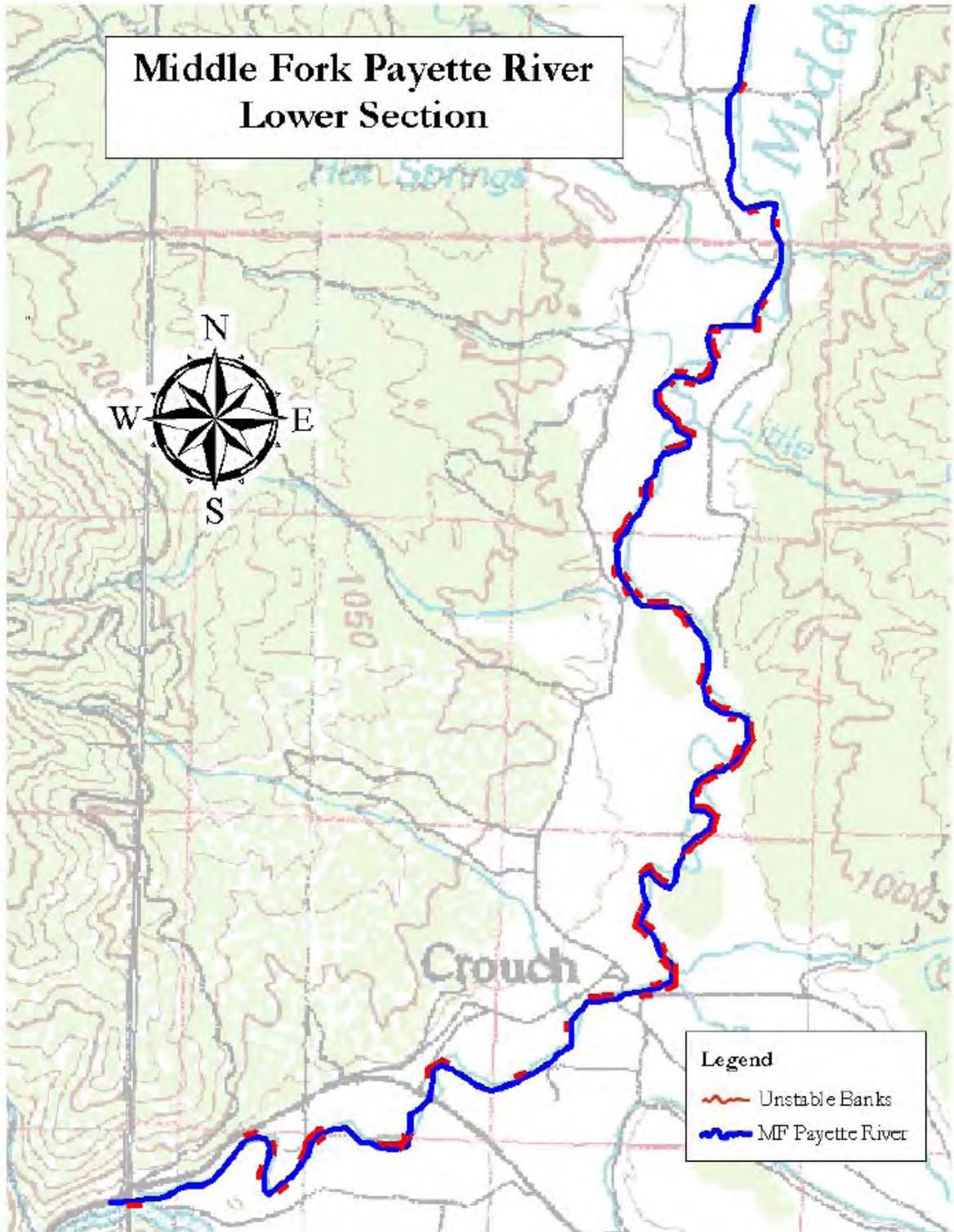


Figure 3.4 2007 Middle Fork Payette River Lower Section Bank Stability Survey Results

Watershed BURP Data

For the Middle Fork Payette River subbasin, BURP data is provided in Table 3.4.

Table 3.4 DEQ BURP Results

Burp ID	Assessment Unit	Location	SHI ¹	SMI ²	SFI ³	Assessment
2004SBOIA151	ID17050121SW002_03	Anderson Creek	1	2	<Min	No Assessment**
2004SBOIA121	ID17050121SW003_03	Lightning Creek	1	3		Fully Supporting
2004SBOIA045	ID17050121SW006_02	Rattlesnake Creek	3	3	2	Fully Supporting
2006SBOIA041	ID17050121SW009_02	Sixteen To One Creek	3	3		Fully Supporting
2006SBOIA094	ID17050121SW004_02	Big Bulldog Creek	3	3		Fully Supporting
2006SBOIA095	ID17050121SW010_02	Scriver Creek	2	3		Fully Supporting
2006SBOIA096	ID17050121SW010_02	Middle Fork Scriver Ck	3	3		Fully Supporting
2006SBOIA097	ID17050121SW005_02	Wet Foot Creek	3	3		Fully Supporting
2006SBOIA098	ID17050121SW007_03	Silver Creek	2	3		Fully Supporting
2006SBOIA099	ID17050121SW005_02	Trail Creek	2	3		Fully Supporting
2006SBOIA101	ID17050121SW001_02	Warm Springs Creek	3	3		Fully Supporting

1. SHI – Stream Habitat Index
2. SMI – Stream Macroinvertebrate Index
3. SFI – Stream Fish Index

** The Anderson Creek BURP Site was a randomly chosen location at the mouth of the stream and is not representative of watershed. In 2008, additional BURP information is being collected further upstream that will be representative of the Anderson Creek assessment unit.

Status of Beneficial Uses

With the exception of Anderson Creek (ID17050121SW002_03), the BURP data indicate full support of beneficial uses for the streams in Table 3.3. For Anderson Creek, no determination regarding support of beneficial uses can be made at this time.

The current pool data indicate that sediment is still impairing beneficial uses for cold water aquatic life in Assessment Unit ID17050121SW001_04. Sediment is reducing pools that provide important fish habitat.

Data for tributaries to the Middle Fork Payette River (ID17050121SW001_02) indicate they provide full support of beneficial uses. These tributaries have a high level of human development, so the assumption is made that if Warm Springs Creek supports beneficial uses, then less-impacted tributaries in this assessment unit also support beneficial uses.

No new data is available for the streams analyzed in 2007 for temperature. Beneficial uses are assumed to still be impaired by high temperatures in those assessment units. The assessment units that had temperature TMDLs developed are listed on the 2008 draft integrated report in Section 5. These assessment units have a TMDL and should be moved to Section 4a in the next listing cycle.

Table 3.5 Summary of Recommended Changes to the Integrated Report

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	Pollutant	Recommended Changes to Next Integrated Report	Justification
ID17050121SW001_04	Middle Fork Payette River – lower 4 th order	temperature	Move to section 4a	Temperature TMDL approved 12/07
ID17050121SW005_02	Middle Fork Payette River – 1 st and 2 nd order	temperature	Move to section 4a	Temperature TMDL approved 12/07
ID17050121SW005_03	Middle Fork Payette River – 3 rd order	temperature	Move to section 4a	Temperature TMDL approved 12/07

Assessment Unit (2008 draft Integrated Report)	Stream Segment Description	Pollutant	Recommended Changes to Next Integrated Report	Justification
ID17050121SW005_04	Middle Fork Payette River – upper 4 th order	temperature	Move to section 4a	Temperature TMDL approved 12/07
ID17050121SW001_02	Middle Fork Payette River – 1 st and 2 nd order	sediment	Remove from section 4a	Erroneous listing in Section 4a-not specifically addressed by TMDL; Should not be listed for sediment, no evidence of impairment.
ID17050121SW001_04	Middle Fork Payette River below Big Bulldog Creek	sediment	No change	TMDL targets not met and beneficial uses not supported

Conclusions

The Middle Fork Payette River did not meet the pool target set in the 1998 TMDL. No changes are recommended at this time to the 303(d) list or the TMDL load allocations or targets.

4. Implementation Plan Activities

The TMDL implementation plan completed in 2003 outlined a series of tasks that would decrease the sediment delivered to the Middle Fork Payette River by human activity. This section summarizes progress toward meeting those implementation goals and also lists additional projects, not identified in the implementation plan, that were undertaken or are planned for the future.

Agricultural Implementation: Planned and Accomplished Activities

Table 4.1 Agricultural Implementation Summary

Water body or location	Pollutant	Activity or strategy	Schedule	Completion Status
Middle Fork Payette River	sediment	Streambank protection, riparian fencing, use exclusion, grazing management etc.	2010	Ongoing

The agricultural implementation plan from 2003 set goals of developing and implementing contracts on 90% of the critical lands in Treatment Units 1 and 2 by 2010 (Table 4.1).

There are 650 critical acres in treatment unit 1, which are riparian/meadow areas. There are 1,050 acres in treatment unit 2, which are irrigated cropland/hayland/grazing lands.

The agricultural implementation plan emphasized a combination of BMPs that would reduce sediment and temperature in the Middle Fork Payette River by:

- Reducing on-site grazing-induced erosion;
- Reducing the erosion and sedimentation within the Middle Fork Payette River watershed;
- Reducing the sedimentation of streams and rivers;
- Reducing surface water contamination by animal wastes;
- Improving riparian vegetation and wildlife habitat.

Since the implementation plan was written in 2003, the following measures have been implemented for the specified lengths of stream or numbers of acres in the Middle Fork Payette River watershed:

- Streambank Protection: 400 feet
- Riparian Fencing: 1,200 feet
- Use Exclusion: 2 acres
- Pasture Planting: 86 acres

While implementation has occurred, the amount of implementation has been very small. This may be because land use in the Middle Fork Payette River substantially consists of ranchettes and second homes. Actual grazing makes up only a small percentage of land use.

Clearly, there are still opportunities for increased implementation in the Middle Fork Payette River watershed, particularly in AU ID17050121SW001_04. The Natural Resources Conservation Service, in cooperation with the Idaho Association of Soil Conservation Districts, is working on reaching more landowners about implementation opportunities and determining what factors would encourage more landowner participation in water quality improvement projects.

Forestry Implementation: Planned and Accomplished Activities

Responsible Parties: The USFS and the IDL

The U.S. Forest Service (USFS) and the Idaho Department of Lands (IDL) outlined the activities listed below in the 2003 Forestry Implementation Plan, as part of their plan to reduce sediment delivery to the Middle Fork Payette River watershed (Table 4.3). While several of the tasks have been accomplished, the USFS is in the process of beginning several projects related to road sediment delivery. In addition, in 2009 a watershed wide road inventory of USFS roads will be completed.

Many of the forestry implementation measures focused on road-related sediment delivery. There are approximately 714 miles of known roads and uncounted miles of user-developed or unauthorized roads in the Middle Fork Payette River Subbasin. Table 4.2 summarizes the number of road miles belonging in each ownership type class.

Table 4.2 Summary of Road Miles by Land Ownership in the Middle Fork Payette River Subbasin.

Land Ownership Type	Acres	Square Miles	% Of Subbasin	Known Road Miles
USFS	190,720.8	298.0	88%	496.6
Other – BLM, BOR, State of Idaho, Private	25,978.2	40.6	12%	217.4
Middle Fork Payette River Subbasin Total	216,99.0	338.6		714
Middle Fork Payette River Subbasin Road Density (mi/mi ²)	2.1			

Notes: USFS – U.S. Forest Service; BLM – Bureau of Land Management; BOR – Bureau of Reclamation

Table 4.3. Forestry Implementation Summary of Planned and Accomplished Activities

Water body or location	Pollutant	Activity or strategy	Schedule	Responsible Party	Completion Status
MF Payette watershed	sediment	Create a crosswalk between road inventory and BOISED modeling results	August 2003	USFS	Not completed, no plans for completion
MF Payette watershed	sediment	Inventory all Middle Fork Payette River roads identified as having data gaps using USFS protocols.	August 2003	USFS	To date, Scriver, Lightning, and Sixmile Creeks, as well as the upper portions of Anderson Creek, have had a roads analysis done. Roads analyses are being done in conjunction with project proposals.
MF Payette watershed	sediment	Develop new sediment implementation projects based on field-checked BOISED modeling.	Ongoing	USFS, IDL, Idaho Dept. of Transportation, Boise County	Projects have been completed in Sixmile, Lightning, and Silver Creeks. These projects include road decommissioning, dispersed recreation improvements, site closures aggregate placement on roads, and user-developed ford closures. Similar projects are currently being developed in Anderson Creek and Scriver Creek.

Water body or location	Pollutant	Activity or strategy	Schedule	Responsible Party	Completion Status
MF Payette watershed	sediment	Annually complete baseline cross-sections and pebble counts, and profile reach surveys	Ongoing	USFS	While hydrologic baseline surveys have not been completed annually, two long-term baseline station surveys were completed on the Middle Fork Payette River in 2003, and at sites in Scriver Creek and Sixmile Creek in 2005.
MF Payette Tributaries	sediment	Identify further stream channel restoration opportunities in tributary streams	December 2003	USFS	To date there are several stream projects that have been identified although not started yet. Two Rattlesnake Creek culverts under the Middle Fork Road (#698) are undersized and will be replaced in 2009 with a bridge, restoring aquatic organism passage. The Wet Foot Creek Culvert is also undersized and will be replaced, and several culverts in the Scriver Creek subwatershed are being analyzed for restoration opportunities as part of the Scriver Project environmental impact statement (EIS).
MF Payette	sediment	Investigate sediment processing through the Middle Fork Payette watershed; sediment throughput in the impacted reach of the Middle Fork Payette River; Work with community leaders to develop sediment reduction projects based on USCOE design alternatives	2004-2008	US Army Corps of Engineers, IDL, Valley and Boise counties	Incomplete-never started
MF Payette	sediment	Develop management alternatives to increase	2005-2006	US Army Corps of Engineers	Incomplete-never started
MF Payette	sediment	Middle Fork Payette River Road Graveling	2000	Boise National Forest	Complete- Spot aggregate placement and magnesium chloride application (dust control) for road maintenance occurs annually
Scriver Creek	sediment	Scriver Creek Road Graveling	October 2001	Boise National Forest	Aggregate was placed on Forest Road 693 in 2001. Additional aggregate for spot maintenance is proposed.
Silver Creek	sediment	Stream Crossing Closure and Rehabilitation/Road Graveling/dispersed campsite rehabilitation	2002	Boise National Forest	Completed in 2002; road graveling is ongoing. In 2010-2011, the entire 671 road will be graveled and two failing bridges replaced on the 678 road. Road obliteration occurred in 2002 and dispersed campsite rehabilitation occurred in 2002.

Water body or location	Pollutant	Activity or strategy	Schedule	Responsible Party	Completion Status
SixShooter Creek	sediment	road decommissioning, realignment and relocation	October 2004	Boise National Forest	17 miles of road was decommissioned in 2007 and another 12 miles are slated to be decommissioned once timber harvest is complete (timber harvest has not started yet)
Upper and Middle Fork Payette River	sediment	Upper and Middle Fork Payette River Projects Road Improvement projects	December 2004	Boise National Forest	Completed 2004-2006-road decommissioning and gravelling
WetFoot Creek	sediment	Wet Foot Projects	December 2006	Boise National Forest	Incomplete—no action being taken until after 2011
Middle Fork Payette watershed	sediment	Complete Cumulative Watershed Effects (CWE) Analysis of all state and private forestlands	1998	IDL	Complete
Middle Fork Payette watershed	sediment	Prioritize 303(d)-listed streams for BMP Installation based on CWE analysis; Repair deficiencies found in the CWE analysis and install the primary BMPs for reduction of sediment delivery from Endowment Trust Lands.	1999-2000	IDL	Complete: Improvements: 0.9 miles of road surfaced in 1999, 3.4 miles of road surfaced in 2000, 2.6 miles of road stabilized and abandoned in 2001.
Middle Fork Payette River watershed		Conduct inventories of minor road maintenance deficiencies and assess road abandonment opportunities.	2002	IDL	Complete: Field inventories completed in September 2000. Analysis of data and final workplan completed in January 2002.
Scriver Creek	sediment	Accomplish priorities for sediment reduction in Scriver Creek drainage via joint 319 grant application and administration with Boise County and USFS.	2001-2003	IDL	Complete: Surfacing of 2.6 miles of road on endowment lands completed in September 2001. In 2003, along roads adjacent to tributary streams of Scriver Creek, 1.2 miles of road were spot-rocked and 23 poorly functioning culverts were replaced.
Middle Fork Payette watershed	sediment	Complete maintenance and abandonment activities on all State lands in the Middle Fork Payette River drainage.	2003	IDL	Complete

Boise National Forest Plan Direction

The Boise National Forest (BNF) Plan has directives that directly influence implementation prioritization. The Boise National Forest Plan developed an Aquatic Conservation Strategy (ACS) to provide direction to maintain and restore characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. The ACS provides a scientific basis for protecting aquatic ecosystems; providing for a comprehensive short- and long-term recovery of fish species listed as threatened or endangered; restoring aquatic habitats and surrounding terrestrial uplands; delisting of water quality-impaired water bodies; and planning for sustainable resource management. In essence, this strategy integrates many of

the goals and objectives of both the Endangered Species Act and the Clean Water Act. Subwatersheds identified as part of the ACS in the BNF Forest Plan have the highest priority for restoration. In the Middle Fork Payette River Subbasin, the following subwatersheds are identified as ACS priority watersheds: Upper Middle Fork Payette, Bull Creek, and Anderson Creek

In addition, the Boise National Forest Plan developed a Watershed and Aquatic Recovery Strategy (WARS) in order to prioritize forest-wide watershed and aquatic restoration planning (USDA, Forest Service, 2003). The WARS strategy designates the type of restoration as Active (A), Passive (P), or Conservation (C), and the restoration priority as Low (L), Moderate (M), or H (High).

Table 4.4 shows the watershed priorities identified in the Boise National Forest Plan, and summarizes current and future activities in the watershed.

Table 4.4 Watershed Priority and Current Activities for the Boise National Forest

Road Inventory Priority	Water-shed	ACS ¹ Priority	BNF ² Forest Plan - Road Density (mi/mi ²)	WARS ³ Restoration Type	WARS Restoration Priority	Notes
1	Scriver Creek	no	3.47	A	H	Roads Analysis Completed. Road Decommissioning/Realignment/Relocation and Motorized Vehicle Closures recommended in the Scriver Project currently in NEPA Process - Decision anticipated 2009.
2	Anderson Creek	yes	2.08	A	H	Roads Analysis completed for the Lightning Fire Perimeter. Road Decommissioning and Motorized Vehicle Closures recommended in the MF Salvage Project anticipated in 2009.
3	Pyle	no	3.71	A	H	Most of this watershed is on private land.
4	Sixmile	no	4.06	A	H	Roads Analysis Complete. Road Decommissioning/Realignment/Relocation and motorized vehicle closures decision made in the Sixshooter Project. Implementation of Road Decommissioning began in October 2006 and is ongoing.
5	Upper MF Payette	yes	1.27	A	H	0.7 miles of road 409F decommissioned and the rest of the 409 road graveled. Drainage improvements were also done on the 409 road during 2004-2006. A total of 3.8 miles of road was graveled/improved. Two undersized culverts replaced on the 409 road.
6	Bridge-Bryon	no	1.18	A	H	No activity reported
7	Rocky Canyon	no	0.74	A	H	No activity reported
8	Silver Creek	no	0.68	A	H	Trail work resulted in replacement of failing culvert on Peace Creek and Silver Creek Summit trail with trail bridges in 2008. Funds should be available in 2010-11 to replace two failing bridges on the 678 road that cross Silver Creek. Spot aggregate placed in sections of road where necessary.

9	Rattle-snake	no	0.45	A	H	Replacement of existing stream crossing (2 - 48" CMP culverts) to be replaced with a bridge in 2009. Currently being designed. New crossing will allow aquatic organism passage and provide for 100 year flow and associated debris.
10	Lightning Creek	no	0.53	P	H	Roads Analysis Complete. Road Decommissioning/Realignment/Relocation and motorized vehicle closures decision made in the Airline Project implemented in 2006/2007.
11	Bull Creek	yes	0.07	P	H	Relocation of Silver Creek Summit Trail to be completed in 2008 due to the trail washing out in June 2006.
12	Bulldog Creek	no	0.03	A	H	No activity reported

1. ACS – Aquatic Conservation Strategy
2. BNF – Boise National Forest
3. WARS – Watershed and Aquatic Recovery Strategy

Future Strategy

The sediment goals have not been attained although progress has been made in accomplishing the tasks set out in the Middle Fork Payette River Implementation Plan. The Boise National Forest will be conducting a Geomorphic Roads Analysis Inventory in 2009, which will help the Forest identify roads needing improvement and prioritize their implementation actions. The future strategy is to continue projects as funds are available.

Planned Time Frame

Table 4.4 shows planned activities by the USFS to continue to meet implementation goals. Future agricultural implementation activities are scheduled based on landowner interest and funding availability.

5. Summary of Five-Year Review and Watershed Advisory Group Involvement

While progress has been made toward reducing excess human-caused sediment delivery in the watershed, overall implementation is still ongoing.

The pools target for sediment appears reasonable and the sediment TMDL breaks down the necessary sediment reductions to reach that target by subwatershed. It is too early in implementation to determine whether in-stream structures are warranted to increase pool quality. Transporting legacy excess sediment out of the Middle Fork Payette watershed will take years and there will be a substantial lag time between when implementation goals are achieved and when an improvement in pool quality is seen.

Additionally, this watershed has burned in 2006 and 2007, in the Rattlesnake Complex, Cascade Complex (2,444 acres burned in the upper Middle Fork Payette watershed), and Middle Fork Complex Fires. These fires resulted in reduced vegetation and destabilized hillslopes, which can lead to mass wasting events and higher overland flow of sediment during runoff. The Middle Fork Complex Fire reforestation activities in Lightning Creek will likely occur in 2009. Fire salvage activities including road decommissioning will occur in Sixmile, Anderson Creek, Pyle, and Lightning Creeks in 2008/2009.

Watershed Advisory Group Consultation

The watershed advisory group reviewed drafts of this five-year review and provided comments. No significant comments regarding the contents of this review in relation to the TMDL, beneficial uses, or TMDL targets were received.

Recommendations for Further Action

Since future implementation actions are planned in the forested section of the Middle Fork Payette drainage, which was identified as the main land area contributing sediment, no further recommendations for action are being made at this time.

References Cited

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GIS Coverages

Restriction of liability: Neither the state of Idaho nor the Department of Environmental Quality, nor any of their employees make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information or data provided. Metadata is provided for all data sets, and no data should be used without first reading and understanding its limitations. The data could include technical inaccuracies or typographical errors. The Department of Environmental Quality may update, modify, or revise the data used at any time, without notice.

Glossary

§303(d)

Refers to section 303 subsection “d” of the Clean Water Act. 303(d) requires states to develop a list of water bodies that do not meet water quality standards. This section also requires total maximum daily loads (TMDLs) be prepared for listed waters. Both the list and the TMDLs are subject to U.S. Environmental Protection Agency approval.

Aquatic

Occurring, growing, or living in water.

Assessment Unit (AU)

A segment of a water body that is treated as a homogenous unit, meaning that any designated uses, the rating of these uses, and any associated causes and sources must be applied to the entirety of the unit.

Beneficial Use

Any of the various uses of water, including, but not limited to, aquatic life, recreation, water supply, wildlife habitat, and aesthetics, which are recognized in water quality standards.

Beneficial Use Reconnaissance Program (BURP)

A program for conducting systematic biological and physical habitat surveys of water bodies in Idaho. BURP protocols address lakes, reservoirs, and wadeable streams and rivers

Best Management Practices (BMPs)

Structural, nonstructural, and managerial techniques that are effective and practical means to control nonpoint source pollutants.

Best Professional Judgment

A conclusion and/or interpretation derived by a trained and/or technically competent individual by applying interpretation and synthesizing information.

Clean Water Act (CWA)

The Federal Water Pollution Control Act (commonly known as the Clean Water Act), as last reauthorized by the Water Quality Act of 1987, establishes a process for states to use to develop information on, and control the quality of, the nation’s water resources.

Criteria

In the context of water quality, numeric or descriptive factors taken into account in setting standards for various pollutants. These factors are used to determine limits on allowable concentration levels, and to limit the number of violations per year. The U.S. Environmental Protection Agency develops criteria guidance; states establish criteria.

Culturally Induced Erosion

Erosion caused by increased runoff or wind action due to the work of humans in deforestation, cultivation of the land, overgrazing, and disturbance of natural drainages; the excess of erosion over the normal for an area (also see Erosion).

Designated Uses

Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act.

Erosion

The wearing away of areas of the earth's surface by water, wind, ice, and other forces.

Feedback Loop

In the context of watershed management planning, a feedback loop is a process that provides for tracking progress toward goals and revising actions according to that progress.

Flow

See *Discharge*.

Fully Supporting

In compliance with water quality standards and within the range of biological reference conditions for all designated and existing beneficial uses as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002).

Fully Supporting Cold Water

Reliable data indicate functioning, sustainable cold water biological assemblages (e.g., fish, macroinvertebrates, or algae), none of which have been modified significantly beyond the natural range of reference conditions.

Geographical Information Systems (GIS)

A georeferenced database.

Habitat

The living place of an organism or community.

Headwater

The origin or beginning of a stream.

Hydrologic Unit

One of a nested series of numbered and named watersheds arising from a national standardization of watershed delineation. The initial 1974 effort (USGS 1987) described four levels (region, subregion, accounting unit, cataloging unit) of watersheds throughout the United States. The fourth level is uniquely identified by an eight-digit code built of two-digit fields for each level in the classification. Originally termed a cataloging unit, fourth field hydrologic units have been more commonly called subbasins. Fifth and sixth field hydrologic units have since been delineated for much of the country and are known as watershed and subwatersheds, respectively.

Hydrologic Unit Code (HUC)

The number assigned to a hydrologic unit. Often used to refer to fourth field hydrologic units.

Hydrology

The science dealing with the properties, distribution, and circulation of water.

Macroinvertebrate

An invertebrate animal (without a backbone) large enough to be seen without magnification and retained by a 500 μ m mesh (U.S. #30) screen.

Mass Wasting

A general term for the down slope movement of soil and rock material under the direct influence of gravity.

Metric

1) A discrete measure of something, such as an ecological indicator (e.g., number of distinct taxon). 2) The metric system of measurement.

Monitoring

A periodic or continuous measurement of the properties or conditions of some medium of interest, such as monitoring a water body.

Mouth

The location where flowing water enters into a larger water body.

Natural Condition

The condition that exists with little or no anthropogenic influence.

Nonpoint Source

A dispersed source of pollutants, generated from a geographical area when pollutants are dissolved or suspended

in runoff and then delivered into waters of the state. Nonpoint sources are without a discernable point or origin. They include, but are not limited to, irrigated and non-irrigated lands used for grazing, crop production, and silviculture; rural roads; construction and mining sites; log storage or rafting; and recreation sites.

Not Fully Supporting

Not in compliance with water quality standards or not within the range of biological reference conditions for any beneficial use as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002).

Pollutant

Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

Pollution

A very broad concept that encompasses human-caused changes in the environment which alter the functioning of natural processes and produce undesirable environmental and health effects. This includes human-induced alteration of the physical, biological, chemical, and radiological integrity of water and other media.

Riparian

Associated with aquatic (stream, river, lake) habitats. Living or located on the bank of a water body.

Riparian Habitat Conservation Area (RHCA)

A U.S. Forest Service description of land within the following number of feet up-slope of each of the banks of streams:

- 300 feet from perennial fish-bearing streams
- 150 feet from perennial non-fish-bearing streams
- 100 feet from intermittent streams, wetlands, and ponds in priority watersheds.

River

A large, natural, or human-modified stream that flows in a defined course or channel or in a series of diverging and converging channels.

Runoff

The portion of rainfall, melted snow, or irrigation water that flows across the surface, through shallow underground zones (interflow), and through ground water to creates streams.

Sediments

Deposits of fragmented materials from weathered rocks and organic material that were suspended in, transported by, and eventually deposited by water or air.

Stream

A natural water course containing flowing water, at least part of the year. Together with dissolved and suspended materials, a stream normally supports communities of plants and animals within the channel and the riparian vegetation zone.

Subbasin

A large watershed of several hundred thousand acres. This is the name commonly given to 4th field hydrologic units (also see Hydrologic Unit).

Subbasin Assessment (SBA)

A watershed-based problem assessment that is the first step in developing a total maximum daily load in Idaho.

Subwatershed

A smaller watershed area delineated within a larger watershed, often for purposes of describing and managing localized conditions. Also proposed for adoption as the formal name for 6th field hydrologic units.

Surface Runoff

Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of nonpoint source pollutants in rivers, streams, and lakes. Surface runoff is also called overland flow.

Surface Water

All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors that are directly influenced by surface water.

Total Maximum Daily Load (TMDL)

A TMDL is a water body's load capacity after it has been allocated among pollutant sources. It can be expressed on a time basis other than daily if appropriate. Sediment loads, for example, are often calculated on an annual bases. A TMDL is equal to the load capacity, such that load capacity = margin of safety + natural background + load allocation + wasteload allocation = TMDL. In common usage, a TMDL also refers to the written document that contains the statement of loads and supporting analyses, often incorporating TMDLs for several water bodies and/or pollutants within a given watershed.

Tributary

A stream feeding into a larger stream or lake.

Water Body

A stream, river, lake, estuary, coastline, or other water feature, or portion thereof.

Water Quality

A term used to describe the biological, chemical, and physical characteristics of water with respect to its suitability for a beneficial use.

Water Quality Standards

State-adopted and U.S. Environmental Protection Agency-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Watershed

1) All the land which contributes runoff to a common point in a drainage network, or to a lake outlet. Watersheds are infinitely nested, and any large watershed is composed of smaller "subwatersheds." 2) The whole geographic region which contributes water to a point of interest in a water body.

Appendix A. Data Sources

Table A-1. Data sources for Middle Fork Payette River Five Year Review.

Water Body	Data Source	Type of Data	When Collected
MF Payette Tributaries	DEQ	BURP Inventory	Multiple Years
MF Payette	DEQ	Bank stability/Pool Survey	2001 and 2007

Appendix B. Distribution List

Middle Fork Payette River Watershed Advisory Group

Boise National Forest

Natural Resources Conservation Service

Squaw Creek Soil Conservation District