St. Joe and St. Maries River
Subbasin Assessment and Total Maximum Daily Load
Five-Year Review

Draft

Department of Environmental Quality

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Five-Year Review St. Joe and St. Maries River Total Maximum Daily Loads

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Acknowledgments

Cover photos are of a small log cabin along the banks of the St. Joe River and bank stabilization work completed along Santa Creek upstream of Emida, Idaho. Photos were taken in the summer of 2008 and 2009 by Tyson Clyne, Idaho Department of Environmental Quality – Coeur d'Alene Regional Office. This review was completed with the cooperation and contributions from the St. Joe/St. Maries Watershed Advisory Group.

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Executive Summary

This document presents a five-year review of the St. Joe and St. Maries River SBA/TMDL(s). This review addresses the water bodies in the St. Joe River Subbasin that are in Idaho's 2008 Integrated Report Section 4(a). 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 St. Joe River Subbasin (17010304), located in northern Idaho.

The TMDL(s) subject to five-year review are shown in Table 1 and were approved by the U.S. Environmental Protection Agency (EPA) in July 2003. During the development of the *St. Joe River Subbasin Assessment and Total Maximum Daily Loads* and *St. Maries River Subbasin Assessment and Total Maximum Daly Loads* (DEQ 2003/DEQ 2003(b) sediment and temperature were found to be impairing beneficial uses. Pollutant (sediment and temperature) load reductions were developed to restore beneficial uses to those watersheds not supporting beneficial uses at the time the TMDL was developed. This review will look at the loads developed in the TMDLs, beneficial uses status and current water quality data. The findings of this review will recommend changes to the water quality listing status and potential re-evaluation or calculation of pollutant loads.

Table 1. Existing EPA approved TMDLs in the St. Joe River Subbasin.

Stream	Assessment Unit	Pollutant(s)
St. Joe River Watershed		
Tribs to St. Joe River - NF St. Joe to St. Maries River	17010304PN027_02 TMDL developed for Blackjack, Harvey and Tank Creeks	Temperature
Mica Creek	17010304PN030_02	Sediment
Mica Creek	17010304PN030_03	Sediment
Bear and Little Bear Creek	17010304PN033_02	Temperature, Sediment
Fishhook Creek	17010304PN039_02 Au not in section 4a but should be	Temperature
Fishhook Creek	17010304PN039_03	Temperature, Sediment
Fishhook Creek	17010304PN039_04	Temperature, Sediment
Sherlock Creek – mining impacted reach	17010304PN041_02a	Temperature
EF and WF Bluff Creek	17010304PN045_02	Temperature
Bluff Creek	17010304PN045_03	Temperature
Mosquito Creek	17010304PN046_02	Temperature
Fly Creek	17010304PN047_02	Temperature
Beaver Creek	17010304PN048_02	Temperature
Simmons Creek	17010304PN052_02	Temperature
Simmons Creek	17010304PN052_03	Temperature
Gold Creek	17010304PN053_02	Temperature
Loop Creek	17010304PN060_02	Temperature
Loop Creek	17010304PN060_03	Temperature
St. Maries River Watershed		
St. Maries River - Santa Creek to mouth	17010304PN007_05	Temperature, Sediment
Alder Creek	17010304PN008_02	Sediment
John Creek	17010304PN009_02	Sediment
Santa Creek	17010304PN010_02	Temperature, Sediment
Santa Creek	17010304PN010_03	Temperature, Sediment
Santa Creek	17010304PN010_04	Temperature, Sediment
Charlie Creek	17010304PN011_02	Sediment

Charlie Creek	17010304PN011_03	Temperature, Sediment
St. Maries River - Carpenter to Santa Creek	17010304PN012_05	Temperature, Sediment
Tyson Creek	17010304PN013_02	Sediment
Tyson Creek	17010304PN013_03	Sediment
Carpenter Creek	17010304PN014_02	Sediment
Carpenter Creek	17010304PN014_03	Sediment
St. Maries River - confluence of WF and MF	17010304PN015_05	Temperature, Sediment
Emerald Creek	17010304PN016_02	Temperature, Sediment
Emerald Creek - EF Emerald to St. Maries River	17010304PN016_03	Temperature, Sediment
WF St. Maries River	17010304PN017_02	Temperature, Sediment
WF St. Maries River	17010304PN017_03	Temperature, Sediment
WF St. Maries River	17010304PN017_04	Temperature, Sediment
MF St. Maries River	17010304PN018_02	Temperature, Sediment
MF St. Maries River	17010304PN018_03	Temperature, Sediment
MF St. Maries River	17010304PN018_04	Temperature, Sediment
MF St. Maries River	17010304PN018_05	Temperature, Sediment
Gold Center Creek	17010304PN019_02	Temperature
Gold Center Creek	17010304PN019_03	Temperature
Crystal Creek	17010304PN023_02	Sediment
Renfro Creek	17010304PN024_02	Sediment
Renfro Creek	17010304PN024_03	Sediment
Thorn Creek	17010304PN026_02	Sediment
Thorn Creek	17010304PN026_03	Sediment

Section 1: Introduction

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes, pursuant to Section 303 of the CWA, are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the nation's waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list (a "§303(d) list") of impaired waters. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards.

Idaho Statute 39-3611(7) requires a five-year cyclic review process for Idaho TMDLs:

> The director shall review and reevaluate each TMDL, supporting subbasin assessment, implementation plan(s) and all available data periodically at intervals of no greater than five (5) years. Such reviews shall include the assessments required by section 39-3607, Idaho Code, and an evaluation of the water quality criteria, in-stream targets, pollutant allocations, assumptions and analyses upon which the TMDL and subbasin assessment were based. If the members of the watershed advisory group, with the concurrence of the basin advisory group, advise the director that the water quality standards, the subbasin assessment, or the implementation plan(s) are not attainable or are inappropriate based upon supporting data, the director shall initiate the process or processes to determine whether to make recommended modifications. The director shall report to the legislature annually the results of such reviews.

This report is intended to meet the intent and purpose of Idaho Statue 39-3611(7). The report documents the review of an approved Idaho TMDL and implementation plan and provides consideration of the most current and applicable information in conformance with Idaho Statute 39-3607, evaluation of the appropriateness of the TMDL to current watershed conditions, implementation plan evaluation, and consultation with the Watershed Advisory Group (WAG). An evaluation of the recommendations presented is provided. Final decisions for TMDL modifications are decided by the Department of Environmental Quality (DEQ) Director. Approval of TMDL modifications is decided by the U.S. EPA, with consultation by DEQ.

Section 2: TMDL Review and Status

The St. Joe and St. Maries SBAs and TMDLs were developed to comply with Idaho's TMDL schedule. The TMDL was set to meet a court appointed settlement agreement by which the state was obligated to finish TMDLs for impaired waters. The streams addressed in the St. Joe and St. Maries TMDL documents were a product to this list.

The St. Joe and St. Maries River SBAs and TMDLs were both approved by EPA in July 2003. The TMDL documents described the physical, biological, and cultural setting, water quality status, pollutant sources, and pollution control actions in the St. Joe River Subbasin. The first part of the document, the subbasin assessment, is an important first step in leading to the TMDL and details the watershed characteristics, reviews beneficial uses and assess water quality data. The starting point for the assessment was Idaho's 1998 §303(d) list of water quality limited water bodies. Thirty-five assessment unites within the St. Joe River Subbasin were included on this list. The subbasin assessment portion of the document defines the extent of impairment as well as causes of water quality limitation throughout the subbasin. The second portion of the TMDL document, the loading analysis quantifies pollutant sources and allocated responsibility for load reductions needed to return listed waters to a condition of meeting water quality standards.

St. Joe River Subbasin characteristics.

Hydrologic Unit Code	**17010304**
Water bodies addressed in 2003 TMDLs	35
Beneficial uses	Coldwater Aquatic Life, Salmonid Spawning, Primary and Secondary Contact Recreation
Pollutants addressed in 2003 TMDLs	Sediments, Nutrients, Bacteria, Dissolved Oxygen, Temperature
Land uses	Silviculture, Agriculture, Recreation, Urban and Rural Development
Watershed Size	St. Joe River watershed 1,849 square miles St. Maries River watershed 490 square miles (within St. Joe River watershed)
Population Centers	St. Maries, Plummer, Santa, Emida, Fernwood, St. Joe City, Calder, Avery, Clarkia
Counties	Benewah, Shoshone, Kootenai, Latah, Clearwater

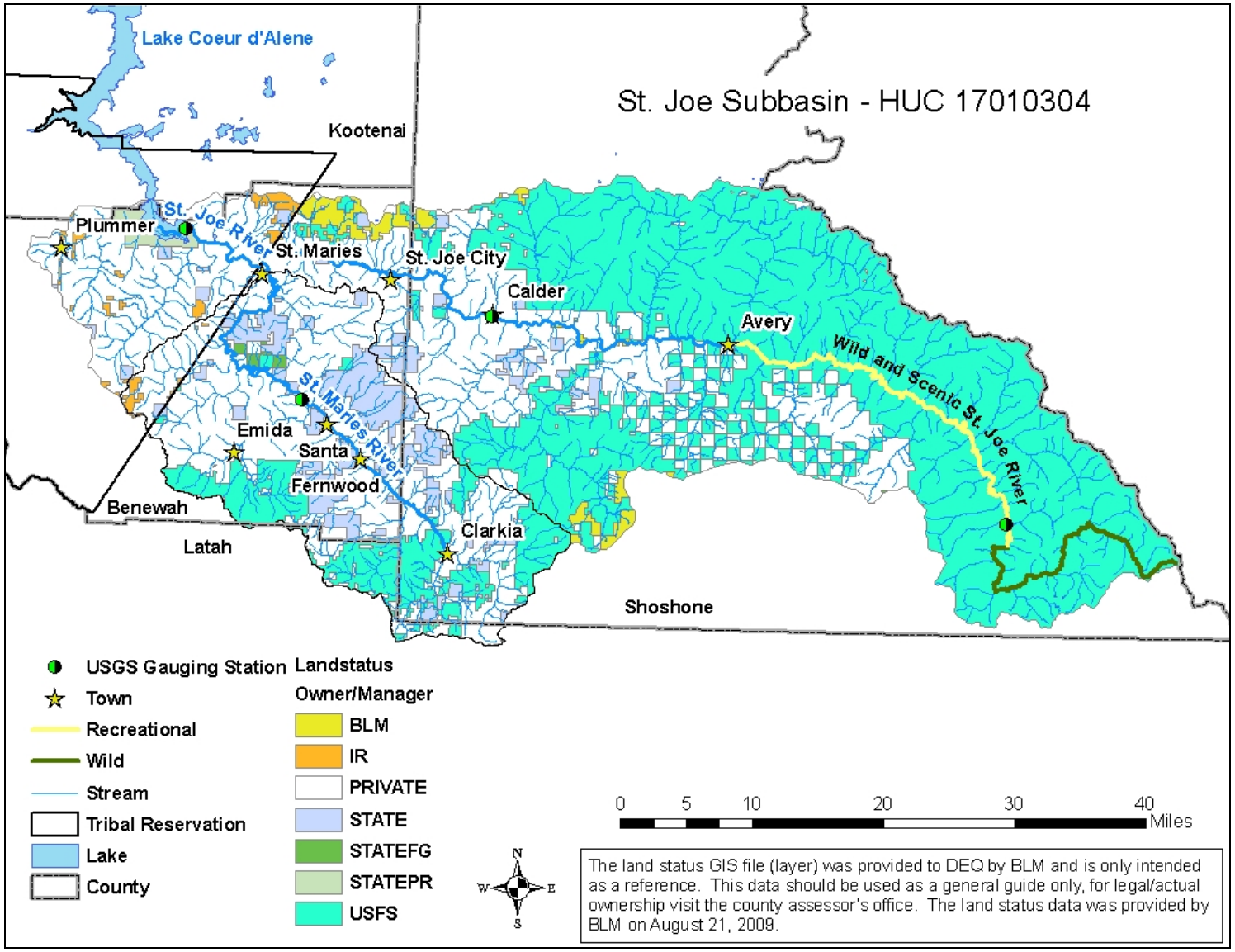

Figure 1. St. Joe River Subbasin at a glance.

EPA approved TMDLs in the St. Joe River Subbasin include the:

St. Joe River Subbasin Assessment and Total Maximum Daily Loads, July 2003

St. Maries River Subbasin Assessment and Total Maximum Daily Loads, July 2003

Copies of the final St. Joe and St. Maries River TMDL documents are kept on file at the Idaho DEQ Coeur d'Alene Regional Office at 2110 Ironwood Parkway, Coeur d'Alene, Idaho. Electronic copies of the documents can also be accessed through the DEQ webpage at: http://www.deq.idaho.gov/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm

Viewing of the TMDL is always available electronically or paperback by visiting the Coeur d'Alene Regional DEQ office.

Sediment and temperature were identified in the St. Joe and St. Maries River as impairing beneficial uses and TMDLs were developed accordingly to address each pollutant. During the TMDL process a current load and load capacity (target load) for each stream were identified. The difference between the two resulted in pollutant load reductions. The pollutant load reduction represents the estimated amount of a pollutant to be removed in order to restore water quality to a level capable of supporting all beneficial uses. Load reductions are only estimates derived from the techniques utilized during TMDL development, and the final goals of the TMDL are support of all beneficial uses.

Setting pollutant load targets is also a critical part of TMDL development. Pollutant load targets were developed using similar methods for both the St. Joe and St. Maries TMDLs. Pollutant load targets were set to be pollutant specific, but all targets were set to restore all beneficial uses to full support.

Sediment

Sediment TMDLs were developed for thirty-two impaired assessment units in the St. Joe River Subbasin (Table 2). The sediment load capacity was set at 50% above background sediment levels. Sediment modeling was conducted by characterizing the current land use practices and assigning a sediment yield coefficient to each land use practice. Background sediment rates reflect a watershed entirely vegetated with coniferous forest and devoid of roads. Sediment yield coefficients were derived using:

- Idaho Department of Lands Cumulative Watershed Effects (CWE) survey road scores were used to estimate sediment contributions from roads. CWE scores were also used to estimate sediment contributions from road failures and encroaching roads (roads within 200 feet of a stream).
- Revised Universal Soil Loss Equation (RUSLE) was used to estimate sediment contributions from pasture and agricultural lands.
- Water and Sediment Yield Model (WATSED) was used to estimate sediment contributions from forest lands.

Modeled current sediment yield was compared to BURP scores of all streams to determine the most appropriate target. During the TMDL development data collected within the St. Joe River Subbasin appeared to support the target of 50% above background (DEQ 2003). Current monitoring and modeling data from within the Idaho panhandle support the use of 50% above background as a reasonable pollutant target. Pollutant targets set in the St. Joe and St. Maries River TMDLs will not be adjusted during the five-year review. Once all appropriate implementation actions have been installed an anticipated period of 20-30 years may be required for the watershed to reduce its current sediment load (DEQ 2003, 2003b). Sediment load estimates will be reexamined following the completion of sediment reduction projects, and data failing to show support of beneficial uses. When beneficial uses are not supported and sediment reductions projects have been completed, loads set in the TMDL may not have been protective enough of beneficial uses and new sediment reduction estimated need to be calculated.

Table 2. Applicable Sediment TMDLs in the St. Joe and St. Maries River watersheds.

Stream	Assessment Unit	Pollutant	Numeric Criteria	Narrative Target
St. Joe River Watershed				
Mica Creek	ID17010304PN030_02 ID17010304PN030_03	Sediment	NA*	50% above natural background
Bear Creek	ID17010304PN033_02	Sediment	NA*	50% above natural background
Fishhook Creek	ID17010304PN039_03 ID17010304PN039_04	Sediment	NA*	50% above natural background
St. Maries River Watershed				
St. Maries River	ID17010304PN007_05	Sediment	NA*	50% above natural background
Alder Creek	ID17010304PN008_02	Sediment	NA*	50% above natural background
John Creek	ID17010304PN009_02	Sediment	NA*	50% above natural background
Santa Creek	ID17010304PN010_02 ID17010304PN010_03 ID17010304PN010_04	Sediment	NA*	50% above natural background
Charlie Creek	ID17010304PN011_02 ID17010304PN011_03	Sediment	NA*	50% above natural background
St. Maries River	ID17010304PN012_05	Sediment	NA*	50% above natural background
Tyson Creek	ID17010304PN013_02 ID17010304PN013_03	Sediment	NA*	50% above natural background
Carpenter Creek	ID17010304PN014_02 ID17010304PN014_03	Sediment	NA*	50% above natural background
St. Maries River	ID17010304PN015_05	Sediment	NA*	50% above natural background
Emerald Creek	ID17010304PN016_02 ID17010304PN016_03	Sediment	NA*	50% above natural background
West Fork St. Maries River	ID17010304PN017_02 ID17010304PN017_03 ID17010304PN017_04	Sediment	NA*	50% above natural background
Middle Fork St. Maries River	ID17010304PN018_02 ID17010304PN018_03 ID17010304PN018_04 ID17010304PN018_05	Sediment	NA*	50% above natural background
Crystal Creek	ID17010304PN023_02	Sediment	NA*	50% above natural background
Renfro Creek	ID17010304PN024_03	Sediment	NA*	50% above natural background
Thorn Creek	ID17010304PN026_02 ID17010304PN026_03	Sediment	NA*	50% above natural background

* Idaho water quality addressing sediment is a narrative criteria which states “sediment shall not exceed quantities specified in section 250 and 252 or, in the absence of specific sediment criteria, quantities, which impair designated

beneficial uses. Determinations of impairment shall be based on water quality monitoring and surveillance and the information utilized as described in Subsection 350 (IDAPA 58.01.02.200.08).

Sediment load allocations identify the portion of the pollutant load generated from an identified pollutant (sediment). The load allocation was then split-out to the different land management agencies. A portion of the load allocation was then identified as a reduction needed to meet the TMDL targets (Table 3).

Table 3. Sediment TMDL load reductions in the St. Joe and St. Maries River watersheds.

Stream Name/ Assessment Unit	Pollutant	Point Sources	Non Point Sources	Load Reduction		Control Location
				Land Mang.	Load Reduc. (tons/yr)	
St. Joe River Watershed above St. Maries River confluence						
Fishhook Creek ID17010304PN039_03 / 04	Sediment	None	Forest, Unstocked forest, Double fires, Road failures, Roads, Mass failures	BLM	0	1 mile upstream of confluence with St. Joe River
				USFS	47	
				Private	39	
				Total	**86**	
Bear Creek/Little Bear Creek ID17010304PN033_02	Sediment	None	Forest, Unstocked forest, Double fires, Road failures, Roads, Mass failures	BLM	3	Mouth of Bear Creek
				USFS	14	
				Private	4	
				Total	**21**	
Mica Creek ID17010304PN030_02 / 03	Sediment	None	Forest, Unstocked forest, Double fires, Road failures, Roads, Mass failures	BLM	10	Mica Creek below Mica Meadows
				USFS	10	
				IDL	63	
				Private	235	
				Total	**318**	
St. Maries River Watershed						
St. Maries River ID17010304PN007_05	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	63	Near confluence with Thorn Creek
				IDL	448	
				Private (forest)	2,114	
				Private (ag.)	107	
				BLM	6	
				BIA	6	
				IDL	382	
				Water	6	
				Total	**3,132**	
Alder Creek ID17010304PN008_02	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	0.1	Confluence with St. Maries River
				IDL	0.9	
				Private (forest)	18	
				Private (ag.)	5	
				BIA	2	
				Total	**26**	
John Creek ID17010304PN009_02	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	[2]	[2]	None set in 2003 TMDL
Santa Creek ID17010304PN010_02 / 03/ 04	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	535	Confluence with St. Maries River
				IDL	52	
				Private (forest)	471	
				Private (ag.)	212	

				Total	**1,270**	
Charlie Creek ID17010304PN011_02 / 03	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	[3]	[3]	None set in 2003 TMDL
St. Maries River ID17010304PN012_05	Sediment	Santa/Fernwood WWTP (ID0022845)[1]	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	44	Near confluence with Tyson Creek
				IDL	950	
				Private (forest)	1,294	
				Private (ag.)	2	
				Total	**2,290**	
Tyson Creek ID17010304PN013_02 / 03	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	7	Confluence with St. Maries River
				IDL	19	
				Private (forest)	9	
				Private (ag.)	3	
				Total	**38**	
Carpenter Creek ID17010304PN014_02 / 03	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	11	Confluence with St. Maries River
				IDL	70	
				Private	123	
				Total	**204**	
St. Maries River ID17010304PN015_05	Sediment	Clarkia WWTP (ID0025071)[1]	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	481	Near confluence with Emerald Creek
				IDL	142	
				Private	890	
				Total	**1,513**	
Emerald Creek ID17010304PN016_02 / 03	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	0	Confluence with St. Maries River
				IDL	0	
				Private	0	
				BLM	0	
				Total	**0**[5]	
West Fork St. Maries River ID17010304PN017_02 / 03/ 04	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	180	Confluence with Middle Fork St. Maries River
				IDL	37	
				Private	131	
				Total	**348**	
Middle Fork St. Maries River ID17010304PN018_02 / 03/ 04/ 05	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	USFS	32	Confluence with West Fork of St. Maries River
				IDL	10	
				Private	66	
				BLM	8	
				Total	**116**	
Crystal Creek ID17010304PN023_02	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	[4]	[4]	None set in 2003 TMDL
Renfro Creek ID17010304PN024_03	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	[4]	[4]	None set in 2003 TMDL
Thorn Creek ID17010304PN026_02 / 03	Sediment	None	Agricultural land, Forest, Unstocked forest, Double fires, Roads, Mass failures	[2]	[2]	None set in 2003 TMDL

[1] Sediment contributions from point sources is 0.10% of that estimated for the watershed. Since the contribution from point sources is negligible, the wasteload is set at current permit limits (DEQ 2003).
[2] Load reduction included in the load allocation and reductions developed for the St. Maries River assessment unit ID17010304PN007_05.
[3] Load reduction included in the load allocation and reductions developed for the Santa Creek watershed.
[4] Load reduction included in the load allocation and reductions developed for the St. Maries River assessment unit ID17010304PN012_05
[5] No load reduction assigned within watershed. Watershed was modeled at the time of TMDL development to be above sediment target.

The sediment load allocations for the St. Maries River watershed were developed to include in the entire watershed, because of the sediment contributions to the lower reaches of the river which was identified as impaired by sediment. All land use types were characterized within the watershed using GIS software and a sediment yield coefficient was applied accordingly. The sediment load allocations and reductions were calculated and tallied to result in cumulative reductions along the mainstem St. Maries River working from the headwaters downstream to the mouth. Individual load allocations and reductions were developed for the larger streams exceeding the 50% above background sediment load target. Those smaller streams (first and unnamed second order streams) to the St. Maries River were included in the "sidewall" load development and included in the overall sediment load allocation and reduction for the mainstem. Load reductions were not set and not included in the overall load reductions for those individual watersheds not exceeding the sediment load target (50% above background). The load allocations identified in the watersheds not exceeding the sediment load target was included in the overall sediment load allocation for the mainstem St. Maries River.

Temperature

Thirty-two assessment unit pollutant combinations were included in the St. Joe and St. Maries River SBA and temperature TMDL document (Table 4). Point sources were determined to be an insignificant source of temperature due to the small discharge. Load allocations were attributed to nonpoint sources of solar loading, reductions in stream shading. The applicable water quality criterion is numeric and the critical periods are site specific (Table 5).

Table 4. Applicable Temperature TMDLs.

Stream	Assessment Unit	Numeric Criteria	Narrative Target	Critical Period
St. Joe River Watershed				
Tributaries to St. Joe River	ID17010304PN027_02	See Table X	NA	Salmonid spawning windows
Toles Creek	ID17010304PN033_02	See Table X	NA	Salmonid spawning windows
Fishhook Creek	ID17010304PN039_03 ID17010304PN039_04	See Table X	NA	Salmonid spawning windows
Sherlock Creek	ID17010304PN041_02a	See Table X	NA	Salmonid spawning windows
Bluff Creek	ID17010304PN045_02 ID17010304PN045_03	See Table X	NA	Salmonid spawning windows
Mosquito Creek	ID17010304PN046_02	See Table X	NA	Salmonid spawning windows
Fly Creek	ID17010304PN047_02	See Table X	NA	Salmonid spawning windows
Beaver Creek	ID17010304PN048_02	See Table X	NA	Salmonid spawning windows

Simmons Creek	ID17010304PN052_02 ID17010304PN052_03	See Table X	NA	Salmonid spawning windows
Gold Creek	ID17010304PN053_02	See Table X	NA	Salmonid spawning windows
Loop Creek	ID17010304PN060_02 ID17010304PN060_03	See Table X	NA	Salmonid spawning windows
St. Maries River Watershed				
St. Maries River	ID17010304PN007_05	See Table X	NA	Salmonid spawning windows
Santa Creek	ID17010304PN010_03 ID17010304PN010_04	See Table X	NA	Salmonid spawning windows
Charlie Creek	ID17010304PN011_03	See Table X	NA	Salmonid spawning windows
St. Maries River	ID17010304PN012_05	See Table X	NA	Salmonid spawning windows
St. Maries River	ID17010304PN015_05	See Table X	NA	Salmonid spawning windows
Emerald Creek	ID17010304PN016_02 ID17010304PN016_03	See Table X	NA	Salmonid spawning windows
West Fork St. Maries River	ID17010304PN017_02 ID17010304PN017_03 ID17010304PN017_04	See Table X	NA	Salmonid spawning windows
Middle Fork St. Maries River	ID17010304PN018_02 ID17010304PN018_03 ID17010304PN018_04 ID17010304PN018_05	See Table X	NA	Salmonid spawning windows
Gold Center Creek	ID17010304PN019_02 ID17010304PN019_03	See Table X	NA	Salmonid spawning windows

Water quality temperature criterion was developed to protect aquatic life within the St. Joe River Subbasin (Table 5). Water temperature data collected were evaluated against Idaho water quality criterion and when exceeded the associated stream segment (assessment unit) was listed as temperature limited and a temperature TMDL was developed.

Table 5. State and Federal water quality temperature criteria in the St. Joe River Subbasin.

Beneficial Use	Location	Criteria	Dates	
Cold Water Aquatic Life	Applies to entire subbasin	22 ºC (71.6 ºF) Maximum Instantaneous (MDMT)	Applies entire year	
		19 ºC (66.2 ºF) Maximum Daily Average (MDAT)		
Salmonid Spawning	Applies to entire subbasin where beneficial use is designated or existing		Spring Spawning	Fall Spawning
		13 ºC (55.4 ºF) Maximum Instantaneous (MDMT)	>4,000 ft Jun 1 – July 31	Aug 15 – Nov 15
		9 ºC (48.2 ºF)	3,000 – 4,000 ft May 15 – July	

Beneficial Use	Location	Criteria	Dates	
		Maximum Daily Average (MDAT)	15 <3,000 ft May 1 – July 1	
Idaho Bull Trout Criteria	Watershed above and including Mica Creek	13 ºC (55.4 ºF) Maximum Weekly Maximum (MWMT)	<u>Rearing</u> Jun 1 – Aug 31	N/A
		9 ºC (48.2 ºF) Maximum Daily Average (MDAT)	N/A	<u>Spawning</u> Sep 1 – Oct 31
EPA Bull Trout Criteria	Bad Bear, Bean, Bear, Beaver, Bedrock, Berge, Bird, Blue Grouse, Boulder, Broadaxe, Bruin, California, Cherry, Clear, Color, Copper, Dolly, Dump, Eagle, East Fork Bluff, East Fork Gold, Emerald, Fishhook, Float, Fly, Fuzzy, Gold, Heller, Indian, Kelley, Malin, Marble, Medicine, Mica, Mill, Mosquito, North Fork Bean, North Fork St. Joe River, North Fork Simmons, Nugget, Packsaddle, Periwinkle, Prospector, Quartz, Red Cross, Red Ives, Ruby, St. Joe River (above Siwash Creek), Setzer, Sherlock, Simmons, Siwash, Skookum, Thomas, Thorn, Three Lakes, Timber, Tinear, Trout, Tumbledown, Wahoo, Washout, Wilson and Yankee Bar Creek	10 ºC (50 ºF) Maximum Weekly Maximum (MWMT)	Jun 1 – Sep 30	

Temperature TMDL load allocations are specific to stream reach and vary according to elevation and orientation. The goal of the temperature TMDL is to achieve 100% canopy closure for streams under 4,000 feet elevation, and lesser amounts of shade are progressively necessary above 4,000 feet. In many locations the modeling results predicted greater than 100% canopy closure to achieve the required stream temperatures. Since this is not possible, canopy closure was defaulted to 100%. No point sources of thermal load were accounted for in the TMDLs. All non point sources were attributed to openings in the canopy immediately adjacent to the stream.

Pollutant Targets

<u>Sediment</u>

Water quality criteria supportive of beneficial uses are stated in the Idaho Water Quality Standards (XXXX). The water quality standard protecting against excess sediment is a narrative standard which states:

> *Sediment shall not exceed quantities specified in Sections 250 and 252, or, in the absence of specific sediment criteria, quantities, which impair designated beneficial uses. Determinations of impairment shall be based on water quality monitoring and surveillance and the information utilized as described in section 350* (IDAPA 58.01.02.200.80).

Additional water quality standards applicable to sediment in section 250 and 252 respectively state:

Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for mote than ten (10) consecutive days (IDAPA 58.01.02.250.01.e).

For those surface waters identified in Subsection 252.01.b.i, turbidity as measured at the public intake shall not be (IDAPA 58.01.02.252.01.ii)*:*

(1) Increased by more than five (5) NTU above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, when background turbidity is fifty (50) NTU or less.

(2) Increased by more than ten percent (10%) above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, not to exceed twenty-five (25) NTU, when background turbidity is greater than fifty (50) NTU.

The in-stream target set in the TMDLs is full support of the cold water designated uses (XXXX). Specifically, sediment must be reduced to a level where full support of beneficial uses is demonstrated using the current assessment method accepted by DEQ at the time the water body is reassessed. Assessments conducted using BURP survey information collected following the completion of the TMDLs will be utilized to evaluate this goal.

To develop numeric sediment load allocations and reductions sediment modeling was conducted and compared to data collected during BURP surveys. Nonpoint sources of sediment (roads, unstocked forests, mass failures, and burned areas) were allocated a sediment yield value which was then multiplied by the extent (acres) of the activity to develop a current sediment load for each watershed. Current sediment loads were compared to watersheds supporting beneficial uses and watersheds not supporting beneficial uses in-order to identify an approximate assimilative capacity. For the St. Joe and St. Maries River watershed that capacity was set at 50% above natural background conditions and was set as the numeric target. The rational supplied in the TMDL to support a 50% above background target are:

- Sediment yield below 50% above background will fully support the beneficial uses of cold water aquatic life and salmonid spawning.
- The stream has some finite yet not quantified ability to process a sediment yield rate greater than 50% above background.
- Beneficial uses (cold water aquatic life and salmonid spawning) will be fully supported when the finite yet not quantified ability of the stream system to process (attenuate) sediment is met.

The goal was identified as being attainable following three (3) high flow events after sediment load reduction projects have been completed. A timeframe of thirty (30) years was set as necessary for three (3) high flow events to occur (DEQ 2003). This time was identified as being necessary to have the channel forming events to export sediment and to create pool structures.

Temperature

Riparian vegetation manipulation, reduction in stream shading, was identified as the cause of stream temperature changes. Increases and maintenance of stream shade was determined to be the most manageable means of achieving the desired in-stream water temperatures.

Pollutant targets were set by estimating the existing stream shade through aerial photograph interpretation and the development of potential shade curves generated from known vegetation characteristics. Potential shade curves represent the maximum amount of shade provided to the stream of varying widths and vegetation composition. Data collected in the field and complied by the USFS was used to develop shade curves to represent the forest types within the St. Joe River Subbasin – full potential shade is the pseudo pollutant target to reduce stream temperatures.

Control and Monitoring Points

Sediment

Control points or monitoring points were set in the TMDLs to develop a location at which compliance with the TMDL can be monitored (Table 6). Although these points only represent a small portion of the watershed they were selected to be representative of watershed health as a whole. These locations also represent locations of BURP surveys, and by revisiting the same location and using the same protocol, it is anticipated that BURP scores can be compared to evaluate any water quality trends. Demonstration of beneficial use support and attainment of WQS at these locations is an indicator of progress or compliance with the load reductions identified in the TMDL.

Table 6. Sediment TMDL points of compliance.

Stream	BURP ID	Latitude	Longitude	Location description
St. Joe River Watershed above St. Maries River confluence				
Fishhook Creek	1995SCDAA025	N 47° 14' 11.99"	W -115° 50' 48.03"	1 mile upstream from mouth
Bear Creek	1995SCDAA061	N 47° 08' 21.83"	W -116° 09' 51.31"	Near mouth
Little Bear Creek	1995SCDAA060	N 47° 07' 57.24"	W -116° 09' 06.87"	Near mouth
Mica Creek	1996SCDAB011	N 47° 15' 50.37"	W -116° 07' 57.71"	Near mouth
Mica Creek	1996SCDAB008	N 47° 12' 28.86"	W -116° 12' 19.55"	Below Mica Meadows
St. Maries River Watershed				
Middle Fork St. Maries River	1996SCDAA040	N 47° 00' 48.91"	W -116° 14' 50.25"	Near mouth
West Fork St. Maries River	1998SCDAA021	N 46° 57' 19.90"	W -116° 18' 38.25"	Near mouth
Emerald Creek	1995SCDAB008	N 47° 03' 57.44"	W -116° 19' 32.30"	Near mouth
St. Maries River	1997SCDAA033	N 47° 02' 59.33"	W -116° 17' 10.38"	Near confluence with Cedar Creek
Carpenter Creek	1995SCDAB054	N 47° 04' 37.19"	W -116° 22' 58.47"	Near mouth
St. Maries River	NA	N 47° 08' 09.91"	W -116° 25' 34.62"	Near confluence with Tyson Creek
Tyson Creek	1995SCDAB055	N 47° 07' 25.07"	W -116° 26' 00.69"	Near mouth
Santa Creek	1995SCDAB005	N 47° 10' 22.81"	W -116° 29' 38.61"	Near mouth
Alder Creek	1995SCDAB004	N 47° 12' 24.15"	W -116° 41' 40.05"	Near mouth
St. Maries River	NA	N 47° 17' 27.81"	W -116° 32' 41.00"	Near below Thorn Creek

The sediment loads developed for the St. Joe and St. Maries River TMDLs do not differentiate between coarse and fine material. The TMDLs do state that 'the sediment interfering with the beneficial use (cold water) is most likely coarse sand bed load particles'. This is most likely the case in streams with sufficient energy to move the larger bed load material. In lower gradient streams and rivers (depositional reaches) with significantly less energy suspended sediment is most likely causing beneficial use impairment. Implementation activities aimed at reducing sediment loading to streams typically do not discern between bed load and suspended load, therefore activities to reduce one will also reduce the other.

Rosgen B and C channel types were noted in the TMDLs as critical reaches. These stream types can also represent areas where sediment is deposited. Along with lessening stream gradient these reaches generally exhibit the most desirable fish habitat, with diversified pools, riffles and runs. Sediment impacts would be expected to manifest in these locations as pool filling, increased embeddedness and stream widening. Impacts to the aquatic communities from excess sediment is not limited to but includes reductions in spawning success (egg survival), reductions in macroinvertebrates and altered feeding behaviors due to increases in turbidity.

Temperature

Shade along individual stream reaches is identified as the TMDL target and because of this there are many points of compliance. Changes in stream width, elevation and vegetation type impact stream shade, therefore each reach is an individual point of compliance. See figures 10a through 10c and 12a through 12g for the target percent canopy cover for streams in the St. Joe River watershed and figures 9a through 9e for streams in the St. Maries River watershed. BURP sites were selected to monitor the water quality status and stream temperatures of streams addressed in the temperature TMDL (Table 7).

Table 7. Temperature TMDL points of compliance.

Stream	BURP ID	Latitude	Longitude	Location description
St. Joe River Watershed above St. Maries River confluence				
Beaver Creek	1995SCDAB029[1] 1994SCDAA052[2]	N 47° 04' 57.95"	W -115° 21' 26.85"	Near mouth
Bluff Creek	To be determined	N 47° 11' 03.02"	W -115° 29' 23.96"	Near mouth
Fly Creek	1994SCDAA044	N 47° 06' 44.12"	W -115° 23' 07.66"	Near mouth
Gold Creek	1994SCDAA048	N 47° 09' 06.22"	W -115° 24' 21.08"	Near mouth
Heller Creek	To be determined	N 47° 03' 51.86"	W -115° 13' 05.54"	Near mouth
Loop Creek	1997SCDAA028	N 47° 21' 15.51"	W -115° 39' 36.73"	Near mouth
Mosquito Creek	1994SCDAA046	N 47° 09' 16.56"	W -115° 24' 50.43"	Near mouth
Simmons Creek	To be determined	N 47° 08' 18.26"	W -115° 23' 37.73"	Near mouth
Bear Creek	1995SCDAA063	N 47° 07' 53.13"	W -116° 09' 15.79"	Near mouth
Little Bear Creek	1995SCDAA009	N 47° 07' 57.24"	W -116° 09' 06.87"	Near mouth
Blackjack Creek	1996SCDAA057	N 47° 15' 11.34"	W -115° 59' 05.03"	Near mouth
Fishhook Creek	1995SCDAA025	N 47° 14' 11.99"	W -115° 50' 48.03"	Near mouth
Fishhook Creek	1995SCDAA024	N 47° 09' 28.55"	W -115° 51' 33.29"	At Lick Creek confluence
Harvey Creek	1996SCDAB012	N 47° 15' 08.87"	W -115° 59' 24.17"	Near mouth
Tank Creek	1996SCDAB017	N 47° 15' 12.75"	W -116° 01' 03.21"	Near mouth
St. Maries River Watershed				
Gramp Creek	1996SCDAA047	N 47° 01' 05.90"	W -116° 08' 45.64"	Near mouth
Gold Center Creek	1996SCDAA045	N 47° 00' 17.09"	W -116° 10' 01.29"	Near mouth
Flewsie Creek	1996SCDAA048	N 47° 00' 43.23"	W -116° 11' 28.29"	Near mouth
Middle Fork of the St. Maries River	1996SCDAA040	N 47° 00' 48.91"	W -116° 14' 50.25"	Near mouth
West Fork of the St. Maries River	1998SCDAA021	N 46° 57' 19.90"	W -116° 18' 38.25"	Near mouth
Emerald Creek	1995SCDAB008	N 47° 03' 57.44"	W -116° 19' 32.30"	Near mouth
Santa Creek	1995SCDAB005	N 47° 10' 22.81"	W -116° 29' 38.61"	Near mouth
St. Maries River	1997SCDAA033	N 47° 02' 59.33"	W -116° 17' 10.38"	At Cedar Creek
St. Maries River	To be determined	N 47° 04' 07.70"	W -116° 19' 32.59"	At Emerald Creek

[1] BURP ID noted in TMDL was misidentified. 1995SCDAB029 is located within the Beaver Creek watershed in the St. Maries River drainage.
[2] BURP location near the mouth of Beaver Creek, St. Joe.

The St. Joe and St. Maries temperature TMDLs state that the primary monitoring will be done using aerial photography interpretation of canopy recovery. This will continue to be employed to determine progress towards meeting TMDL targets. Canopy cover has been re-assessed using aerial photograph data collected in the summer of 2009. The canopy cover was evaluated to determine stream shading and followed protocols outlined in the *Potential Natural Vegetation (PNV) Temperature Total Maximum Daily Load (TMDL) Procedures Manual* (DEQ2009). Potential natural vegetation and the results on the analysis are discussed in the next section (Load Capacity).

Evaluation of Data Collected at or Near Identified Compliance Points

A limited amount of BURP data has been collected at or near the points of compliance following the completion of the TMDLs. The table below outlines the BURP data that has been collected at or near the specified compliance points post TMDL approval, or within the same assessment unit (Table 8).

Table 8. Data collected at or near compliance points following TMDL development.

Stream	Assessment Unit	Compliance Point and Type Sed. or Temp.	New Site ID	Comment
St. Joe River Watershed				
Mica Creek	ID17010304PN030_03	1996SCDAA0B08 Sediment	2007SCDAA042	New data suggests full support of beneficial uses
Lower Fishhook Creek	ID17010304PN039_04	1995SCDAA025 Sediment and Temperature	2001SCDAE024	New data suggests full support of beneficial uses
Mid Fishhook Creek	ID17010304PN039_03	Not set in TMDL Temperature	2001SCDAE023	New data suggests full support of beneficial uses
Upper Fishhook Creek	ID17010304PN039_02	Not set in TMDL	2003SCDAA047	New data suggests full support of beneficial uses
Bluff Creek	ID17010304PN045_03	Near mouth Temperature	2002SCDAA060	New data suggests full support of beneficial uses
Mosquito Creek	ID17010304PN046_02	1994SCDAA046 Temperature	2001SCDAA030 2001SCDAE020 2001SCDAV003 2002SCDAA038 2002SCDAV003 2003SCDAA037 2004SCDAA029 2005SCDAA007 2006SCDAA020	New data suggests full support of beneficial uses
Gold Creek	ID17010304PN053_02	1994SCDAA048 Temperature	2002SCDAA047 2007SCDAA040	New data suggests full support of beneficial uses
Simmons Creek	ID17010304PN052_03	Near mouth Temperature	2002SCDAA063	New data suggests full support of beneficial uses
Fly Creek	ID17010304PN041_02	1994SCDAA044 Temperature	2005SCDAA008 2006SCDAA022 2007SCDAA039 2008SCDAA031	New data suggests full support of beneficial uses
Heller Creek	ID17010304PN070_02	Near mouth Temperature	2002SCDAA065	New data suggests full support of beneficial uses
St. Maries River Watershed				
Gold Center Creek	ID17010304PN019_03	1996SCDAA045 Temperature	2001SCDAF015	New data suggest not full support of beneficial uses
Tyson Creek	ID17010304PN013_03	1995SCDAB055 Sediment	2001SCDAF013 2001SCDAF014 2008SCDAA034	New data suggest not full support of beneficial uses

To achieve the goals of restoring beneficial uses and reduction of nonpoint source pollutant loads identified in the TMDL a feedback loop was identified in the St. Maries River and tributary agricultural TMDL implementation plan. An implementation plan is a 'road map' for reducing pollutant loads identified in the TMDL, and focus on developing projects to reduce pollutant loads. The feedback loop concept consists of continuing the role and involvement of the WAG, tracking projects and conducting both BMP effectiveness monitoring and in-stream biological monitoring. At the point that monitoring determines that beneficial uses are supported the stream is at its assimilative capacity. This process is ongoing and the TMDL Implementation Plan is considered a living document that is subject to review and modification. The initial Implementation Plan identified three features or objectives in the feedback loop process:

- Active long term commitment and participation of the WAG,
- Long term commitment of identified responsible agencies to carry out actions listed in the Implementation Plan and
- Annual progress reports reviewed by the WAG at follow-up meetings with the intent of modifying the Implementation Plan.

Staffing limitations at DEQ shortly after the completion of the TMDL and Implementation Plan made it difficult for DEQ to continue participation and facilitation in WAG activities. Between 2005 and 2009 no St. Joe WAG meetings were held. During this time some Designated Management Agencies (DMA) continued to work on implementation activities but no widespread effort was organized. Through the five year review process implementation activities were inventoried and assessed with regard to the TMDL goals (Section 4).

Many of the streams included in the St. Joe and St. Maries TMDLs failed to meet Idaho water quality temperature criteria and thus were included on the §303(d) list as temperature impaired. Some streams which failed to meet the temperature criteria showed support of aquatic beneficial uses based on BURP scores, and this is still the case in many watersheds. All of the watersheds in the St. Joe River watershed which had temperature TMDLs developed indicate support of aquatic beneficial uses through BURP monitoring. During the development of the temperature TMDLs it was noted that temperature monitoring in the St. Joe River Subbasin streams with little or no human development and at a relatively high elevation fail to meet the Idaho water quality temperature criteria.

During this review stream shading was evaluated and compared to modeled shade values derived from the potential natural vegetation within each temperature listed watershed. The evaluation was completed to identify sections of streams which are lacking shade and absorbing in excess solar load, resulting in elevated stream temperatures. Watersheds within the St. Joe River watershed were shown to be closer to having full potential shade than those evaluated in the St. Maries River watershed.

Load Capacity

Sediment

Sediment loads were developed in the St. Joe and St. Maries watershed through the application of an empirical based model. The model predicted the background and current sediment load based on the land use types and geology within the desired watershed. The area altered by each land use type was multiplied by a sediment yield coefficient to determine the amount of sediment contributed to the stream from a given area. The sediment yield coefficients were derived by other modeling techniques such as Revised Universal Soil Lose Equation (RUSLE), Water and Sediment Yield (WATSED), and Water and Erosion Prediction Project (WEPP) roads. The outputs of the model were intended to provide a relative rather than an exact estimate of sediment yield. The model did not yield an exact sediment load capacity; rather the current modeled sediment load was compared between streams supporting beneficial uses and streams not supporting beneficial uses. The comparison between the supporting and non-supporting streams identified a sediment load capacity of 50% above natural background sediment load as a target. Those supporting beneficial uses modeled below 50% above natural background and those not supporting beneficial uses exceeded 50% above natural background.

The sediment load calculations (model results) relied on many different modeling techniques utilized by other agencies and external sources of data. The model also relied on Geographic Information System (GIS) analysis for the classification and location of different land use types. Sediment yield coefficients were applied to each land use and calculated a sediment load in tons per unit area (tons per acre per year). The model assumed 100% delivery from all modeled land use types. Assuming 100% delivery from all land use types is a conservative overestimate of sediment delivery and accounted for in the TMDL's

margin of safety. Overall the TMDLs predicted that the model used to develop sediment loads was 164% conservative when used in watersheds underlain by a granitic geology, and 231% conservative with used in watersheds underlain by belt supergroup rocks. The conservative overestimates were also factored into the TMDLs margin of safety.

For a detailed description see Appendix C "Sediment Model Assumption" in the St. Joe and St. Maries River TMDLs.

Temperature

In-stream temperatures recorded within the St. Maries River watershed failed to meet Idaho water quality standards. A temperature TMDL for the entire watershed was developed to try and reduce stream temperatures in the lower reaches of the St. Maries River to comply with Idaho water quality criteria. In the St. Maries River watershed stream temperatures are affected by natural weather conditions and adjacent plant community potential, including disturbance and recovery (DEQ 2003b). Vegetation manipulation to create access or as a result of timber harvest is the major anthropogenic cause of increased stream temperatures (DEQ 2003). Grazing, agricultural activities, mining and removal of vegetation along private recreational lots have also been shown to be land use activities resulting in reductions of stream shading. The environmental factors affecting stream temperatures are local air temperatures, stream depth, ground water inflow, and stream shading by riparian cover and/or topography (in DEQ 2003, Sullivan and Adams 1990, Theurer et. al 1984, Beshcta and Weatherred 1984). Changes in topography directly affect ambient air temperature, cooling air temperatures with increases in elevation. In forest streams, ambient temperature and stream shading are believed to account for up to 90% of stream temperature variability (in DEQ 2003, Brown 1971). Because stream shading is the only one of the two that can be modified by management stream shade was identified and characterized to develop load allocations.

The temperature TMDLs developed in 2003 was an equation based TMDLs and resulted in most stream segments needing 100%+ shade to meet TMDL goals. This is unattainable in most scenarios due to stream width, plant community, natural disturbance, and topography.

In the St. Joe and St. Maries River temperature TMDLs the shade needed to produce the required stream temperatures was back calculated using the Cumulative Watershed Effects (CWE) empirical model. The model uses elevation, stream temperature and riparian canopy cover to calculate a maximum weekly maximum temperature. Because only shade can be modified the equation was re-written to solve for canopy to predict the required canopy at a given elevation

Original equation: $MWMT = 29.1 - 0.00262*E - 0.0849*C$

MWMT = Maximum Weekly Maximum Temperature (°C)
E = Stream reach elevation (feet)
C = Riparian canopy cover (%)

Equation re-written $C = (29.1/0.085) - (MWMT/0.085) - (E*0.0026/0.085)$

To meet Idaho water quality standards the required stream temperature was set at 10°C in the St. Maries River watershed. Because the needed temperature is known the equation was simplified to determine the required shade percentage.

Final equation $C = 224.7 - 0.031*E$

Watershed in which temperature TMDLs were developed in the St. Joe River watershed are located within the St. Joe bull trout recovery area. The area includes the St. Joe River watershed above Mica Creek (Panhandle Bull Trout Technical Advisory Team 1998). The governing temperature standards for these creeks and their tributaries are the federal 10°C seven-day running average from May 1 to September 1 and the state 9°C daily maximum spawning standard from September 1 through October 31. After October 31, water temperature is expected to be well below 9°C in the St. Joe River Subbasin. In

practice, the two standards are essentially the same (Dupont 2002): a standard 10°C seven day running average from May 1 through October 31 will meet both federal and state requirements.

Final equation $C = 224.7 – 0.031*E$

Following the completion of the St. Joe and St. Maries temperature TMDLs EPA has promulgated temperature criteria for bull trout protection (Title 40, Part 131, Subpart D, Section 131.33).

(1) Except for those streams or portions of streams located in Indian country, or as may be modified by the Regional Administrator, EPA Region X, pursuant to paragraph (a)(3) of this section, a temperature criterion of 10°C expressed as an average of daily maximum temperatures over a seven day period, applies to the waterbodies identified in paragraph (a)(2) of this section during the months of June, July, August and September.

Steams designated in the St. Joe River watershed included:

(xxxi) ST. JOE R. BASIN: Bad Bear Creek, Bean Creek, Bear Creek, Beaver Creek, Bedrock Creek, Berge Creek, Bird Creek, Blue Grouse Creek, Boulder Creek, Broadaxe Creek, Bruin Creek, California Creek, Cherry Creek, Clear Creek, Color Creek, Copper Creek, Dolly Creek, Dump Creek, Eagle Creek, East Fork Bluff Creek, East Fork Gold Creek, Emerald Creek, Fishhook Creek, Float Creek, Fly Creek, Fuzzy Creek, Gold Creek, Heller Creek, Indian Creek, Kelley Creek, Malin Creek, Marble Creek, Medicine Creek, Mica Creek, Mill Creek, Mosquito Creek, North Fork Bean Creek, North Fork Saint Joe River, North Fork Simmons Creek, Nugget Creek, Packsaddle Creek, Periwinkle Creek, Prospector Creek, Quartz Creek, Red Cross Creek, Red Ives Creek, Ruby Creek, Saint Joe River (above Siwash Creek), Setzer Creek, Sherlock Creek, Simmons Creek, Siwash Creek, Skookum Creek, Thomas Creek, Thorn Creek, Three Lakes Creek, Timber Creek, Tinear Creek, Trout Creek, Tumbledown Creek, Wahoo Creek, Washout Creek, Wilson Creek, Yankee Bar Creek.

The use of the CWE equation resulted in unattainable targets in some areas. Given the elevation of most streams in the upper reaches of the watershed the calculated shade target exceeded 100% and was truncated at 100% shade. Variations in natural stream characteristics (stream width, riparian community, disturbance, and topography) alter canopy cover making 100% shade unachievable.

Idaho water quality standard includes a provision (IDAPA 58.01.02.200.09) which establishes that if water quality criteria are exceeded concurrently with natural condition, the exceedance is not considered to be a violation of water quality standards. In these situations, natural conditions essentially become the water quality standard, and the natural level of shade becomes the target of the TMDL. The in-stream temperature which results from attainment of these conditions is consistent with the water quality standards, even though it may exceed numeric temperature criteria.

Idaho DEQ began to develop temperature TMDLs using a different methodology in 2005. Using the newer method, Potential Natural Vegetation (PNV), many of the natural variations discussed above are taken into consideration. Similar to the CWE equations the PNV method characterizes stream shade for reductions in stream temperature, and develops a solar load based on stream shade. The steps for developing a temperature TMDL using the PNV methodology include:

a) Classification of existing shade using aerial and/or satellite imagery,

b) Determine natural bankfull width,

c) Characterize the surrounding riparian community,

d) Apply target shade values based on riparian community and stream width, and

e) Calculate solar load.

For detailed information about the PNV methodology refer to *The Potential Natural Vegetation (PNV) Temperature Total Maximum Daily Load (TMDL) Procedures Manual*, Idaho DEQ revised October

2009. Similar to the CWE methodology PNV load capacity is essentially the desire to achieve a natural riparian corridor. The watersheds which were included in the St. Joe and St. Maries River Temperature TMDLs have been reevaluated using the PNV method.

Load Allocations

Sediment

Sediment load allocations were assigned to land managers/owners within each watershed for which sediment TMDLs were developed. Allocations were assigned to each designee based on the percentage of land owned or managed. The reductions were based on a reduction to 50% above natural background. The load reductions required for each land owner/manager is based on the difference between the existing sediment contribution and the load capacity at 50% above background.

Allocating sediment load reductions based on the amount of land owned or managed in a watershed may over estimate or underestimate load reduction needed from the land steward. The load allocation does not take into consideration the type of land use activity occurring on each land owner/managers property. A large land owner/manager may minimally manage the land resulting in little disturbance, but because they own a majority of the watershed they may be responsible for a majority of the load reduction. To better allocate load reductions, load reductions should be assigned by land use and owner/manager type, not solely on the amount of land owned/managed.

All thought the load allocation portion of the TMDL may over or under allocated sediment loads the overall load allocations and associated load reductions for each watershed will remain. The goal of the TMDLs is restoration of beneficial uses and a reduction in sediment regardless of land owner within the watershed is vital to this goal. The load capacity was generated using the best available data at the time the TMDLs were developed, reviewed by the WAG and approved by EPA (Figure 2 and 3).

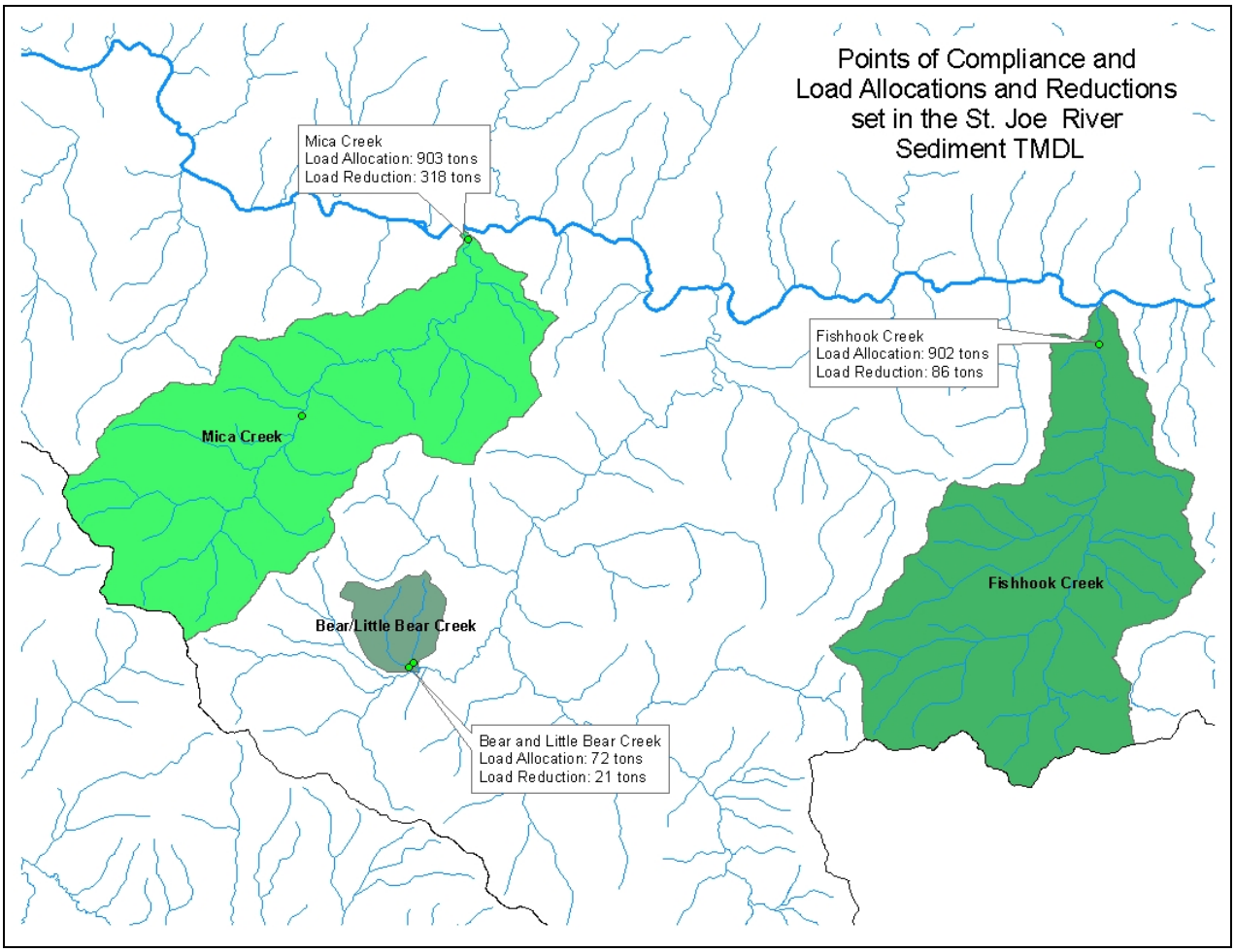

Figure 2. Points of compliance and load allocations and recution set in the St. Joe River sediment TMDL.

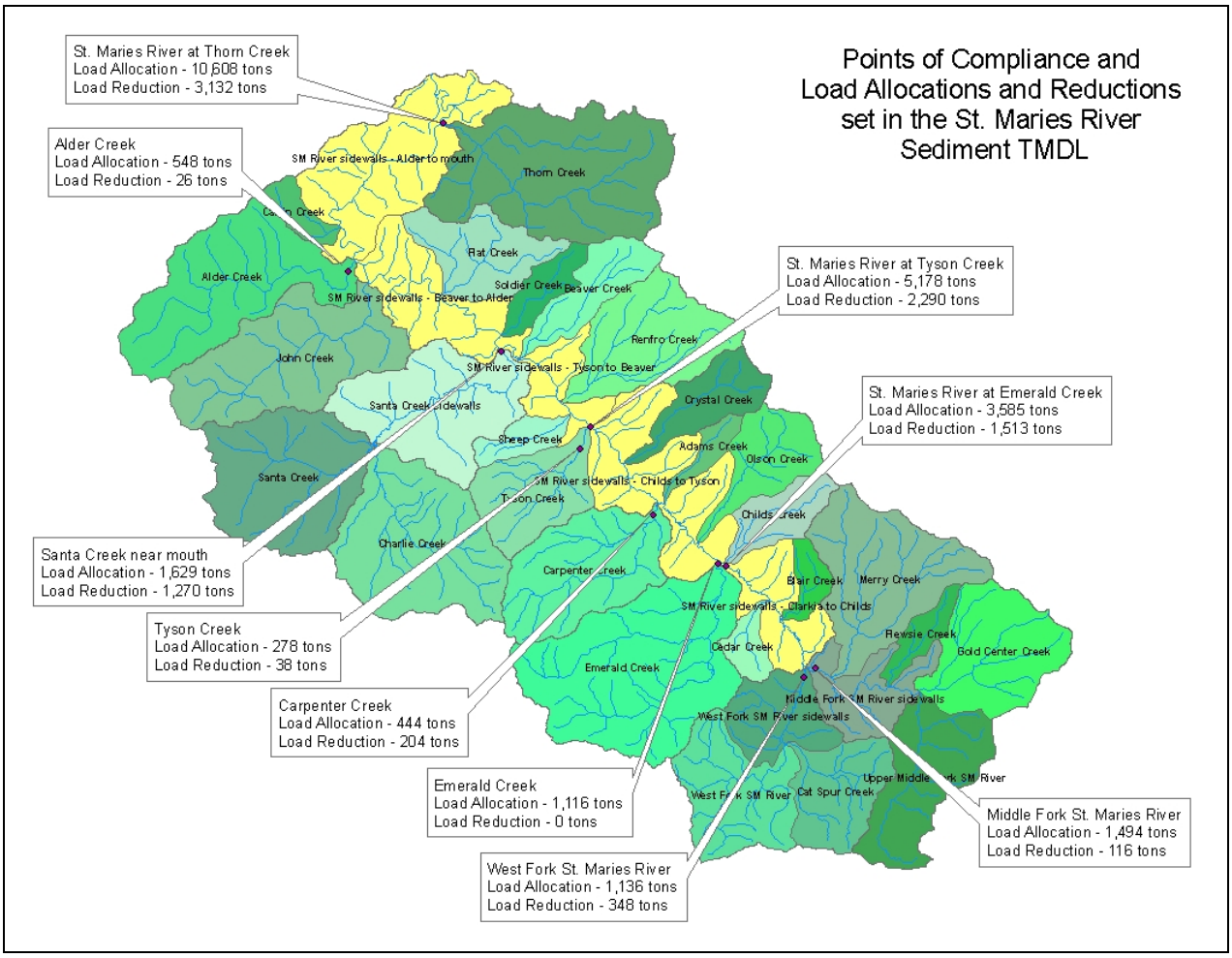

Figure 3. Points of compliance and load allocations and reductions set in the St. Maries River sediment TMDL.

Temperature

Due to reasons discussed above, the temperature TMDLs developed in the St. Joe and St. Maries River watersheds have been reassessed using the PNV methodology. This conversion will result in a TMDL that is more applicable, and yield better implementation potential by evaluated each stream reach independently. The evaluation of each stream reach will more accurately identify those stream reaches which need increases in shade. Load allocations will be reach specific and the responsibility of the land manager/owner for each segment during ownership/management.

Margin of Safety

Sediment

The margin of safety (MOS) is described as implicit for the model used in the St. Joe and St. Maries Rivers sediment TMDLs. The model is estimated to be 231% conservative when applied in areas underlain by belt supergroup geologies and 164% conservative when applied to metamorphosed border belt terrain. The overestimate is identified as the implicit margin of safety. The conservative (over estimate) MOS helps to compensate for the lack of data to insure that pollutant targets set are protective of beneficial uses.

Temperature

The margin of safety developed for the temperature TMDLs was taken into consideration when setting the desired canopy cover. The desired canopy cover percentages are assumed to be the greatest shade available at the location to satisfy the thermal equations.

Seasonal Variation

Sediment

Sediment from nonpoint sources was identified in the TMDLs as being loaded episodically, primarily during high discharge events. During the high discharge events the streams and river swell with snowmelt and precipitation runoff increasing stream velocities. During this period the increased stream velocities mobilize stream bed and bank material increasing the streams sediment load. Also during this time overland flow is prevalent due to increased precipitation, snow melt, frozen soils and low infiltration rates. The increase in overland flow transports soil to streams and rivers adding to the sediment load. The critical period, most often spring, posses the greatest risk to surface waters, if protected during this critical period it is anticipated to be protected throughout the year.

Temperature

Temperature TMDLs developed in the St. Joe River watershed states that the seasonal variation is related to the bull trout temperature standard – the St. Maries watershed is not included in the bull trout protection area.

The warm summer months are the time when temperature criteria are most likely to be exceeded. This time also coincides with the beginning of fall spawning and the end of spring spawning season for native trout. The summer months occupy the time after spawning during egg incubation and rearing. It is critical during this time that stream temperatures stay cool.

Reserve

Sediment

No part of the load allocations were held in reserve in either the St. Joe or St. Maries sediment TMDLs. All new infrastructures should be constructed or mitigated to allow no net increase in sediment yield to surface water.

Temperature

No part of the load allocations were held in reserve in either the St. Joe or St. Maries temperature TMDLs. Point sources do exist within the St. Maries River watershed but currently considered to have insignificant impact on the rivers temperature. If future data suggest the dischargers are increasing the temperature of the St. Maries River and impacting beneficial uses a waste load allocation will be developed and incorporated into the TMDL.

Section 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 *Water Body Assessment Guidance*, second edition (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 the "presumed uses," DEQ will apply the numeric cold water aquatic life criteria and primary or secondary contact recreation criteria to undesignated waters

Beneficial Uses

The beneficial uses addressed in the St. Joe and St. Maries River SBA and TMDLs are listed below (Table 9). Beneficial uses are an important part of Idaho water quality standards and identify the water quality criteria applicable to the specified water body. Beneficial uses in the St. Joe River watershed are currently defined as existing along with the majority of the water bodies in the St. Maries River watershed. The mainstem of the St. Maries River and Santa Creeks are the only water body addressed in the TMDLs with designated uses. Beneficial uses assessed in 2003 are current with the beneficial uses of the subbasin and will not be adjusted.

Table 9. Beneficial uses of TMDL water bodies.

Stream Name	Assessment Unit	Beneficial Uses	Type of Use (designated, existing, presumed)
St. Joe River Watershed			
Tribs to St. Joe River - NF St. Joe to St. Maries River	17010304PN027_02	CW, SS, SCR/PCR	Existing
Mica Creek	17010304PN030_02	CW, SS, SCR/PCR	Existing
	17010304PN030_03	CW, SS, SCR/PCR	Existing
Toles Creek	17010304PN033_02	CW, SS, SCR/PCR	Existing
Fishhook Creek	17010304PN039_03	CW, SS, SCR/PCR	Existing
	17010304PN039_04	CW, SS, SCR/PCR	Existing
Sherlock Creek	17010304PN041_02a	CW, SS, SCR/PCR	Existing
EF and WF Bluff Creek	17010304PN045_02	CW, SS, SCR/PCR	Existing
Bluff Creek	17010304PN045_03	CW, SS, SCR/PCR	Existing
Mosquito Creek	17010304PN046_02	CW, SS, SCR/PCR	Existing
Fly Creek	17010304PN047_02	CW, SS, SCR/PCR	Existing
Beaver Creek	17010304PN048_02	CW, SS, SCR/PCR	Existing
Simmons Creek	17010304PN052_02	CW, SS, SCR/PCR	Existing
	17010304PN052_03	CW, SS, SCR/PCR	Existing
Gold Creek	17010304PN053_02	CW, SS, SCR/PCR	Existing
Loop Creek	17010304PN060_02	CW, SS, SCR/PCR	Existing
	17010304PN060_03	CW, SS, SCR/PCR	Existing
St. Maries River Watershed			

St. Maries River - Santa Creek to mouth	17010304PN007_05	CW, PCR	Designated
Alder Creek	17010304PN008_02	CW, SS, SCR/PCR	Existing
John Creek	17010304PN009_02	CW, SS, SCR/PCR	Existing
Santa Creek	17010304PN010_02	CW, SS, PCR	Designated
	17010304PN010_03	CW, SS, PCR	Designated
	17010304PN010_04	CW, SS, PCR	Designated
Charlie Creek	17010304PN011_02	CW, SS, SCR/PCR	Existing
	17010304PN011_03	CW, SS, SCR/PCR	Existing
St. Maries River - Carpenter to Santa Creek	17010304PN012_05	CW, PCR	Designated
Tyson Creek	17010304PN013_02	CW, SS, SCR/PCR	Existing
	17010304PN013_03	CW, SS, SCR/PCR	Existing
Carpenter Creek	17010304PN014_02	CW, SS, SCR/PCR	Existing
	17010304PN014_03	CW, SS, SCR/PCR	Existing
St. Maries River - confluence of WF and MF	17010304PN015_05	CW, PCR, DWS, SRW	Designated
Emerald Creek	17010304PN016_02	CW, SS, SCR/PCR	Existing
Emerald Creek - EF Emerald to St. Maries River	17010304PN016_03	CW, SS, SCR/PCR	Existing
WF St. Maries River	17010304PN017_02	CW, SS, SCR/PCR	Existing
	17010304PN017_03	CW, SS, SCR/PCR	Existing
	17010304PN017_04	CW, SS, SCR/PCR	Existing
MF St. Maries River	17010304PN018_02	CW, SS, SCR/PCR	Existing
	17010304PN018_03	CW, SS, SCR/PCR	Existing
	17010304PN018_04	CW, SS, SCR/PCR	Existing
	17010304PN018_05	CW, SS, SCR/PCR	Existing
Gold Center Creek	17010304PN019_02	CW, SS, SCR/PCR	Existing
	17010304PN019_03	CW, SS, SCR/PCR	Existing
Crystal Creek	17010304PN023_02	CW, SS, SCR/PCR	Existing
Renfro Creek	17010304PN024_02	CW, SS, SCR/PCR	Existing
	17010304PN024_03	CW, SS, SCR/PCR	Existing
Thorn Creek	17010304PN026_02	CW, SS, SCR/PCR	Existing
	17010304PN026_03	CW, SS, SCR/PCR	Existing

CW – Cold water communities
SS – Salmonid spawning
PCR – Primary contact recreation
SCR – Secondary contact recreation
SRW – Special resource water
DWS – Domestic water supply

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 10 includes the most common numeric criteria used in TMDLs; **Error! Reference source not found.** 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 10. 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
Temperature[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	
Turbidity			Turbidity shall not exceed background by more than 50 NTU[e] instantaneously or more than 25 NTU for more than 10 consecutive days.	
Ammonia			Ammonia not to exceed calculated concentration based on pH and temperature.	
EPA Bull Trout Temperature Criteria: Water Quality Standards for Idaho, 40 CFR Part 131				
Temperature				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.
[e] Nephelometric turbidity units

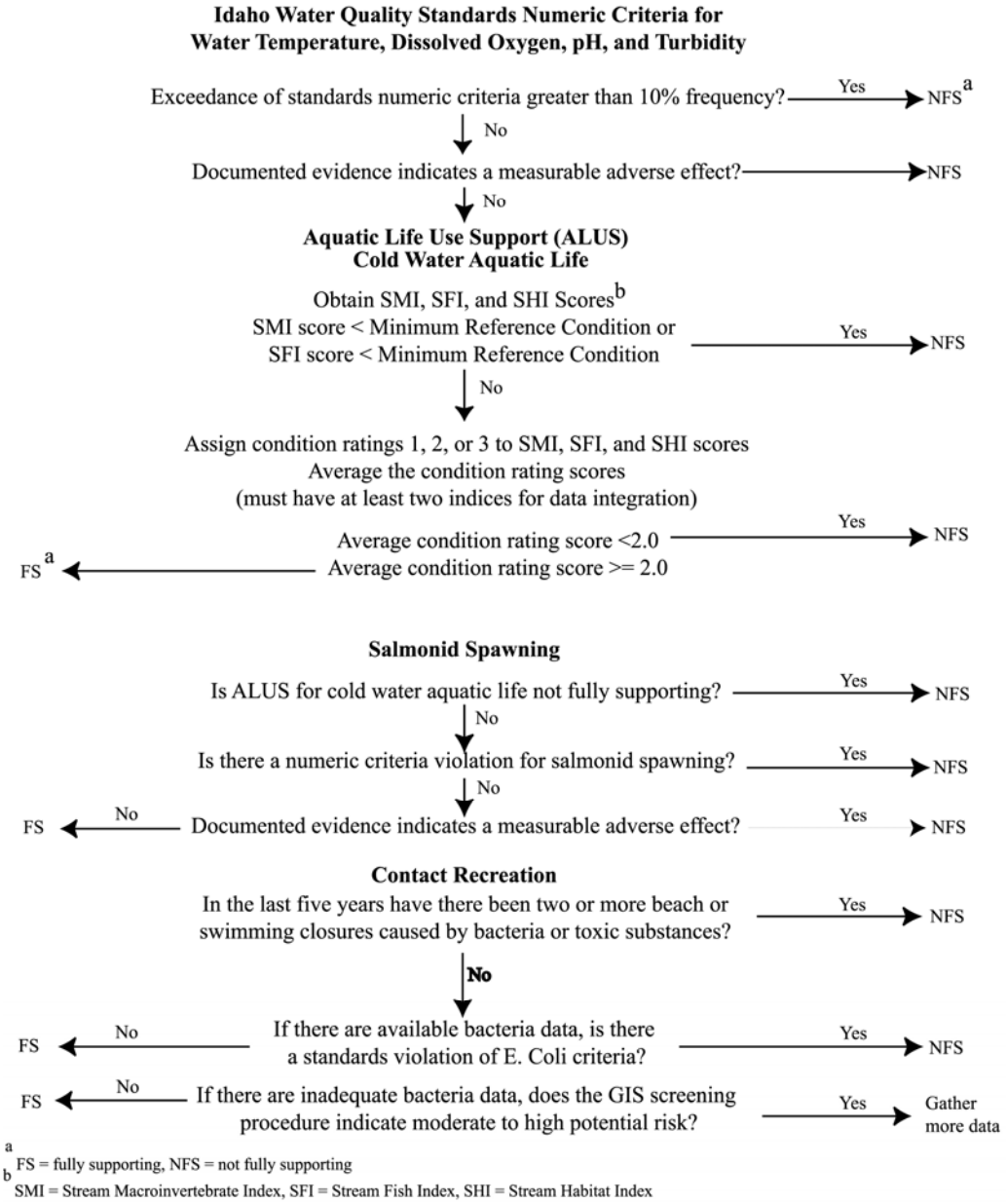

Figure 4.. Determination Steps and Criteria for Determining Support Status of Beneficial Uses in Wadeable Streams: Water Body Assessment Guidance, Second Addition (Grafe et al. 2002)

The designated and existing uses evaluated in the TMDL are appropriate. Changes to the beneficial uses are not recommended. Continued monitor will help to track the progress of the TMDL and implementation goals toward reaching support of beneficial uses.

Changes to Subbasin Characteristics

The St. Joe and St. Maries River watersheds harbor a robust timber industry. Much of the watersheds has been and will continue to be logged. Historic logging practices utilized the river and stream network to store and transport logs to mills, railroads or other points of commerce. This use of the waterways as a transport mechanism resulted in long-term damage to fish habitat, riparian communities, and natural stream channel features.

The Idaho Forest Practices Act (FPA) governs timber harvest practices in Idaho (IDAPA 20.02.01). Under the FPA the practices that were once used to log Idaho's forests are no longer legal. Rules and regulations of the FPA outline best management practices (BMPs) that will be taken by the timber harvester to mitigate impacts to surface water and the surrounding ecosystem. The FPA identifies standards for logging, road building, reforestation, streamside protection, and other forestry practices.

Land ownership in the St. Joe and St. Maries River watersheds is mixed between federal and state agencies, timber companies, private, and the Coeur d'Alene Indian Tribe (Table 11). The USFS, the largest single land steward in the St. Joe River watershed, manages approximately 524,228 acres in the St. Joe watershed and 66,800 acres in the St. Maries watershed. Following the completion of the TMDLs in 2003 the parcels of land managed and owned by individual companies, agencies, or other has remained relatively unchanged.

Table 11. Acres by land manager/owner in the St. Joe HUC (including St. Maries watershed).

Land Manager/Owner	Acres	Percent of Watershed (%)
United State Forest Service (USFS)	591,028	50
Idaho Dept. of Lands (IDL)	73,795	6
Idaho State Parks	7,645	1
Idaho Fish and Game	2,980	<1
Bureau Land Management	17,165	1
Coeur d'Alene Tribe	8,217	1
Private	479,931	41
Total	**1,180,761**	**100**

Post TMDL development the USFS has been working to finalize a Travel Management Plan (Plan). The Plan was developed by a local advisory committee and with the guidance and oversight of the USFS St. Joe Ranger District. The Plan is a requirement of the USFS following the 2005 Travel Management Rule and identifies roads, trials, and areas that will be open to the public, identifies the type of wheeled motorized vehicles that are allowed to use the designated routes, and publish this information on Motorized Vehicle Use Map.

The Plan does not create or remove roads or trials from the landscape, but it does put limits on vehicle usage in sensitive areas such as near or crossing streams. Resource damage caused by off-road vehicles has been a reoccurring issue within the subbasin and contributes to increases in sediment and temperature. Limiting and controlling access to surface water will help to restore riparian vegetation resulting in increased stream shading and reductions in sediment loading.

Summary and Analysis of Current Water Quality Data

One hundred fifty three (153) BURP surveys have been completed within the St. Joe River Subbasin since the completion of the St. Joe River and St. Maries River TMDLs. Each summer the DEQ Coeur d'Alene Regional office completes 30-60 BURP surveys in northern Idaho, of which anywhere between 4 to 15 are completed in the St. Joe River watershed. TMDLs completed in the St. Joe and St. Maries River watersheds in 2003 were written to address waters included on the 1998 §303(d) list. BURP data used in the evaluation of beneficial uses support status in the 2003 TMDLs and 1998 §303(d) list was collected

prior to or in 1996. Since the completion of the TMDLs in 2003 153 BURP sites have been visited and of those 112 fit the monitoring protocol and had data collected. The remaining 41 were determined to be dry, inaccessible, denied permission to access the site, or too larger to be monitored used the BURP methodology.

During each completed BURP survey stream macroinvertebrates were collected and a habitat assessment was conducted. Depending on staff availability fish were also collected and identified, measured and released back into the stream. When determining the beneficial use support status of a stream using BURP data only two of the three variables (macroinvertebrates, habitat, and fish) are needed to make an assessment. The data collected is ran through and assessment matrix to determine a score relative to reference streams in similar ecological regions and the raw scores are converted and scored a 0, 1, 2, or 3, 3 being the highest and 0 being the lowest. Scores of 2 or greater are considered to be supporting beneficial uses and scores less than 2 are an indication of use non-support. The scores from at least two variables are averaged to determine the overall score and support status. If any of the three variables score a 0, regardless of how the other variables sore the site is considered to be non-supportive of beneficial uses. See *Waterbody Assessment Guidance* Second Addition for a detailed discussion of the use of BURP data in determining beneficial use support determination (Grafe, et al., 2002).

Of the 112 completed BURP surveys following the completion of the TMDLs, 36 were conducted in assessment units addressed in the TMDLs (Table 12).

Table 12. BURP data collected in watersheds assessed in the 2003 St. Joe and St. Maries TMDLs following EPA approval.

St. Joe River Watershed						
Stream	**Assessment Unit**	**BURP Site ID**	**SMI - Score**	**SHI - Score**	**SFI - Score**	**Average Score**
Tribs to St. Joe River - NF St. Joe to St. Maries River	17010304PN027_02	No new data	-	-	-	-
Mica Creek	17010304PN030_02	No new data	-	-	-	-
	17010304PN030_03	2007SCDAA042	80.20 – 3	74 – 3	98.35 – 3	3
Bear/Little Bear Creek	17010304PN033_02	No new data	-	-	-	-
Fishhook Creek	17010304PN039_03	2001SCDAE023	73.33 – 3	53 – 1	90.60 – 3	2.33
	17010304PN039_04	2001SCDAE024	58.78 – 2	54 – 1	90.72 – 3	2
Sherlock Creek	17010304PN041_02a	2002SCDAA066	74.36 – 3	63 – 2	Not collected	2.50
EF and WF Bluff Creek	17010304PN045_02	No new data	-	-	-	-
Bluff Creek	17010304PN045_03	2002SCDAA060	78.59 – 3	54 – 1	Not collected	2
Mosquito Creek	17010304PN046_02	1999SCDAA019	60.59 – 2	72 – 3	98.26 – 3	2.67
		2001SCDAA030	64.98 – 3	77 – 3	98.66 – 3	3
		2001SCDAE020	66.03 – 3	79 – 3	98.33 – 3	3
		2001SCDAV003	69.30 – 3	76 – 3	Not collected	3
		2002SCDAA038	76.55 – 3	75 – 3	98.33 – 3	3
		2002SCDAV003	71.48 – 3	75 – 3	Not collected	3
		2003SCDAA037	66.55 – 3	79 – 3	Not collected	3
		2004SCDAA029	73.47 – 3	81 – 3	92.59 – 3	3
		2005SCDAA007	59.03 – 2	74 – 3	Not collected	2.50
		2006SCDAA020	72.41 – 3	77 – 3	Not collected	3

Fly Creek	17010304PN047_02	2005SCDAA008	69.25 – 3	83 – 3	84.35 – 3	3
		2006SCDAA022	78.15 – 3	71 – 3	Not collected	3
		2007SCDAA039	80.00 – 3	73 – 3	98.74 – 3	3
		2008SCDAA031	66.33 – 3	76 – 3	Not collected	3
Beaver Creek	17010304PN048_02	No new data	-	-	-	-
Simmons Creek	17010304PN052_02	No new data	-	-	-	-
	17010304PN052_03	2002SCDAA063	76.15 – 3	73 – 3	Not collected	3
Gold Creek	17010304PN053_02	2002SCDAA047	70.53 – 3	65 – 2	98.33 – 3	2.67
		2007SCDAA040	-	-	-	Inaccessible
Loop Creek	17010304PN060_02	No new data	-	-	-	-
	17010304PN060_03	No new data	-	-	-	-
St. Maries River Watershed						
Stream	**Assessment Unit**	**BURP Site ID**	**SMI - Score**	**SHI - Score**	**SFI - Score**	**Average Score**
St. Maries River - Santa Creek to mouth	17010304PN007_05					
Alder Creek	17010304PN008_02	No new data	-	-	-	-
John Creek	17010304PN009_02	2001SCDAF010	59.89 – 2	66 – 3	Not collected	2.50
Santa Creek	17010304PN010_02	No new data	-	-	-	-
	17010304PN010_03	No new data	-	-	-	-
	17010304PN010_04	No new data	-	-	-	-
Charlie Creek	17010304PN011_02	No new data	-	-	-	-
	17010304PN011_03	No new data	-	-	-	-
St. Maries River - Carpenter to Santa Creek	17010304PN012_05	No new data	-	-	-	-
Tyson Creek	17010304PN013_02	2001SCDAF012	50.91 – 1	43 – 1	97.94 – 3	1.67
	17010304PN013_03	2001SCDAF013	36.89 – 0	42 – 1	16.76 – 0	0
		2001SCDAF014	28.72 – 0	43 – 1	11.00 – 0	0
		2008SCDAA034	50.14 – 1	17 – 1	21.54 – 0	0
Carpenter Creek	17010304PN014_02	No new data	-	-	-	-
	17010304PN014_03	No new data	-	-	-	-
St. Maries River - confluence of WF and MF	17010304PN015_05					
Emerald Creek	17010304PN016_02	2004SCDAA033	49.50 – 1	44 – 1	Not collected	1
Emerald Creek - EF Emerald to St. Maries River	17010304PN016_03	2004SCDAA032	62.88 – 2	49 – 1	29.22 – 0	0
WF St. Maries River	17010304PN017_02	No new data	-	-	-	-
	17010304PN017_03	2006SCDAA023	74.49 – 3	61 – 2	Not collected	2.50
	17010304PN017_04	No new data	-	-	-	-
MF St. Maries River	17010304PN018_02	No new data	-	-	-	-
	17010304PN018_03	No new data	-	-	-	-
	17010304PN018_04	No new data	-	-	-	-
	17010304PN018_05	2008SCDAA044	-	-	-	Non wadeable
Gold Center Creek	17010304PN019_02	2001SCDAF011	69.79 – 3	78 – 3	85.42 – 3	3
		2007SCDAA025	-	-	-	Dry

	17010304PN019_03	2001SCDAF015	52.94 – 1	57 – 1	89.36 – 3	1.67
Crystal Creek	17010304PN023_02	2007SCDAA035	-	-	-	Dry
Renfro Creek	17010304PN024_02	No new data	-	-	-	-
	17010304PN024_03	2004SCDAA074	65.38 – 3	51 – 1	83.84 – 3	2.33
Thorn Creek	17010304PN026_02	No new data	-	-	-	-
	17010304PN026_03	No new data	-	-	-	-

Water quality criteria are the condition presumed to support or protect the designated uses (Karr 1991- from WBAG). These conditions may be expressed as numeric values or narrative statements. When sufficient data exists to assess either numeric or narrative criteria this information supersedes the monitoring data collected during BURP protocols (Grafe et al. 2002). Stream water temperatures are an example of when this is applied. Many of the streams exceeding the numeric temperature criteria in the St. Joe River watershed show beneficial use support when evaluating BURP data, but stream water temperatures recorded exceed the numeric water quality criteria and therefore are failing Idaho water quality criteria for excessive water temperature.

The 2003 temperature TMDLs were reevaluated using the Potential Natural Vegetation (PNV) method because of improvements in TMDL methods. The PNV methodology develops effective shade targets for streams in the St. Joe River Subbasin based on the concept of maximum shading under PNV equaling natural stream temperatures. Shade targets were derived from effective shade curves developed for similar vegetation types in the St. Joe River Subbasin.

Four subwatersheds within the St. Joe River watershed were found to be meeting TMDL shade targets. Beaver (ID17010304PN048_02), Fly (ID17010304PN041_02/ ID17010304PN047_02), Mosquito (ID17010304PN046_02) and Heller/upper Sherlock Creeks (ID17010304PN041_02) exhibit riparian vegetation communities at or near potential. These watersheds are relatively unentered and have land use practices (lack of roads, timber harvest, or other anthropogenic removal of riparian vegetation) consistent with development and maintenance of full potential natural vegetation. BURP data collected within these watersheds also indicates a level of water quality supportive of beneficial uses.

Although Bear/Little Bear (ID17010304PN033_02), Fishhook (ID17010304PN039_03/ ID17010304PN039_04), Bluff (ID17010304PN045_02, ID17010304PN045_03), Simmons (ID17010304PN052_02/ ID17010304PN052_03), Gold (ID17010304PN053_02), and Loop Creek (ID17010304PN060_02/ ID17010304PN060_03) have passing BURP scores the PNV analysis showed areas needing improvements in stream shading in-order to meet TMDL targets.

Additional BURP data is needed to assess any water quality trends in the St. Maries River watershed. Most streams addressed in the previous TMDL effort have not been monitored in the years following the completion of the TMDL. The St. Maries River watershed was also reassessed using the PNV methodology and all streams assessed were lacking shade.

BURP data collected within AUs included in the St. Joe sediment TMDL, Mica (ID17010304PN030_03) and Fishhook (ID17010304PN039_03/ ID17010304PN039_04), have passing scores from recent surveys. Sediment reduction activities have been implemented in both watersheds and may explain the improvement in BURP scores. A reoccurring mass failure area was mitigated in 2006 by Forest Capital and Benewah Soil and Water Conservation District.

Mica Creek is the focus of a joint study between the University of Idaho and Potlatch Corporation. The study focus on impacts to water quality from modern timber harvest practices. Throughout the study water quality has been monitored following many different timber harvest and post harvest treatment practices. Forest roads have been made hydrologically inert. Additional sediment reduction projects have also contributed to the improvement in BURP scores.

No new BURP surveys have been completed on upper Mica (ID17010304PN030_02) and Bear/Little Bear Creeks (ID17010304PN033_02). Additional monitoring is needed to evaluated beneficial use

support status within these AUs. PNV analysis completed on Bear/Little Bear Creek show the need for shade improvements to meet the goals set in the TMDL.

Recommended Integrated Report Changes

At the time this TMDL review was being completed the Idaho's DRAFT 2010 Integrated Report was being finalized. The report identifies water bodies not assessed, attaining beneficial uses, and not attaining beneficial uses. The report is the starting point for TMDL development and helps DEQ fulfill its Clean Water Act requirements. The report incorporates TMDL finding and data collected by DEQ and other agencies. EPA approved TMDLs were incorporated into the 2008 report. The reevaluation of the St. Joe and St. Maries temperature TMDLs yielded recommended changes to the report (Table 13).

Table 13. Summary of recommended changes for AUs evaluated.

Stream	Assessment Unit	Pollutant	Recommended Changes to 2012 Integrated Report	Justification
St. Joe River Watershed				
Beaver Creek	ID17010304PN048_02	Temperature	Move AU to Section 3	Meets temperature TMDL shade targets
Fly Creek	ID17010304PN047_02	Temperature	Move AU to Section 2	Meets temperature TMDL shade targets and has passing BURP scores
	ID17010304PN041_02			
Heller and Sherlock Creek	ID17010304PN041_02	Temperature	Move AU to Section 2	Meets temperature TMDL shade targets and has passing BURP scores
Mosquito Creek	ID17010304PN046_02	Temperature	Move AU to Section 2	Meets temperature TMDL shade targets and has passing BURP scores
Big Creek	ID17010304PN063_02	Temperature	Move to Section 4a	Completed TMDL
	ID17010304PN063_03			
Sherlock Creek	ID17010304PN041_02a	Temperature	Move to Section 4a	Completed TMDL
Marble Creek	ID17010304PN031_04	Temperature	Move to Section 4a	Completed TMDL
Slate Creek	ID17010304PN062_03	Temperature	Move to Section 4a	Completed TMDL
St. Maries River Watershed				
John Creek	ID17010304PN009_02	Temperature	Move to Section 4a	Completed TMDL
Tyson Creek	ID17010304PN013_03	Temperature	Move to Section 4a	Completed TMDL
Carpenter Creek	ID17010304PN014_02	Temperature	Move to Section 4a	Completed TMDL
Merry Creek	ID17010304PN020_03	Temperature	Move to Section 4a	Completed TMDL
Thorn Creek	ID17010304PN026_02	Temperature	Move to Section 4a	Completed TMDL
	ID17010304PN026_03			

Section 4: Review of Implementation Plan and Activities

The St. Maries River and Tributaries Agricultural TMDL Implementation Plan was developed jointly by the Benewah Soil and Water Conservation District, Idaho Soil Conservation Commission and the Idaho Association of Soil Conservation Districts. At the time the plan was developed the IDL, USFS, County and State road departments, and private timber companies had not responded to requests to participate. The implementation plan outlined site specific projects to reduce sediment and temperature in areas altered by agricultural practices. The St. Maries River Implementation Plan identified critical areas for project activity. The critical areas were grouped into three different tiers, with project priority given to tier 1 proposals.

> Tier 1 – Stream banks and adjacent fields having a direct and substantial influence on a stream, 200 foot corridor width.
>
> Tier 2 – Includes fields with an indirect yet substantial influence on a stream.
>
> Tier 3 – Upland fields in a subwatershed that indirectly influence a stream

Ten (10) projects were identified in the plan and classified under tier 1 for the St. Maries River watershed. No specific projects for pollutant load reductions were identified in the plan for the St. Joe River watershed.

An implementation plan for the St. Joe River watershed is under development. The plan will be developed through the St. Joe/St. Maries WAG and identify actions needed to achieve load reductions set in the TMDL. Similar to the St. Maries River Implementation Plan the plan will identify projects and potential funding sources. Both plans will be considered a living document that is subject to review and modification.

Responsible Parties

Implementation actions will be developed and achieved though the private, state and federal agencies who own or manage land within the St. Joe River Subbasin were assigned a load reduction. DEQ and other designated management agencies (DMAs) responsible for TMDL implementation will make every effort to address past, present and future pollution problems in an attempt to link them to watershed characteristics and management practices designated to improve water quality and restore beneficial uses. Any and all solutions to help restore beneficial uses will be considered as part of the TMDL implementation plan in an effort to make the process as effective and cost-effective as possible. Adjustment to the implementation plan may need to be made if progress towards the goals of the TMDL is not being met.

Idaho's Designated Management Agencies and regulatory or oversight activities include:

- The Idaho Department of Lands for timber harvest activities, oil and gas exploration and development, and mining activities,
- The Idaho Soil Conservation Commission for grazing and agricultural activities,
- The Idaho Transportation Department for public road construction,
- The Idaho Department of Agriculture for aquaculture, and
- The Idaho Department of Environmental Quality for all other activities.

Accomplished Pollutant Reduction Activities

Santa Creek

The Benewah Soil and Water Conservation District (BSWCD), Idaho Soil Conservation Commission and the Natural Resources Conservation Service (NRCS) began installing best management practices (BMPs) along Santa Creek in 2001 and continued through 2006. This project included the instillation of exclusionary fencing, hardened cattle stream crossings, bank stabilization, riparian tree plantings and stream habitat construction. The project was funding through land owner contributions and DEQ's §319 program and was administered by the BSWCD.

During the four phases of implementation the following was completed:

Phase 1 (Fall 2002-Spring 2003): One (1) stream mile of exclusionary fencing, two (2) hardened crossings, planted riparian areas.

Phase 2 (2004-2005): 2,000 feet of riparian exclusionary fencings, three (3) hardened crossings, five (5) acres of tree planting, 600 willows planted, 4,200 feet of bank shaping, seven (7) rock chutes, and twelve (12) log/rock drops structures.

Phase 3 (2005): 2,700 stream feet of riparian exclusionary fencing, three (3) hardened crossings, twelve (12) log/rock barbs, six (6) rock weirs, 966 feet of bank shaping, and twelve (12) rock chutes.

Phase 4 (2006): 2,250 stream feet of riparian exclusionary fencing, 1.5 hardened crossings, four (4) log/rock barbs, four (4) rock weirs, 935 feet of bank shaping, three (3) rock chutes, and 410 feet of bank protection.

The total sediment load reduction following completion of the four phases was 761 tons per year. In total the project cost approximately $109,000.

Fishhook Creek slide stabilization project

The project focused on stabilizing a chronic mass wasting area. Before the instillation of the project the area continued to contribute sediment to Fishhook Creek every year from the road, cut bank and fill slope. The project focused on long-term stabilization of the area while maintaining the road for safe passage. DEQ §319 monies funded approximately $18,000 of the total $33,000 project. The remaining $15,000 was provided by the land owner in the form of equipment, laborer hours, and hard match (dollars). When completed the project included the following: long-term stabilization by removal of overburden, installation of rock structures/barriers, installation of sediment traps, seeding and mulching. The overall long-term benefits of the project were identified to be reduced stream bank erosion, and improved riparian and stream channel habitat. The total load reduction estimated in the St. Joe sediment TMDL to restore beneficial uses was modeled to be 86 tons per year.

Solider Creek road improvement project

Prior to the completion of the project the area in question consisted of native surface roads and undersized culverts which was resulting in high erosion rates and increased sediment contribution to nearby streams. The project installed ditch relief culverts and installed properly sized culverts where needed. The project also resurfaced approximately six (6) miles of roads using crushed rock to reduce road surface erosion rates. The project cost approximately $322,000, of which $197,000 was funded using DEQ §319 monies.

As part of the project, extensive pre and post monitoring was conducted to determine the sediment reduction effectiveness of road rocking and culvert replacement. Sediment was measured in the treated areas by installing sediment traps in the road ditches and measuring the amount of sediment captured. This measurement was a direct measurement of the amount of sediment being generated from the road way which would have ultimately been transported to nearby streams. The project monitored road-side ditches before and after the road surfaces were rocked and before the installation of ditch-relief culverts.

The results of the monitoring efforts showed dramatic sediment reductions from rocking the road surface and installation of ditch relief culverts. Sediment was reduced by 79-93% in the study area, indicating that road rocking and ditch-relief culverts are effective at reducing sediment generated from forest roads.

West Fork – Middle Fork St. Maries River culvert replacement project

The project replaced seven (7) undersized culverts in the West Fork and Middle Fork watersheds of the St. Maries River, and improved road surfaces on 3.4 miles of forest roads. Culverts were contributing sediment to the stream, impeding or reducing fish passage, and were at risk of failing. The culverts were removed and replaced with larger culverts to allow for flood flows and movement of bed load material. Culverts were made "fish friendly" by the instillation of fish ladders or installed below the stream bed to minimally impact the natural stream gradient. Partners in the project included the Idaho Department of Fish and Game, the IDL, USFS, and the Potlatch Corporation. The total project cost approximately $161,000, of that approximately $97,000 was paid for by DEQ §319 funds.

Idaho Department of Lands and the Timber Industry

IDL and the timber industry have been actively implementing the TMDL through the improvement of the forest road system. Forest roads were modeled to be a large contributor of sediment to watersheds during the 2003 TMDL effort. Road crossings and near stream roads were modeled as generating the largest load from the forest road network. Forest roads generate sediment due to the semi-impervious running surface and cross-cutting the hill slope. The captured water is diverted onto the forest floor or in other cases inside ditches which then transport the sediment to near-by streams. Road improvement projects implemented focus on improving the running surface, replacement of undersized culverts, restricting traffic and redirection of water off road way in an effort to reduce sediment transport to surface waters.

Following the completion of the St. Maries sediment TMDL, IDL and the timber industry have spent approximately $1,150,000 and $61,000 respectively to improve forest roads (Table 14).

Table 14. Forest road improvement projects.

Stream	Assessment Unit	Practice	Location TRS[1]	Date Completed	Project Cost ($)
Work completed by IDL					
Benewah Creek	ID17010304PN004_02	Replaced 4 undersized culverts	45N,04W, S36	2009	3,763
Syringa/Thron Creek	ID17010304PN026_02	Rocked 2.7 miles of road	45N,02W, S13	2008	119,092
Beaver/Soldier Creek	ID17010304PN025_02 ID17010304PN026_02 ID17010304PN007_02	Rock 5.9 miles of road, 20 new ditch relief culverts, replaced 6 damaged or undersized culverts, 0.08 miles of road obliteration	45N,01W, S23,26,27 ,28,33	2005-2006	272,981
Flat Creek	ID17010304PN007_02	Installation of ditch relief culverts	45N,02W, S24	2010	700
Davis/Renfro Creek	ID17010304PN024_02	Rocked 6.5 miles of road	44N,01W, S12,13	2006-2007	252,895
Renfro Creek	ID17010304PN024_02	Rocked 4.5 miles of road	44N,01E, S7,8,9	2005-2006	143,325
Davis Creek	ID17010304PN024_02 ID17010304PN012_02	Rocked 2.1 miles of road	44N,01W, S13,24	2006-2007	22,068
Renfro/Rock Creek	ID17010304PN024_02	Rocked 2.0 miles of road	44N,01W, S13	2009	20,000
Finn Creek	ID17010304PN013_02	Rocked 0.8 miles of road	44N,01W, S32	2009	10,000
Tyson Creek	ID17010304PN013_03	Ditch rock 0.6 miles and rocked 2.6 miles of road and installed 4 new culverts	43N,01W, S4,9,15, 16	2006	132,427

Little Carpenter Creek	ID17010304PN014_02	Rocked 2.8 miles of road	43N,01W, S14,15	2006	139,798
Carpenter Creek	ID17010304PN014_02	Rocked 0.2 miles of road and installed 3 ditch relief culverts	43N,01W, S22	2006	11,392
Little Carpenter Creek	ID17010304PN014_02	Obliterated 0.3 miles of road	43N,01W, S10	2008	2,300
St. Maries River	ID17010304PN016_02	Gated road to restrict access	43N,01W, S36	2010	2,000
Tyson Creek	ID17010304PN013_02	Gated road to restrict access	43N,01W, S9	2010	2,000
Heineman Creek	ID17010304PN014_02	Gated road to restrict access	43N,01W, S26	2010	2,000
Carpenter Creek	ID17010304PN014_02	Gated road to restrict access	43N,01W, S22	2010	2,000
West Fork St. Maries River	ID17010304PN017_02	Rocked 0.45 miles of road	42N,02E, S30	2008	14,628
Work completed by Forest Capital Partners					
Bond Creek	ID17010304PN028_02	Obliterated 0.3 miles of road	45N, 01E, S33	2010	1,320
John Creek	ID17010304PN009_02	Rocked 0.6 miles of road	44N, 03W, S22	2010	5,700
Canyon Creek	ID17010304PN026_02 ID17010304PN026_03	Rocked 4 miles of road and replaced 2 ditch relief culverts	45N, 01W, S06 - 45N, 01W, S03	2010	54,000

[1] Township, Range, Section

Future Strategy for TMDL Review and Monitoring

Continued monitoring will determine if implementation actions have been sufficient to restore all beneficial uses. A considerable amount of time will be necessary for the net benefit of nonpoint source load reductions to be seen in improved water quality and beneficial use support. Continuing to reduce nonpoint sources of sediment and increases in stream shading will be a priority on those streams covered by the TMDLs which do not support all beneficial uses. A time-line for vegetation growth, stream channel morphological changes and transport of channel stored sediments is impossible to identify, but monitoring for beneficial use support will continue and provide benchmarks.

DEQ will assess water quality status during the development of the Integrated Report and 5-year TMDL review processes. DEQ will also continue to collected water quality data to determine beneficial use support.

Section 5: Summary of Five Year Review

Due to the lack of change in management, land use and landownership within the St. Joe River Subbasin load allocations and load reductions identified in the St. Joe and St. Maries sediment TMDLs will remain unchanged. Findings of the PNV analysis conducted in 2010 should be incorporated into Idaho's 2012 Integrated Report.

Review process

The St. Joe/St. Maries Watershed Advisory Group (WAG) began meeting February 26, 2010 to discuss the TMDL 5-year review and development of TMDLs for newly listed waters (waterbodies identified as impaired or not meeting WQS after the completion of the 2003 TMDLs). WAG meetings were advertised in local newspapers and participation was sought by DEQ throughout the process. Meetings were open to the public and complied with Idaho open meeting laws.

During the WAG process data from those participating was solicited to be evaluated during the 5-year review and development of new TMDLs. Data supplied to DEQ included water temperature, water chemistry, observations, and other (Table 15).

Table 15. Data types supplied to DEQ by WAG participants.

Data Supplier	Data Type	Watershed in which data was collected	Date supplied to DEQ
USFS	Stream temperature data		
USFS	Electro-fishing survey results		
Santa Fernwood Sewer	Discharge volume Water temperature Water chemistry	Water samples collected from WWTP outfall (discharge to St. Maries River)	Supplied to DEQ monthly during reporting requirements set forth by NPDES permit
Clarkia Sewer	Discharge volume Water temperature Water chemistry	Water samples collected from WWTP outfall (discharge to St. Maries River)	Supplied to DEQ monthly during reporting requirements set forth by NPDES permit
IASCD	Water chemistry • Total phosphorus • *E. coli* • Nitrogen – NO2, NO3, NH3 • TSS • Temperature • Turbidity • Dissolved Oxygen • Dissolved oxygen (%) saturation • TDS	MF St. Maries River (upper) MF St. Maries River (lower) St. Maries River (lower) WF St. Maries River (lower) Little Carpenter Creek Tyson Creek Renfro Creek Santa Creek (lower) Santa Creek (upper) Charlie Creek	Report completed in 2004
IDL	Inventory of sediment reduction projects	St. Maries River Watershed	September 2010

Data was determined to be relevant to the TMDL if the data was collected within a TMDLed watershed, the sample collected a parameter of interest (sediment, temperature, bacteria, nutrients, riparian community composition, shade, aquatic life), and was collected using scientific means.

Data submitted to DEQ was used to help track the implementation progress of the TMDL and will be used to help direct future monitoring efforts. Water chemistry data was evaluated to determine compliance with Idaho water quality criteria and to evaluate any water quality trends. Evaluation of data submitted did not warrant any water quality listing changes and was consistent with the TMDL.

TMDL Analysis Review

Sediment

The 2003 sediment TMDL was developed using the most current land uses and best available data. Conclusions from the modeling effort will remain in-place until a newer sediment assessment is completed or the completion of sediment reduction projects and multiple years of data show support of beneficial uses. The development of sediment loads relied heavily on model outputs. In the future more on-the-ground measurements will be utilized to determine sediment impairment and to quantify current and target sediment loads.

The methods used to allocation load reductions oversimplified the allocation process. During load allocations each land manager/owner was allotted a percentage of the load reduction dependent on the amount (%) of land managed/owned within the watershed. This method for allocating sediment load reductions does not allocate loads based on the type of land use occurring within the watershed and as a result could over allocate or under allocate to a particular land steward. Load capacities developed were developed to represent a relative load and not an exact load, and because of this load reductions within a watershed will be used as guidelines to improve beneficial uses. The final test to determine if the nonpoint source pollutant has been reduced to sufficient quantities will be the support of beneficial uses and attainment of water quality criteria.

Sediment load allocations will not be reassessed. The modeling techniques used to develop the sediment TMDLs of the St. Joe and St. Maries River TMDL document will remain until further assessments warrant the need for new sediment load quantification. The implementation of nonpoint source projects to reduce sediment may warrant the need for a new sediment load calculation if the beneficial use support is not attained after all implementation actions have been installed.

Temperature

The assumptions used in the development of the temperature TMDLs were valid at the time the TMDLs were developed, but new methodologies better represent temperature TMDLs on the landscape. The original TMDL utilized an equation to determine the appropriate amount of shade required to elicit a temperature change. The equation did not take into consideration the vegetation types adjacent to the stream and because of this relied heavily on elevation to determine the desired riparian canopy cover percentage. As a result many of the areas addressed by the temperature TMDLs required 100% canopy cover. One-hundred percent canopy cover is not achievable in natural stream reaches given the complexities of riparian vegetation.

Another invalid assumption made was the canopy cover increases as you descend a watershed, this is just the opposite. Streams widen from headwaters to mouth and the ability of the neighboring riparian community to shade the stream decreases. Headwater portions of streams are narrow and can be entirely shaded by very little riparian vegetation. It is for these reasons that the streams originally assessed using the CWE equation will be reassessed using the PNV methodology.

Watershed Advisory Group Consultation

Summarize the documentation requested by the WAG, of the WAG, and describe WAG involvement in the development of the review.

Describe the changes suggested by the Watershed Advisory Group. Categorize recommendations into groups relative to monitoring, analyses, criteria, targets, allocations, and implementation. Begin with conceptual philosophies and concepts and progress to individual detail. Include justification and rational for each.

Provide a summary of the recommendations that result from the review. (EX: modifications to beneficial use status, modifications to control/target monitoring, modifications to implementation, etc.).

Recommendations considered applicable, achievable, and appropriate should be identified. Recommendations considered to be inapplicable, unachievable, or inappropriate should be addressed as such, with an explanation as to why.

Summarize recommendations for future scheduling proposals by listing in a table (Table 1) by category.

The St. Joe/St. Maries Watershed Advisory Group (WAG) began meeting to discuss water quality within the St. Joe River Subbasin in 2001 and continued to meet until EPA approval of the St. Joe and St. Maries TMDLs. The St. Joe/St. Maries WAG began to meet again in February 2010. The new group consisted of old and new members. Meetings were held very third Friday of the month at the St. Maries Fire Station from 9-11am. Meetings were and will continue to be open to the public and advertised in local papers and on the St. Joe/St. Maries WAG webpage. At the time this review was being completed nine meetings had been held.

During the meetings water quality standards, beneficial uses, TMDLs, TMDL implementation plans and the TMDL 5-year review have been discussed. WAG membership included state and federal agencies, private land owners, timber companies, environmental interests, mining representative, recreational enthusiasts, local government and concerned citizens.

Table 16. Summary of WAG recommendations.

Recommended Action	Schedule	Responsibility	Justification

Recommendations for Further Action

Summarize what the next steps should be for meeting the TMDL. This may include a recommendation for modifying the TMDL or implementation plan based on the data reviewed.

TMDL implementation needs to continue. Temperature TMDLs need to be converted to PNV TMDLs and results implemented.

References Cited

Clean Water Act (Federal water pollution control act), 33 U.S.C. § 1251-1387. 1972.

Grafe, C.S., C.A. Mebane, M.J. McIntyre, D.A. Essig, D.H. Brandt, and D.T. Mosier. 2002. The Idaho Department of Environmental Quality water body assessment guidance, second edition-final. Department of Environmental Quality. Boise, ID. 114 p.

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.

Water Quality Act of 1987, Public Law 100-4. 1987.

Appendix A. Report of Implementation Activities

A detailed discussion of implementation projects can be found in Section 4. The figures below (Figures 5 and 6) are spreadsheets that were supplied to DEQ from the Idaho Department of Lands and Forest Capital Partners, a timber company in north Idaho. The projects completed below are forest road related projects and are anticipated to reduce sediment in nearby streams but a load reduction associated with each project is not feasible. In order to calculate a sediment load reduction for each project road specifics such as running surface type, amount of travel, road slope, road ditch information, local weather data are needed pre and post project completion are need to model sediment reductions. Forest roads near and crossing streams were modeled to be a significant source of sediment, but the information used to estimated sediment contributions is not applicable to every project, each project is unique. To estimate future sediment load reductions the USFS Water and Erosion Prediction Project (WEPP) may be used to calculated sediment generation pre and post project completion.

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IDL COMPLETED PROJECTS FOR TMDL REDUCTION (7/1/2003 - 7/1/2010) WITHIN ST MARIES RIVER DRAINAGE

Item No.	Agency Landowner	Stream/ Watershed	Practice	Location	Pollutant	Estimated Reduction	Actual Date	Actual Cost $	Co-op Partners	% Completed	FIC
1	IDL	C-II/Benewah Cr	Replace 4 undersized CMP's	S36 45N 4W	S		2009	3,763	None	100%	JRM
2	IDL	Syringa Cr/Thorn Cr	Rock 2.7 miles of road	S13 45N 2W	S		2008	119,092	None	100%	JRM
3	IDL	Flat Cr/SMR	Ditch relief CMP installed	S24 45N 2W	S		2010	700	None	100%	JRM
4	IDL	Beaver-Soldier/SMR	Rock 5.9 miles of road, 20 new ditch relief CMP's, 6 replaced damaged or undersized CMP's, .08 miles road obliteration	S23,26,27,28 S33, 45N 1W	S		2005/06	272,981	PFH/IEP/FCP	100%	ALB
5	IDL	Davis-Renfro/SMR	Rock 6.5 miles of road	S12 S13 44N 1W	S		2006/07	252,895	None	100%	ALB
6	IDL	Renfro/SMR	Rock 4.5 miles of road	S7 S8 S9 44N 1E	S		2005/06	143,325	PFH	100%	ALB
7	IDL	Davis/SMR	Rock 2.1 miles of road	S13 S24 44N 1W	S		2006/07	22,068	None		ALB
8	IDL	Renfro-Rock Cr/SMR	Rock 2.0 miles of road	S13 44N 1W	S		2009	20,000	None	100%	RMV
9	IDL	Finn Cr/SMR	Rock 0.8 mile of road	S32 44N 1W	S		2009	10,000	None	100%	RMV
10	IDL	Tyson CR/SMR	Ditch rock 0.6 mi, rock rd 2.6 mi. 4 CMP's	S4 S9 S15 S16 43N 1W	S		2006	132,427	None	100%	MRB
11	IDL	Little Carpenter Cr/SMR	Rock 2.8 mi road	S14 S15 43N 1W	S		2006	139,798	None	100%	MRB
12	IDL	Carpenter Cr/SMR	Rock 0.2 mile, 3 ditch relief CMP's	S22 43N 1W	S		2006	11,392	None	100%	MRB
13	IDL	L. Carpenter Cr/SMR	Obliterate 0.3 mile road	S10 43N 1W	S		2008	2,300	None	100%	MRB
14	IDL	SMR	Gate	S36 43N 1W	S		2010	2,000	None	100%	MRB
15	IDL	Tyson Cr/SMR	Gate	S9 43N 1W	S		2010	2,000	None	100%	MRB
16	IDL	Heineman/SMR	Gate	S26 43N 1W	S		2010	2,000	None	100%	MRB
17	IDL	Carpenter Cr/SMR	Gate	S22 43N 1W	S		2010	2,000	None	100%	MRB
18	IDL	W. Fork SMR	Rock 0.45 mile of road	S30 42N 2E	S		2008	14,628	None	100%	RMA
		TOTALS	**30.1 Miles road rocking** **0.6 Miles ditch rocking** **0.3 Miles road obliteration** **Replace 14 undersized CMP's** **Install 23 ditch relief CMP's** **Install 4 gates**					**$1,153,369.00**			

SMR = St. Maries River
CMP = Corrugated metal pipe
PFH = Potlatch Forest Holdings
IEP = Inland Empire Paper
FCP = Forest Capital Partners
M-Drive: Timber/TMDL/St. Maries
TMDL Work Completed 7-03 to 7-10

Figure 5.. Implementation data supplied to DEQ from the Idaho Department of Lands.

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FCP COMPLETED PROJECTS FOR TMDL REDUCTION (8/10-12/10) WITHIN ST MARIES/ST JOE RIVER DRAINAGES

Item No.	Agency Landowner	Stream/ Watershed	Practice	Location	Pollutant	Estimated Reduction	Actual Date	Actual Cost $	Co-op Partners	% Completed	FIC
1	FCP	Bond Cr/St Joe	Obliterate 0.32 mile road	S33 45N 1E	S		2010	1,320	None	100%	
2	FCP	John Cr./SMR	Rock about .6 mile of road	S22 44N 3W	S		2010	5,648	None	100%	
3											
4	FCP	Canyon Cr./SMR	Rock about 4 miles of road, replace (2) new ditch relief CMP's	S6,T45N,R1W to S3,T45N,R1W	S		2010	53,997	None	100%	
TOTALS								$60,965.00			

SMR = St. Maries River
CMP = Corrugated metal pipe
PFH = Potlatch Forest Holdings

IEP = Inland Empire Paper
FCP = Forest Capital Partners

Figure 6.. Implementation data supplied to DEQ from Forest Capital Partners.