Kootenai – Fisher TMDL Project

Watershed Advisory Group Meeting

April 4, 2012

PRESENTED BY:

Christina Staten, Project Coordinator

Lou Volpe, Metals Project Manager

Lisa Kusnierz, Nutrients, Sediment, & Temperature Project Manager

Presentation Outline:

- What are TMDLs?
- Kootenai – Fisher TMDL Project Area
- Metals Overview
- Nutrients Overview
- Temperature & Sediment Overview
- Next Project Steps
- Overview of Project Website

What is a TMDL?

- **T**otal **M**aximum **D**aily **L**oad is the amount of a pollutant that a stream can receive from all sources and still meet water quality standards

- Basically the allowable loading rate or loading capacity of the stream (think of loading as a supply or amount)

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

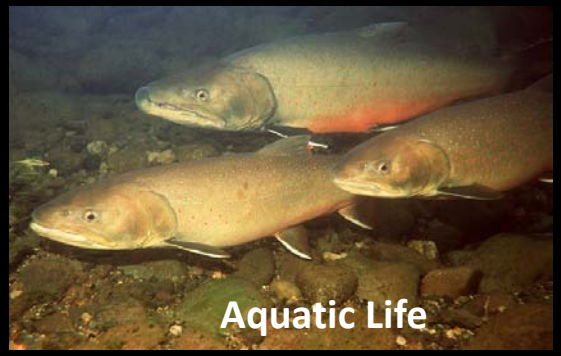
What is a TMDL?

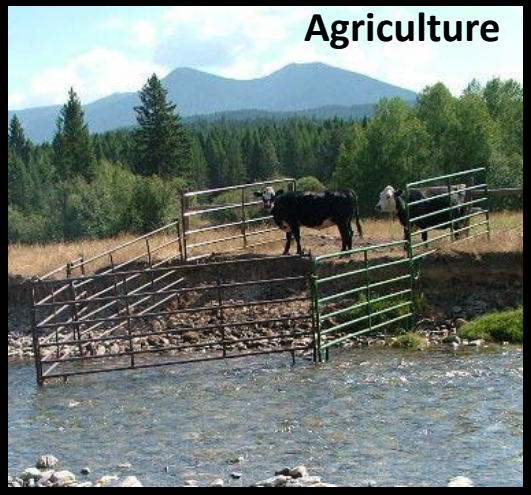
- The Clean Water Act (CWA) requires states to assess the quality of their waters
- The goal of the CWA is to ensure that the quality of all surface waters is capable of supporting designated beneficial uses.

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

All streams in the Kootenai River and Fisher River watersheds must be maintained suitable for the following beneficial uses:





- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

- Water quality standards form the basis for determining whether a waterbody is supporting its beneficial uses

- Waterbodies not meeting water quality standards, and therefore not supporting one or more beneficial uses, are placed on a list of impaired waters

- Impairments are identified by comparing existing water quality conditions to the water quality standards

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

Per CWA & Montana law, TMDLs must be developed for waterbodies with pollutant causes of impairment

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

Where Do Pollutants Come From?

- Point Sources
- Nonpoint Sources
- Natural Background Sources

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

Point Sources: discharge to water from a specific point

Point sources generally come from permitted entities such as wastewater treatment plants.

- Beneficial Uses
- Water Quality Standards
- Pollutants
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What is a TMDL?

Nonpoint Sources: pollutants do not originate from a specific point, but from a diffuse area

<u>Examples</u>:

- Agriculture Fields
- Grazing
- Timber Harvest Areas
- Lawns

- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

Natural Sources: not caused by human activity

<u>Examples</u>:

•Bare ground after a forest fire

•Naturally eroding streambanks

•Natural saline seeps

- Beneficial Uses
- Water Quality Standards
- Pollutants
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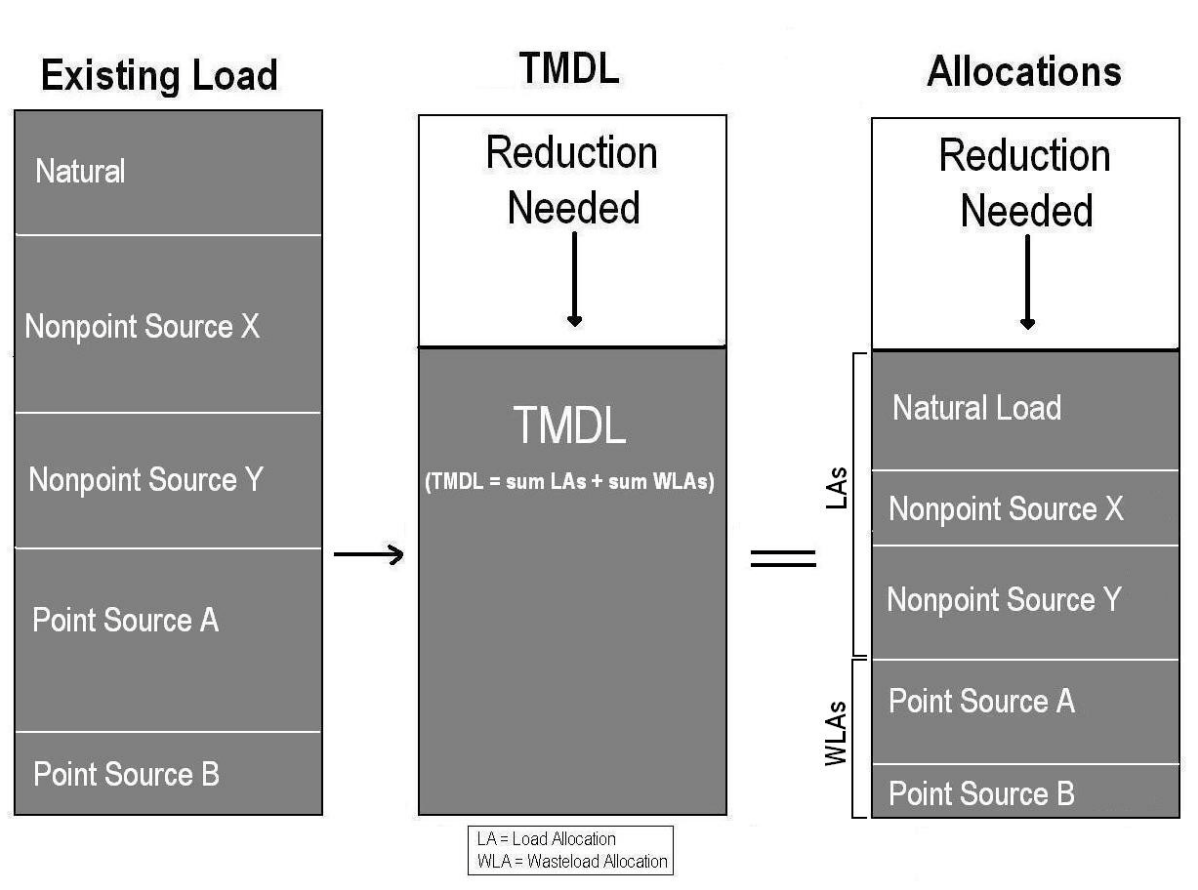
What is a TMDL?

TMDL = The maximum amount of a pollutant that a stream can receive from all sources and still meet water quality standards



- Beneficial Uses
- Water Quality Standards
- Pollutants
- Pollutant Sources

What is a TMDL?

TMDLs are expressed as a load per given time (e.g., 16 pounds/day, 2.6 tons/year)

May also be expressed as a percent reduction (e.g., 30% total load reduction)

How Many TMDLs?

- A TMDL is developed for each pollutant cause of impairment for a stream
- A stream segment may have multiple TMDLs if it is listed for more than one pollutant
- Additionally, one stream may have multiple segments all listed for the same pollutant, and therefore have multiple TMDLs for that pollutant

How Many TMDLs?

EXAMPLE:

A stream is determined to be impaired for both temperature & sediment.

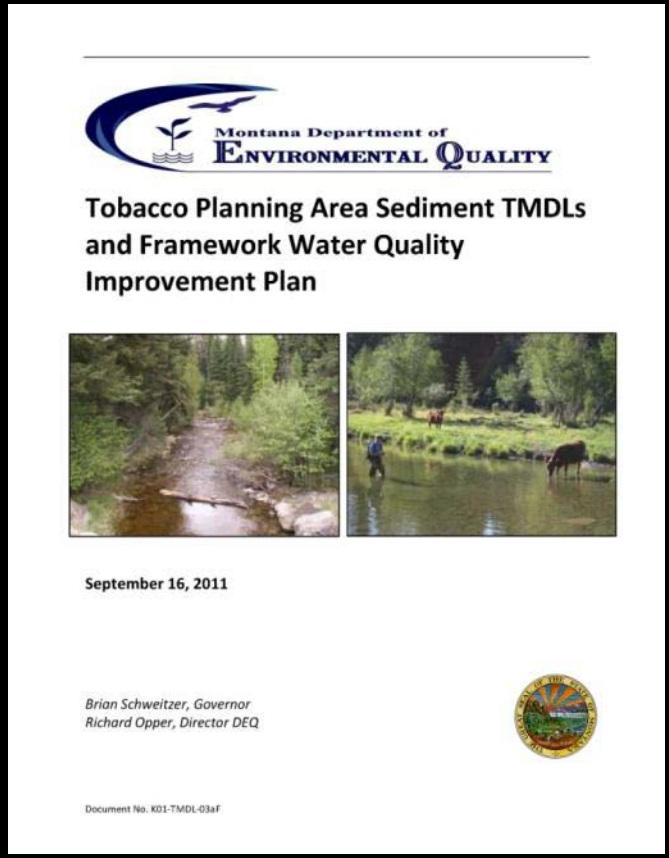
This stream will have 2 TMDLs: a temperature TMDL & a sediment TMDL

If our example stream has 2 segments, both listed for sediment & temperature, each segment will have 2 TMDLs and the stream will have a total of 4 TMDLs

TMDL Documents

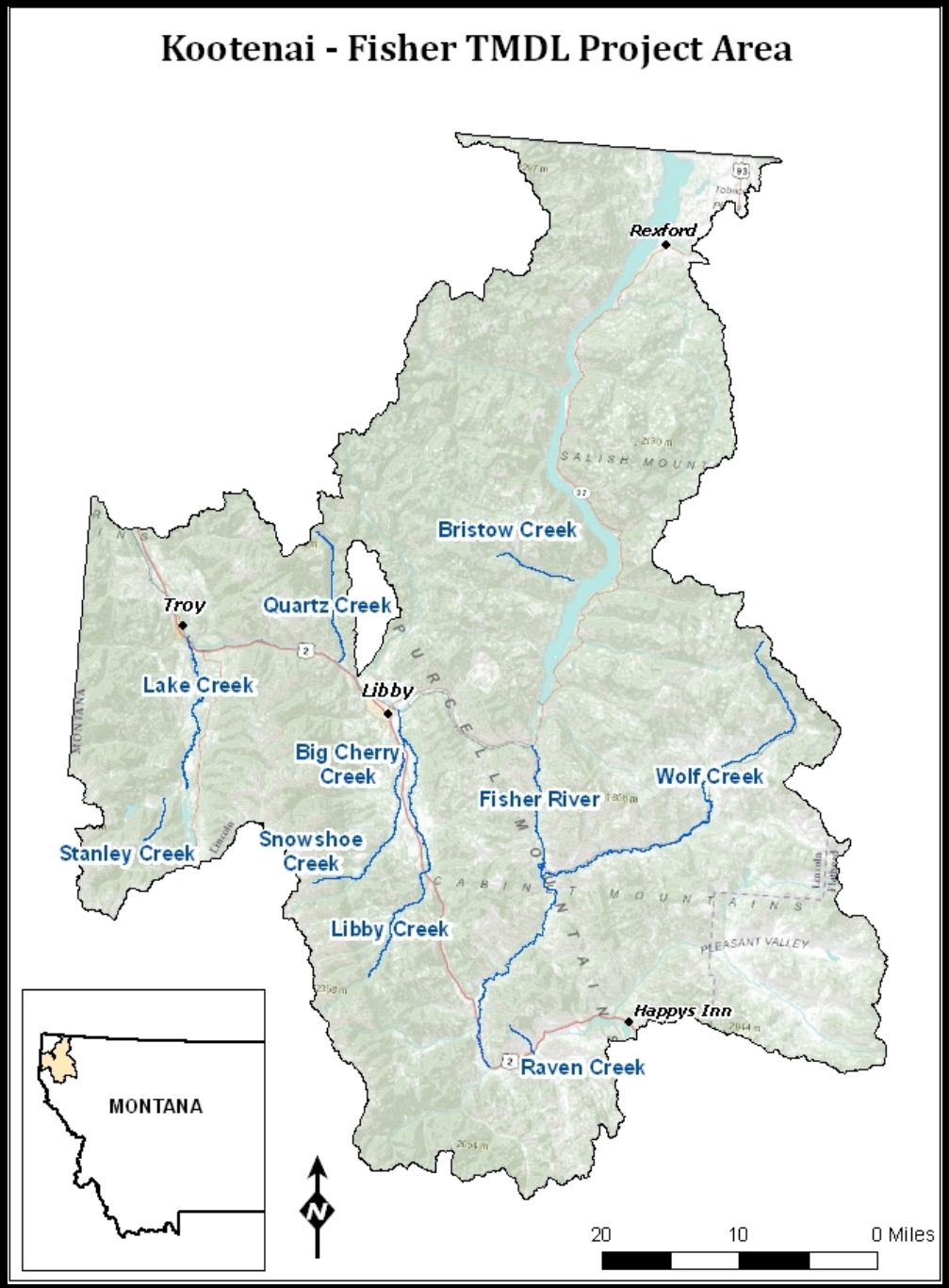
- TMDLs are presented within the context of a scientifically based plan (not a mandate) that includes recommended restoration approaches

- A completed TMDL provides information on water quality problems and strategies to reduce pollutants by changing land and water management activities



What to Expect from a Completed TMDL

- A TMDL does not create or impose new regulations; but may affect how existing regulations are implemented
- The majority of pollution causing activities are unregulated
- Example Activities that are Regulated:
  - Point Source Discharges (e.g., wastewater treatment facilities)
  - Stormwater Discharges (e.g., from large construction sites)
  - Work in or near a stream (requires a 310 permit)
  - Timber harvesting (Streamside Management Zone Law)
- Implementation of best management practices (BMP) practices and restoration projects are voluntary



Included Streams

Big Cherry Creek

Bristow Creek

Fisher River

Lake Creek

Libby Creek

Quartz Creek

Raven Creek

Snowshoe Creek

Stanley Creek

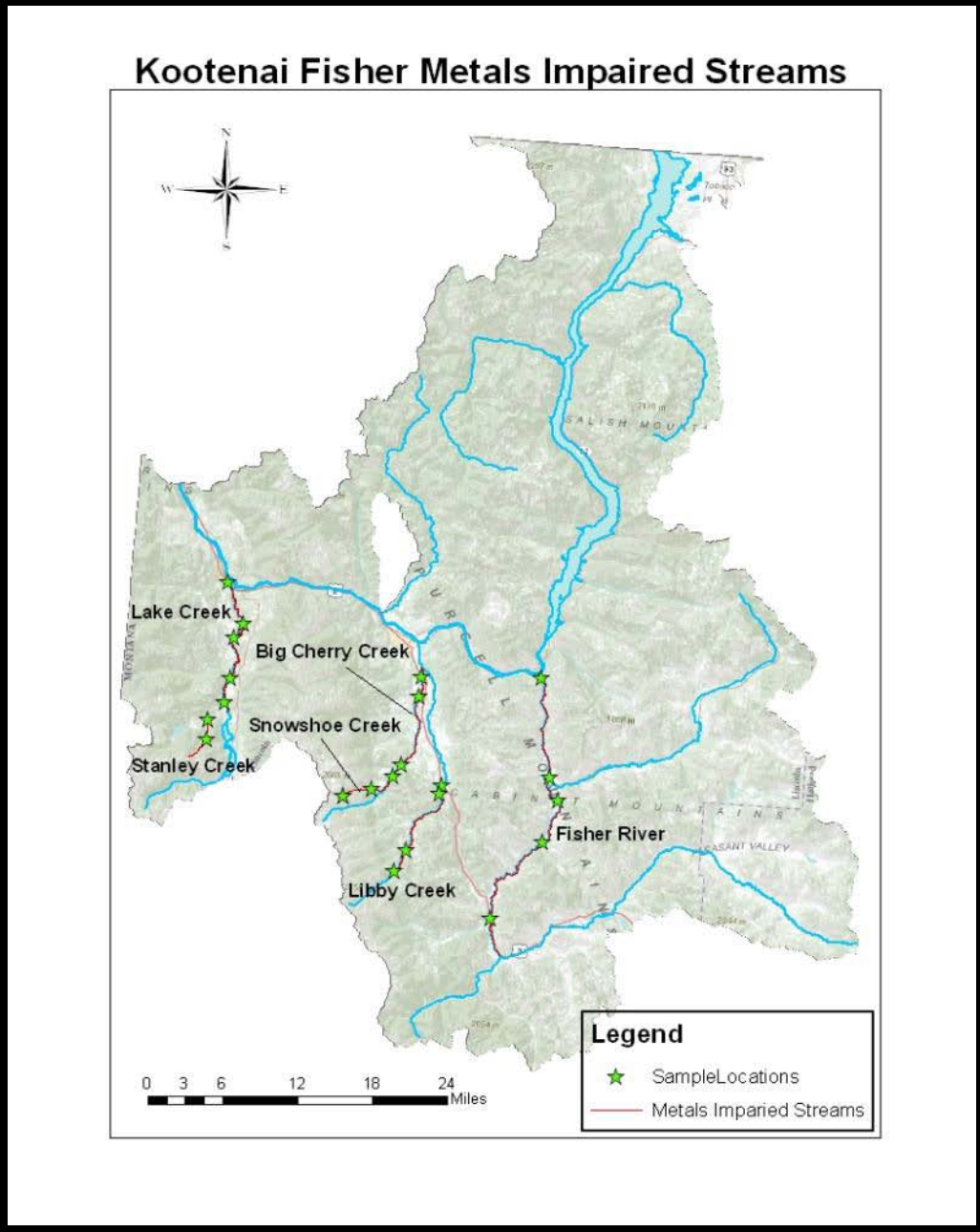
Wolf Creek

Metals TMDL Development for the Kootenai - Fisher Project Area

Metal TMDLs

Anticipated TMDLs

- Fisher River
  - Lead
- Stanley Creek
  - Copper
- Lake Creek
  - Cadmium
  - Copper
  - Lead
  - Zinc
- Snowshoe Creek
  - Cadmium
  - Zinc
- Big Cherry Creek
  - Zinc
- Libby Creek
  - Mercury



Fisher River

Miles of Stream Channel: 33.8

Number of Sampling Locations: 5

Class Use : B-1

Impairments: Lead

Originally listed: 2000, based on a single sample of lead that was twice the chronic Aquatic Life standard. Listed as not supporting the Aquatic Life beneficial use.

2011 water quality monitoring indicated “Non - Detect” for all lead samples

Potential exists for delisting ?

Big Cherry Creek

Miles of Stream Channel: 13.1

Number of Sampling Locations: 4

Class Use: B-1

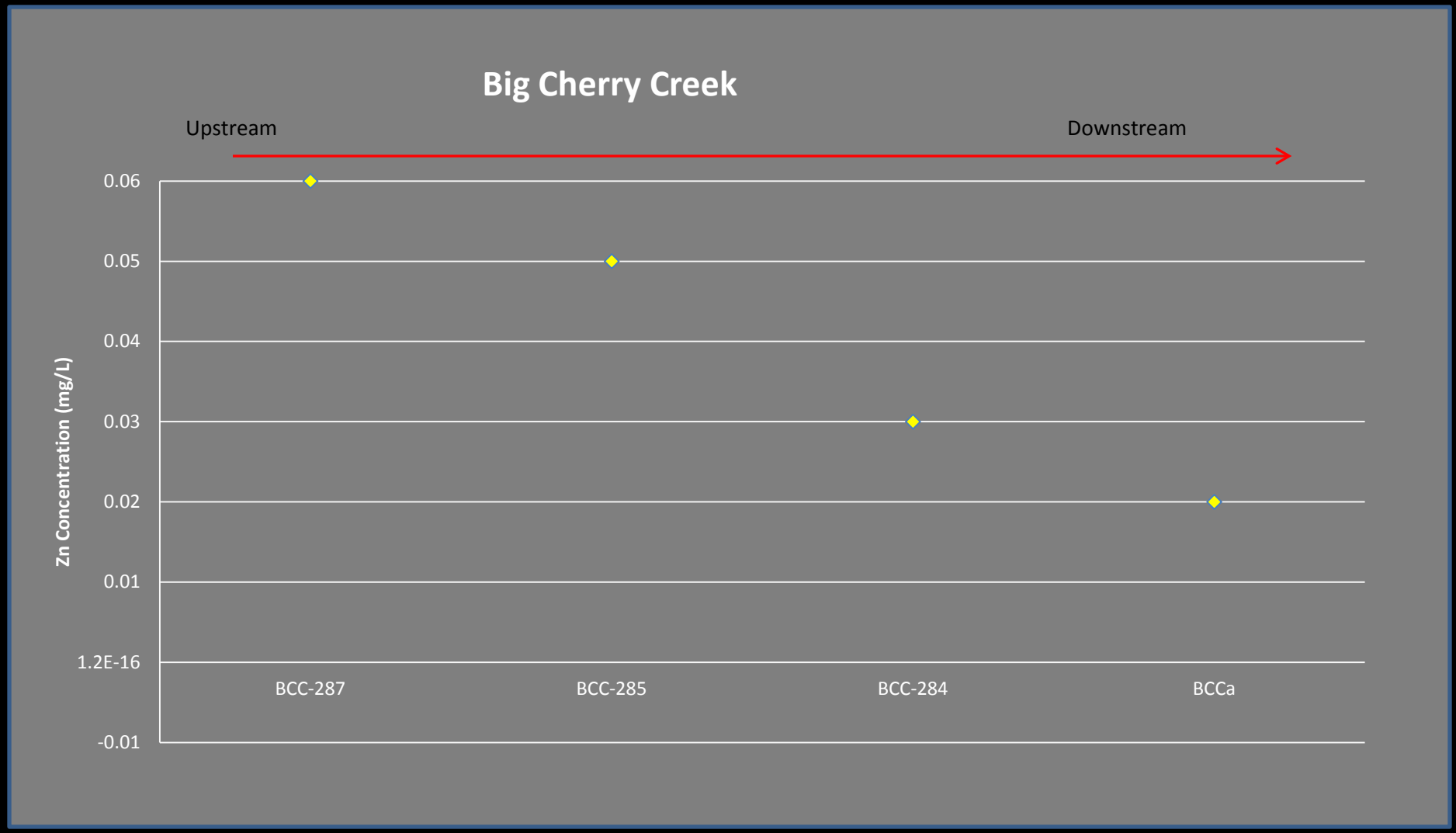
Impairments: Zinc

Originally listed: 1988 as a result of zinc exceedances of the chronic and acute Aquatic Life standards. As a result of this, listed as not supporting the Aquatic Life beneficial use. Drinking Water beneficial was uses not assessed.

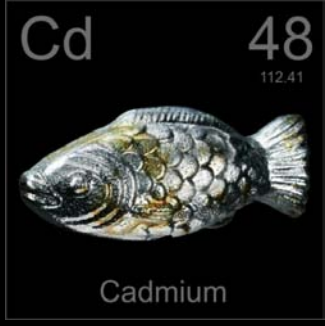
2006 Sediment data above Probable Effects Level (PEL) for As, Cd, Pb, and Zn.

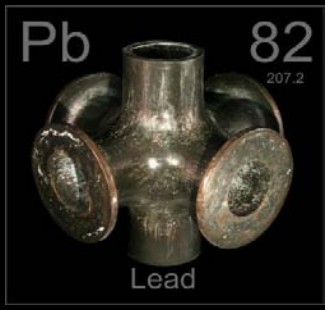
- Sediment data used a supplemental indicator for impairment
- PEL based on NOAA guidelines for metals in sediment

Big Cherry Zn 2011 Sample Results



Lake Creek





Miles of Stream Channel: 17.6

Number of Sampling Locations: 5

Class Use: B-1

Impairments:

- Cadmium
- Copper
- Lead
- Zinc

Originally listed in 1992 as a result of a number of metals samples being above the Aquatic Life standard. Cd, Cu, Pb and Zn all had numerous acute exceedances. Listed as not supporting the Aquatic Life and Drinking Water beneficial uses.

2011 water quality monitoring indicated “Non-Detect” for all impaired pollutant parameters

Libby Creek (upper segment, upstream of Hwy 2 bridge)

Miles of Stream Channel: 11.2

Number of Sampling Locations: 4

Class Use : B-1

Impairments: Mercury

Originally listed: 1988 as a result of metals

samples that exceeded the drinking water quality standards for Hg. Considered to not be supporting the Aquatic Life and Drinking Water beneficial uses.

2011 water quality monitoring indicated “Non-Detect” for all mercury samples

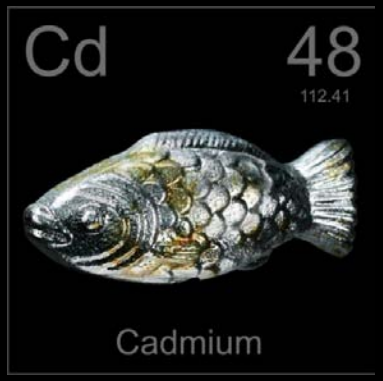
Snowshoe Creek

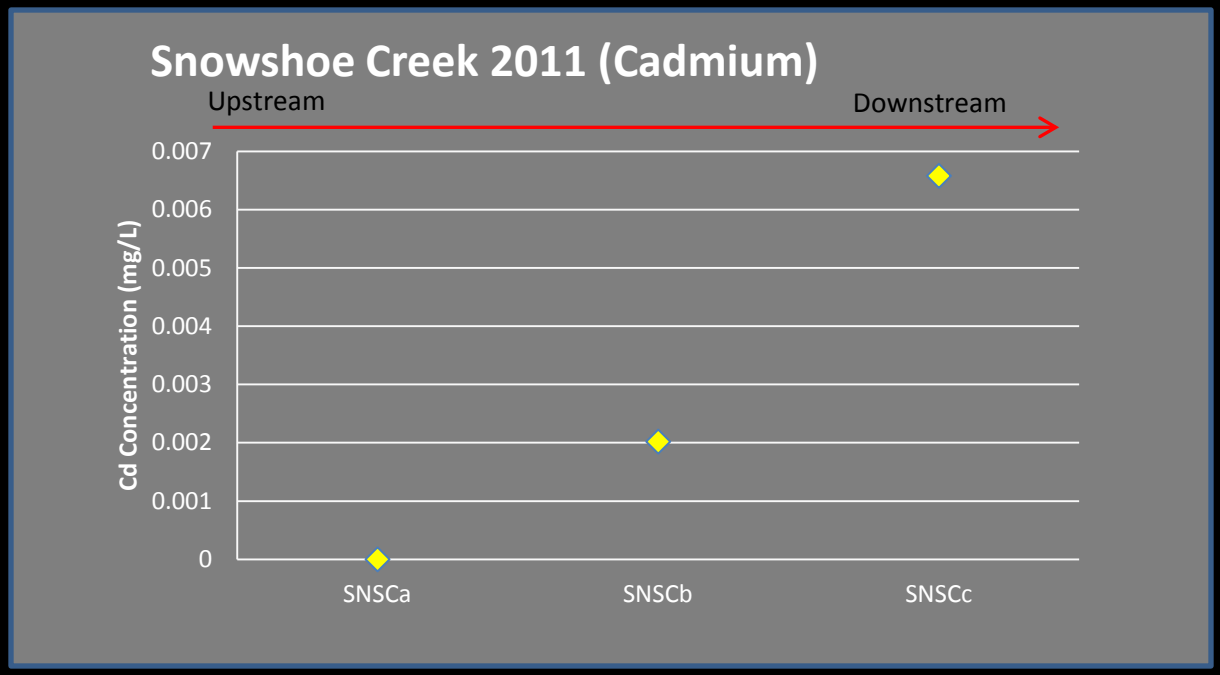
Miles of Stream Channel: 3.6
Number of Sampling Locations: 3
Class Use : B-1

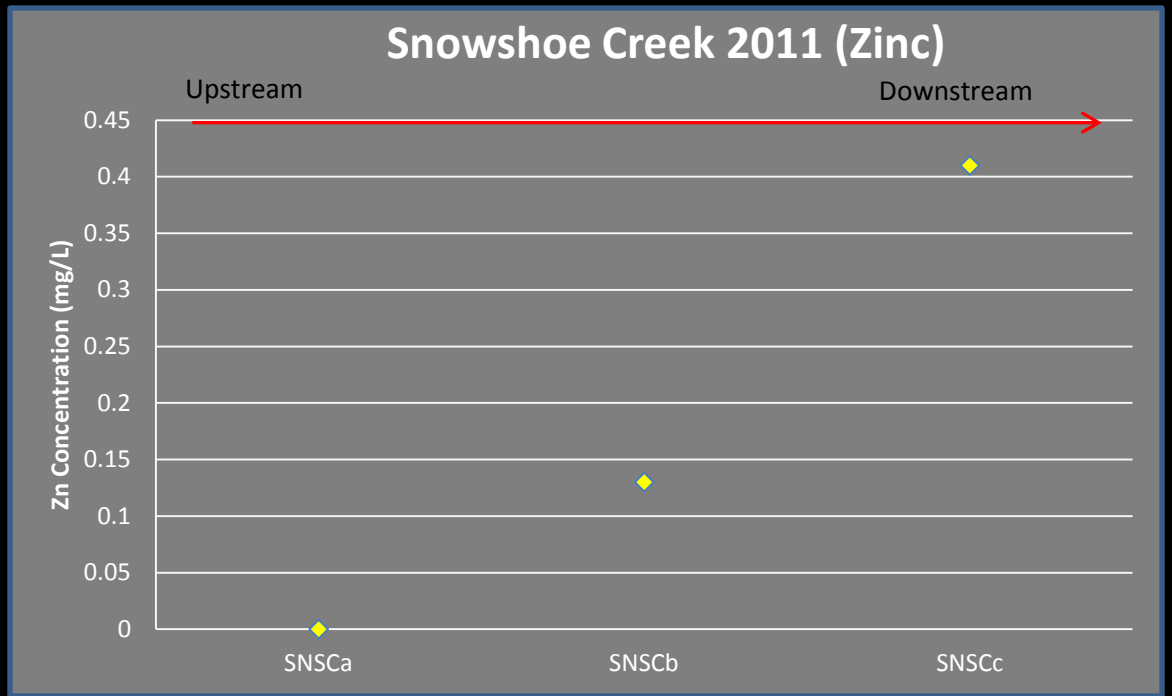
Impairments:

- Cadmium
- Zinc

Originally listed: 1988 as a result of metals Sampling. Considered to not be supporting Aquatic Life, Drinking Water and Agricultural Beneficial uses.




Snowshoe Creek 2011 (Cadmium)
Upstream
Downstream
Cd Concentration (mg/L)
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
SNSCa
SNSCb
SNSCc


Snowshoe Creek 2011 (Zinc)
Upstream
Downstream
Zn Concentration (mg/L)
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
SNSCa
SNSCb
SNSCc

Stanley Creek

Miles of Stream Channel: 4

Number of Sampling Locations: 3

Use Class: B-1

Impairments:

- Copper

Originally listed in 1988 as a result of metals sampling. Found to be partially supporting Aquatic Life beneficial use.

DEQ 2011-2012 Assessment Monitoring

Sampling Event	Nutrients	Chlorophyll	Metals	Sediment Metals
August/September 2011	X	X	X	
May/June 2012			X	
July-September 2012 (2 runs)	X	X		
	X		X	X

Water Column		In-Stream Sediment
Metals	**Other**	**Metals**
Aluminum, Dissolved	Total Hardness	Aluminum, Total
Arsenic, Total Recoverable	TSS	Arsenic, Total
Cadmium, Total Recoverable		Cadmium, Total
Copper, Total Recoverable		Copper, Total
Iron, Total Recoverable		Iron, Total
Lead, Total Recoverable		Lead, Total
Mercury (low level), Total		Selenium, Total
Selenium, Total Recoverable		Zinc, Total
Zinc, Total Recoverable		

Metal Sources

Natural sources

- Geology

Human influenced sources

- Abandoned Mines/Mills/Placers:
  - 15 Fisher River
  - 24 Big Cherry and Libby Creek
  - 18 Lake Creek
- Active Mines:
  - Montanore (Libby Creek)
  - Troy Mine (Stanley Creek)
- Reclaimed Mines:
  - Snowshoe Mine (2010)
- Point Sources:
  - Permitted entities WWTP's, General permits:
    - Suction Dredge (10 on Libby Creek)
    - Storm Water
- Soil erosion from:
  - Forest Practices/Timber Operations (logging, milling, roads)
  - Agriculture
  - Development

What's Next?

- Gather 2012 field data
- Data compilation
  - Data contributed form outside agencies (USFS) and sources as well as 2011-2012 sample dataset
- Evaluate existing conditions
  - using available compiled data
- Evaluate sources of metals pollution
- Development of numeric water quality targets
  - represent water quality conditions that are unimpaired for the pollutant of concern
- Comparison of existing data with water quality targets
  - evaluate water quality target attainment and determination of the need for a TMDL
- Develop Metals TMDLs
- Allocate loads to point source and nonpoint sources

QUESTIONS?

Lou Volpe: lvolpe@mt.gov (406) 444-6742

Nutrient, Sediment, & Temperature TMDL Development

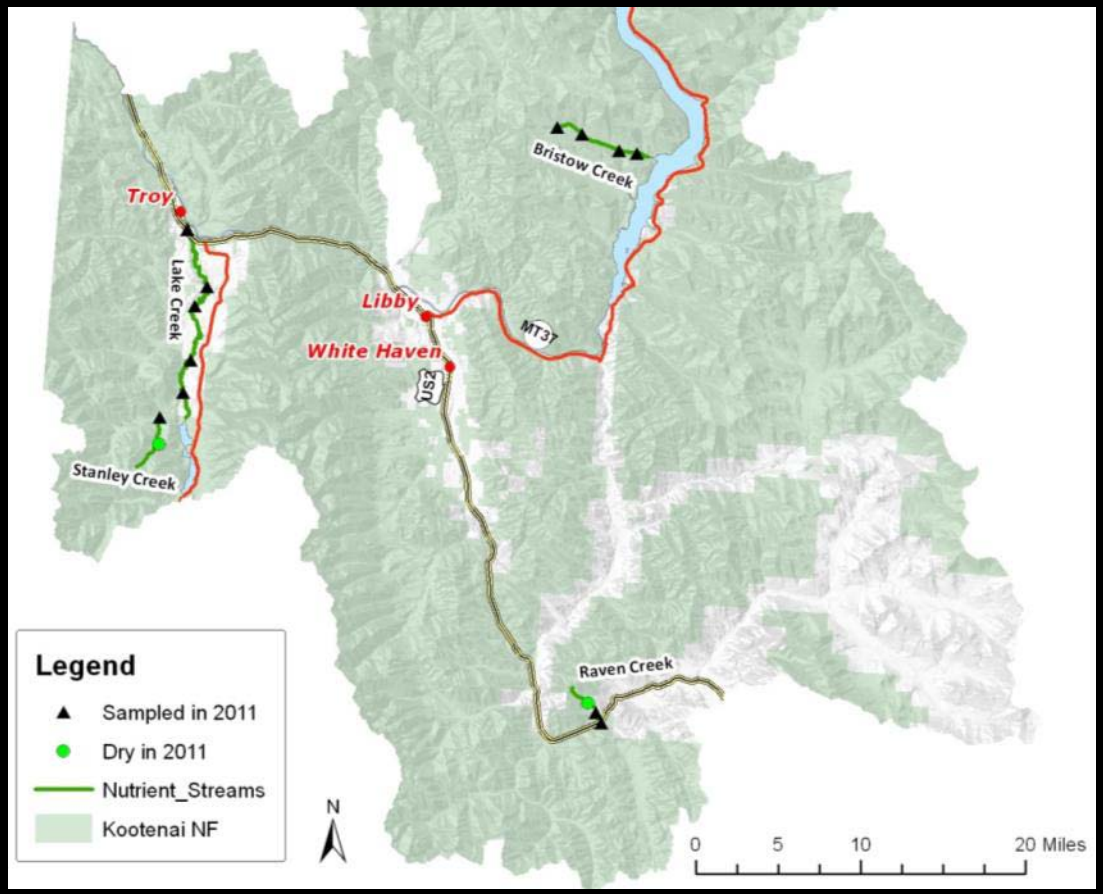
Nutrient Listings & Monitoring

2010 303(d) List

- Four listed waterbodies
  - Bristow Creek (TN)
  - Lake Creek (NO_3)
  - Raven Creek (TP, TN, NO_3)
  - Stanley Creek (bio-integrity)

Monitoring

- Low flow sampling in Aug/Sept 2011
- Three low flow events in 2012
- 14 sites for water chemistry and chlorophyll (2 were dry in 2011)

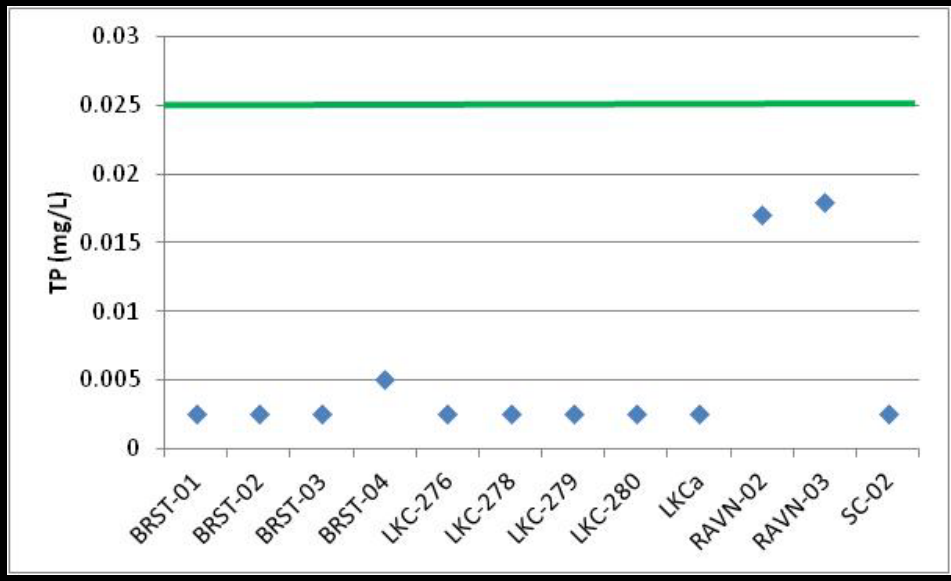


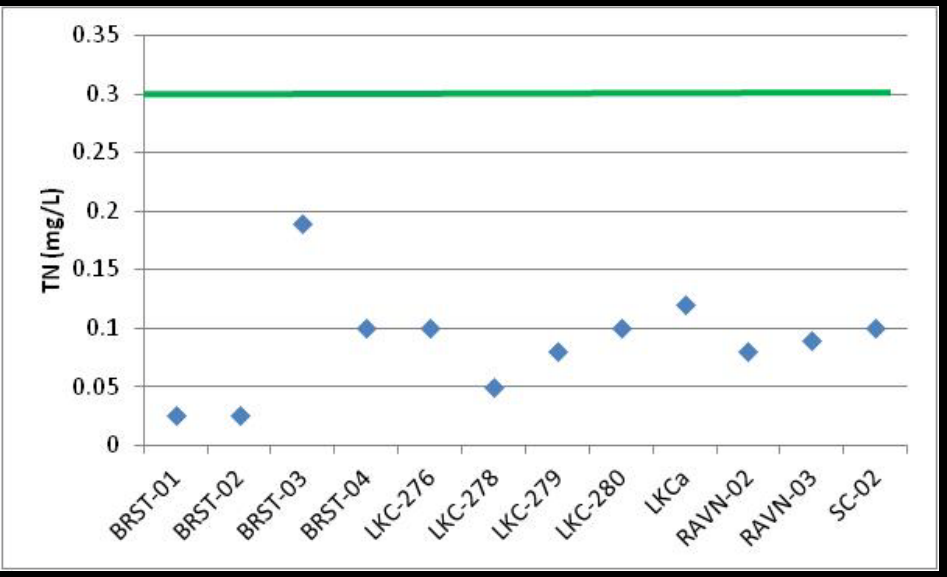
Targets

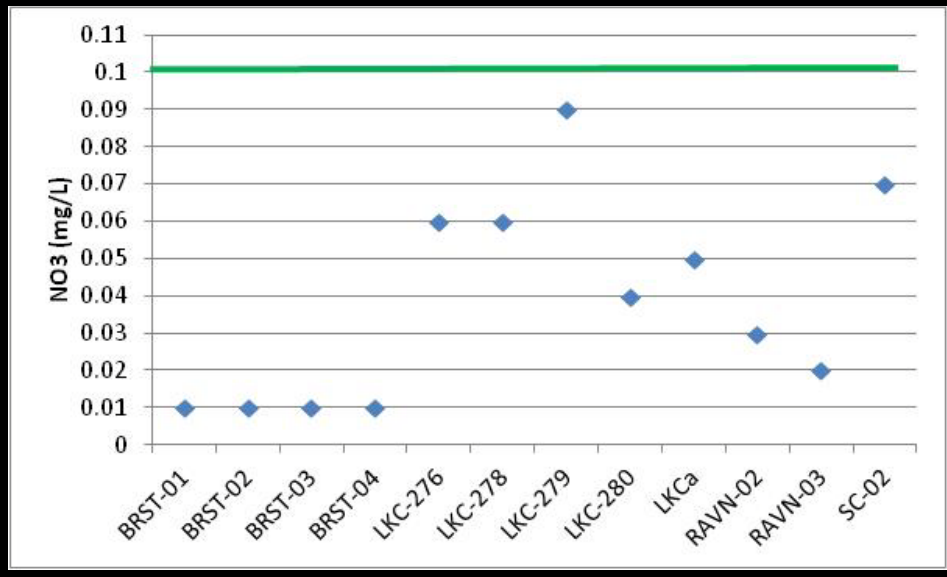
- Numeric translation of standard

2011 Results

- All chlorophyll values were < 120 mg/m2
- All nutrient values were below the target values
- Continued sampling in 2012 to get at least 12 samples per stream







Data Evaluation and TMDLs

- Data will be evaluated following the 2012 sampling and evaluated using DEQ's nutrient assessment methodology
- A TMDL development determination will be made for each stream
- If a TMDL is needed, the collected water quality data will be used for the allocations and TMDL

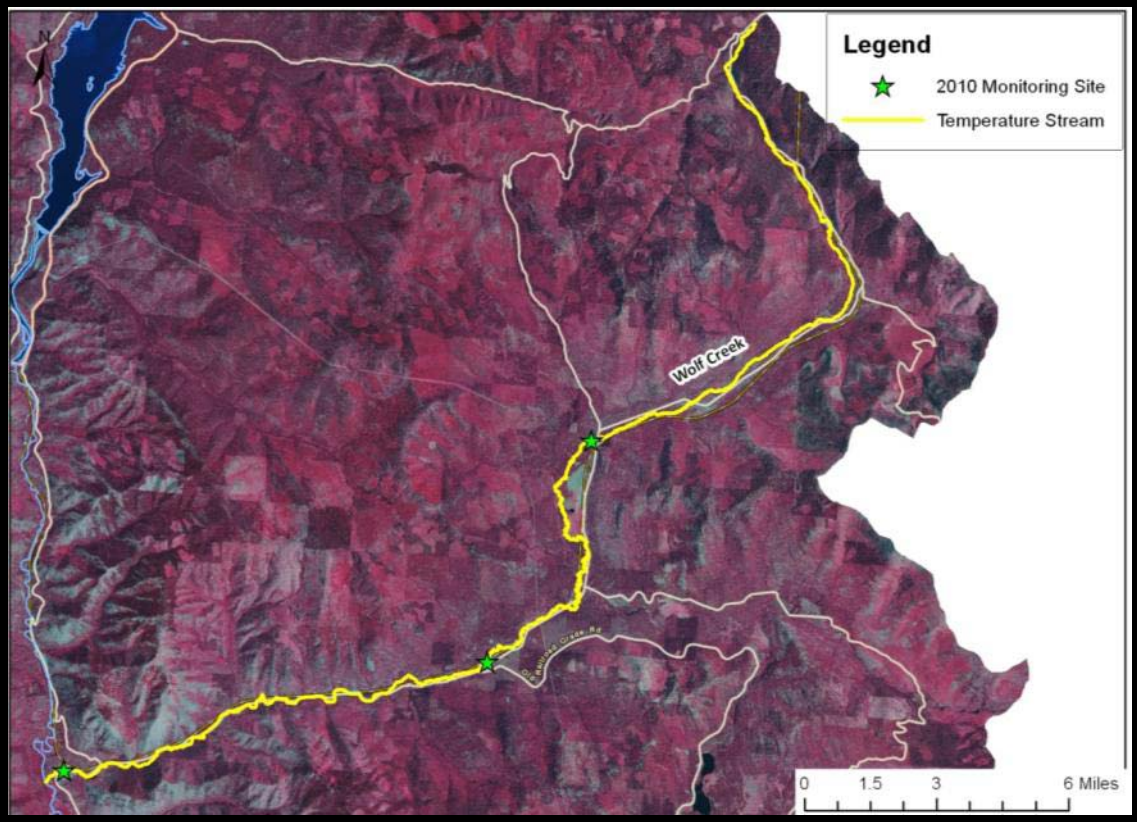
Temperature Listing and Monitoring

Monitoring

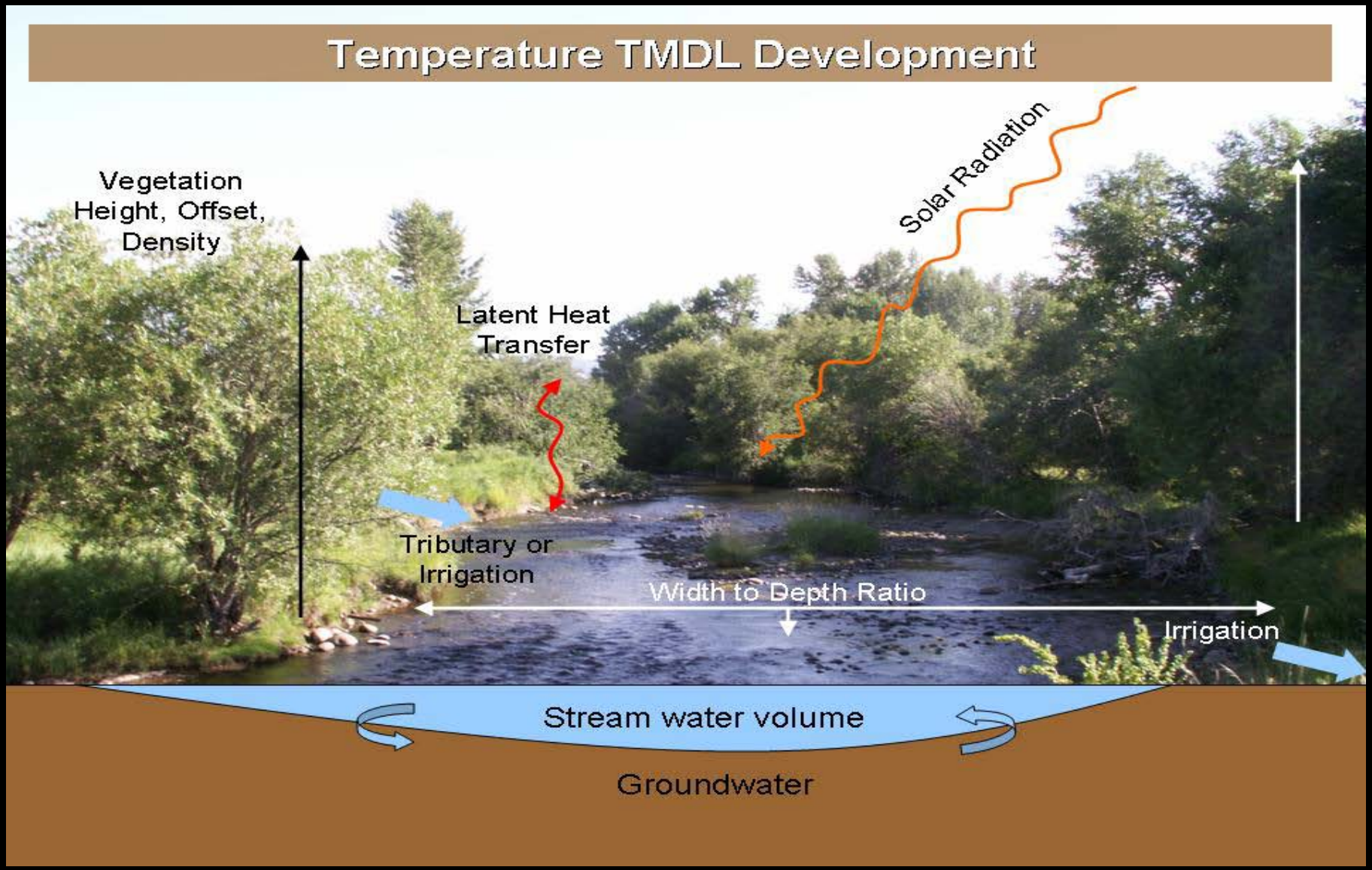
- Conducted at 3 sites on Wolf Creek in 2010
- More intensive monitoring to be conducted in 2012

Details

- Continuous temperature recordings during the hottest months of the year
- Shade cover/riparian condition, channel morphology, and flow
- Conditions will be modeled



Temperature Factors

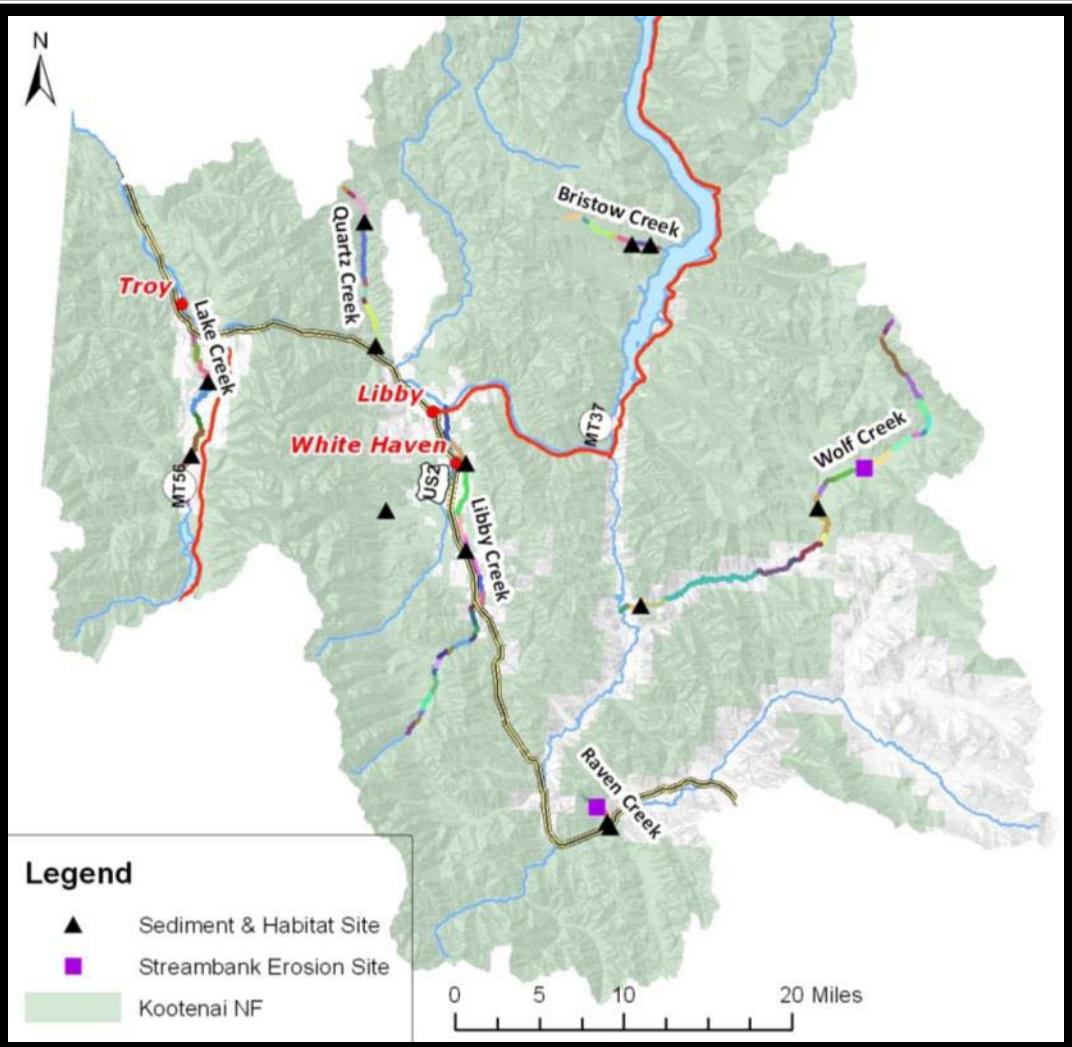


Data Evaluation and TMDLs

- 2010 Data
  - 7-Day Average Max: 65 - 68.1 ˚F
  - Instantaneous Max: 67 - 69.8 ˚F

- Evaluate temperatures relative to thresholds for harm to use for fish that use, or those with the potential to use, the stream
- If temperatures are in the harmful range, evaluate human sources of elevated temperatures via modeled scenarios
- TMDL expressed as a thermal load and via surrogate targets

Sediment Listings & Monitoring



2010 303(d) List

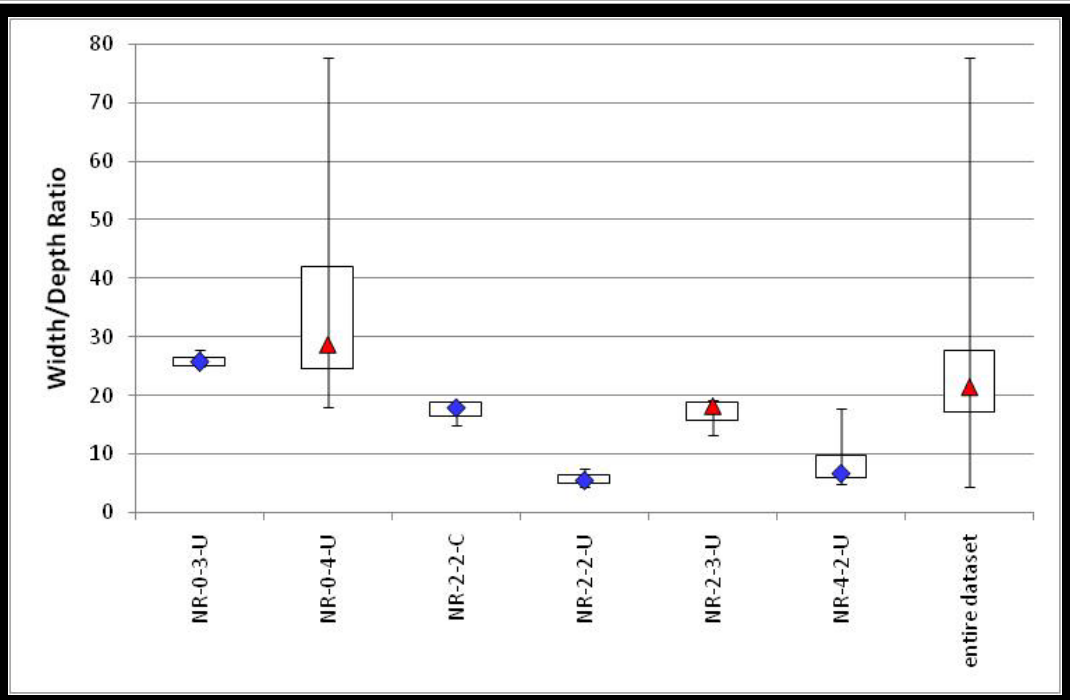
- 6 waterbodies are listed as impaired due to sedimentation & other sediment related habitat alterations
  - Bristow Creek
  - Lake Creek
  - Libby Creek
  - Quartz Creek
  - Raven Creek
  - Wolf Creek

- Streams were stratified by ecoregion, valley gradient and confinement, and stream order
- Monitoring was conducted on 15 reaches in 2011

2011 Sediment/Habitat Monitoring

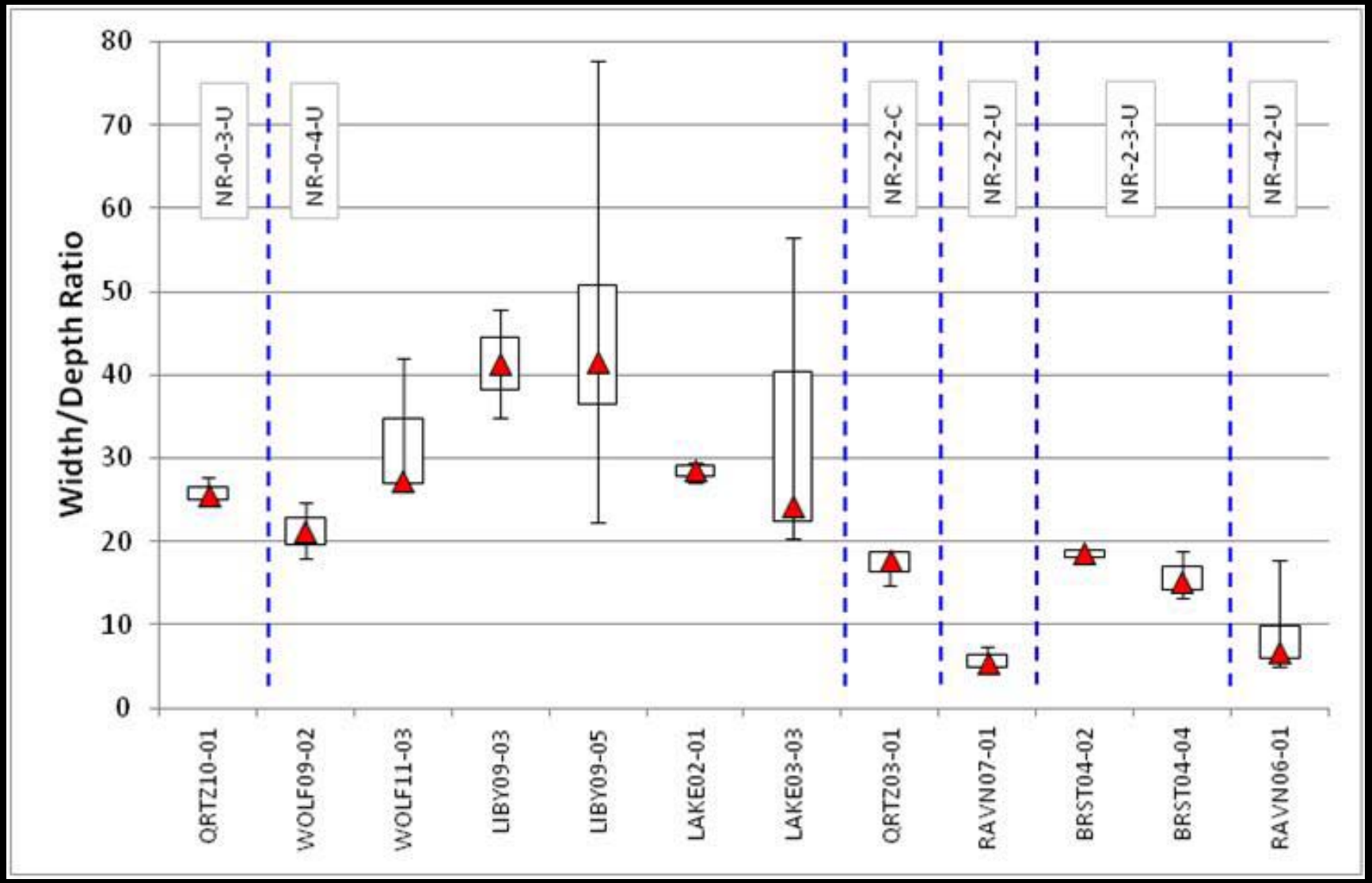
- Channel form: W/D ratio and Entrenchment
- Fine sediment: % fine sediment < 6mm and 2mm in pools and riffles via pebble count & grid toss
- In-stream habitat: pool and large woody debris frequency; residual pool depth
- Bank erosion and sources
- Macroinvertebrates
- Riparian vegetation assessment (“greenline”)

2011 Monitoring Data Summary



Statistical Parameter	Reach Type						
	NR-0-3-U	NR-0-4-U	NR-2-2-C	NR-2-2-U	NR-2-3-U	NR-4-2-U	Entire Dataset
# of Monitoring Sites	1	6	1	1	2	1	12
Sample Size	4	17	4	3	6	4	38
Minimum	24.9	18.0	14.8	4.5	13.2	5.0	4.5
25th Percentile	25.1	24.6	16.4	5.0	15.8	5.9	17.1
Median	25.7	28.6	17.9	5.5	18.2	6.7	21.4
75th Percentile	26.5	41.9	18.8	6.5	18.8	9.8	27.7
Maximum	27.8	77.8	18.9	7.4	19.2	17.8	77.8
Monitoring Sites	QRTZ10-01	WOLF09-02, WOLF11-03, LIBY09-03, LIBY09-05, LAKE02-01, LAKE03-03	QRTZ03-01	RAVN07-01	BRST04-02, BRST04-04	RAVN06-01	

2011 Monitoring Data Summary

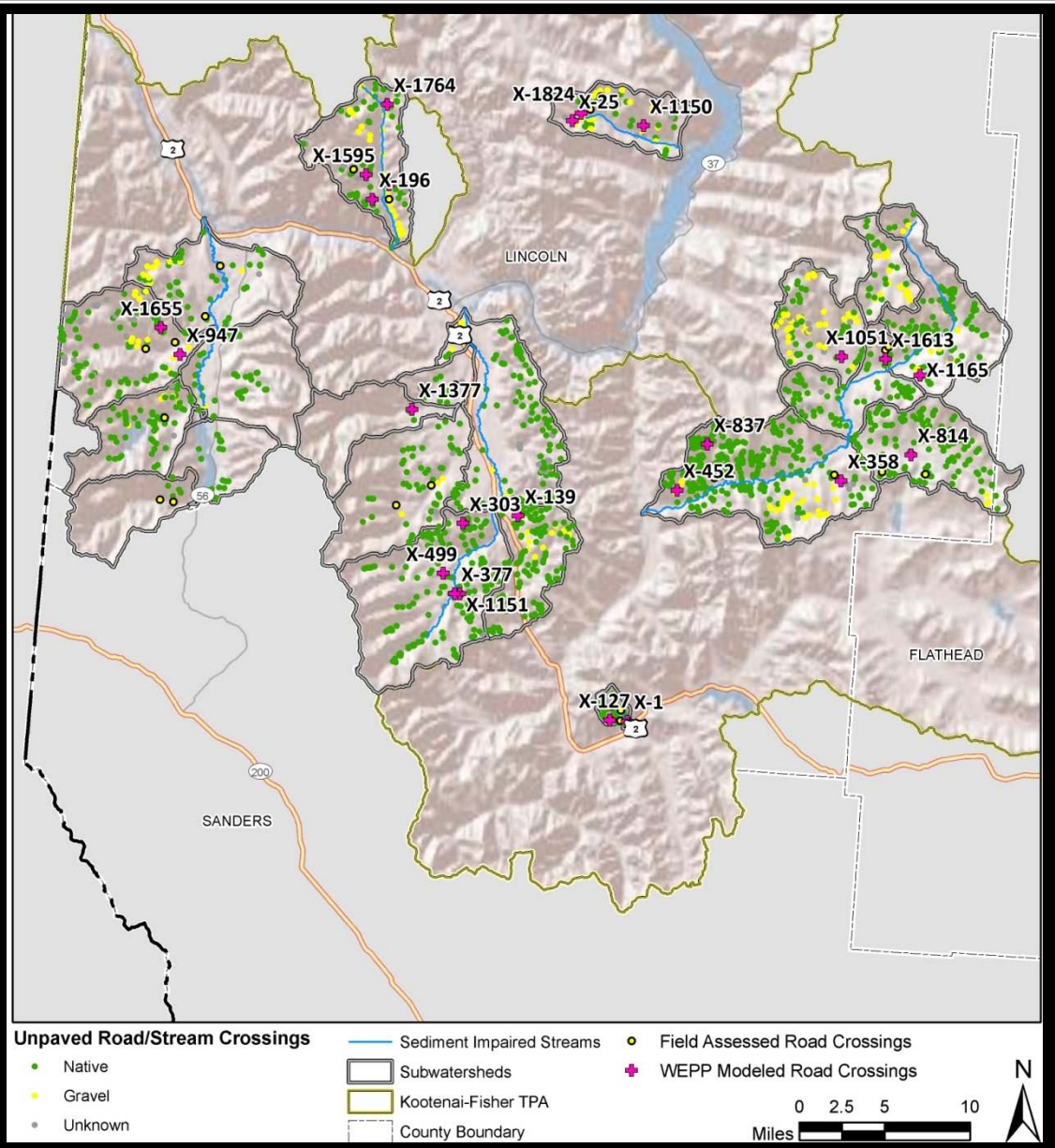


Data Evaluation and TMDLs

- Develop targets to translate the narrative standard and evaluate condition of each stream
- Sediment TMDLs are based on following all reasonable land, soil, and water conservation practices
  - TMDL is based on a percent reduction approach for all significant sediment sources

2011 Roads Assessment

- Visited 47 randomly selected sites; completed a full evaluation at 24 and recorded condition at remaining sites
- Parallel segments were determined in the field to not be a significant source
- Loading will be modeled via WEPP
- Culvert failure potential and fish passage also evaluated



Sediment Task Status

Completed Tasks

- Reach stratification and riparian health assessment
- Sediment / habitat assessments on 15 reaches
- Road assessment
- Bank erosion assessment

Remaining Tasks

- Target Development
  - Based on Kootenai NF and PIBO reference data as well as sample dataset
- Evaluate existing conditions using available data from DEQ, USFS, etc
- Unpaved roads model development
- Upland erosion model
- Data compilation

Questions About the Nutrient, Temperature, or Sediment TMDLs?

Next Project Steps:

- All monitoring will be complete by this fall
- Data summaries and source assessment reports will be posted to the project website for your review, as they become available
- Monitoring data will be assessed and TMDL determinations will be made (yes / no)
- TMDL targets will be developed and a draft document written
- Targets & draft document will be available for stakeholder review prior to public comment
- Another advisory group meeting will be held prior to public comment (Spring 2013)

MONTANA TMDL DEVELOPMENT PROJECTS WIKI / TMDL Home - Windows Internet Explorer provided by MT DEQ

http://montanatmdlflathead.pbworks.com

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Page Safety Tools

TMDL Home

last edited by Christina Staten 1 week ago

Page history

Montana Department of Environmental Quality

Welcome to the Montana Department of Environmental Quality's Wiki for Total Maximum Daily Load (TMDL) Development Projects

This site contains pages dedicated to TMDLs that are under development in the state of Montana. You will find quick links to active TMDL projects in the sidebar to the right and in the table below. Note that not all TMDL projects have information on this site. A full list of current TMDL projects, and corresponding contact information, can be found on DEQ's TMDLs Under Development web page.

CURRENT TMDL PROJECTS			
Beaverhead	Boulder – Elkhorn	Flint	Lower Gallatin
Bitterroot	Flathead	Kootenai - Fisher	Rock

For full information about DEQ's TMDL program, including an overview of the TMDL process, TMDL staff contacts, public comment & public meeting information, and final TMDL documents, please see the **DEQ TMDL Web Page**. You will also find links to watershed groups and other water quality information pages.

See Frequently Asked Questions for Information on Navigating and Requesting Access to this Site.

You may also visit the **What is a TMDL** page for a brief description of the TMDL process.

This site is maintained by DEQ's Water Quality Planning Bureau. Please contact the Bureau if you would like additional information regarding this site or have questions regarding TMDL development. Some pages on this site are dedicated to specific TMDL technical advisory groups (TAGs). These pages are intended as a communication tool between the TMDL Project Managers and the applicable TAG members, and are not viewable by everyone. If you need additional information regarding any of these pages, please contact Christina Staten, DEQ wiki administrator.

We'd love to hear back from you regarding the layout and contents of this site. Provide us with your feedback.

To join this workspace, request access.

Already have an account? Log in!

SideBar

Home Page

How to Navigate This Site & Request Access

What is a TMDL?

Link to the DEQ Nonpoint Source & 319 Grants Wiki

Link to the DEQ TMDL Webpage

Completed Projects (Older Pages)

Current Projects:

Beaverhead

Bitterroot

Boulder-Elkhorn

Flathead

Flint

Kootenai - Fisher

Lower Gallatin

Internet 100%

Kootenai - Fisher TMDL Project

last edited by Christina Staten 1 week, 2 days ago

Page history

Project Contacts *Outreach* *Documents*

This page provides a general overview of the Kootenai – Fisher TMDL project. Here you will find a brief explanation on the purpose of the project and what it entails, a description of the project area and the included streams, as well as project contacts. You can find project updates and meeting announcements on the Kootenai – Fisher Project Outreach page. The links above will appear on each project page and can be used to navigate between the pages.

Page Contents

i. Project Area
ii. Project Purpose
iii. Project Overview
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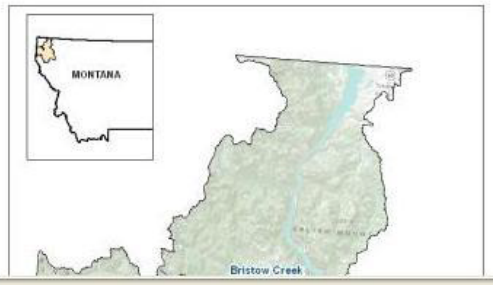
Project Area

The Kootenai – Fisher TMDL project area encompasses the entire Fisher River watershed and a portion of the Kootenai River watershed. Majority of the project area is contained in Lincoln County, and includes the Town of Troy and the City of Libby. A very small portion of the project area lies in Flathead County.



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Completed Projects
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Current Projects:

Beaverhead

Bitterroot

Boulder-Elkhorn

Flathead

Flint

Kootenai - Fisher

Lower Gallatin

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Kootenai - Fisher TMDL Project Outreach

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Kootenai - Fisher TMDL Project Home Page
Project Contacts *Documents*

This page is intended to provide project status updates and information on opportunties for public input during TMDL planning activities for the Kootenai-Fisher TMDL Project. Below you will find project announcments and status updates, copies of meeting presentations, project contacts, and a description of the role of the Kootenai - Fisher TMDL advisory group.

ANNOUNCEMENTS & UPDATES

March 29, 2012	A watershed advisory group meeting will be held Wednesday, April 4, 2012 at 2 p.m. at the Kootenai National Forest Supervisors Office in Libby. Project staff will provide a brief overview of the TMDL process and the scope of the Kootenai -Fisher TMDL Project. Sampling activities taking place for the metals, nutrients, sediment, and temperature TMDLs will also be discussed. Contact Christina Staten (406-444-2836) if you would like additional information about the meeting.
March 19, 2012	This table will be used to post informaton on the project's status, meeting notices, and other related announcments.

MEETINGS & PRESENTATIONS

MEETING	PRESENTATIONS & HANDOUTS
No meetings have been held yet	

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KOOTENAI - FISHER TMDL ADVISORY GROUP

Montana state law (75-5-703 & 704) requires DEQ to consult with local conservation districts and to request participation of individuals of applicable interest groups to work in an advisory capacity to DEQ and the conservation districts during the development of TMDLs. DEQ has formed a watershed advisory group (WAG) for this project that is comprised of representatives of various interest groups and federal, state, and local governments. The goal is to maintain a manageable and efficient feedback process by selecting a limited number of advisory group members who can represent their applicable interest group by attending meetings, reviewing provided information, disseminating information to the group of people that they represent, and subsequently obtaining feedback that can be passed on to DEQ and EPA project staff. All advisory group members participate at their discretion.

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Lower Gallatin

Rock

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Kootenai-Fisher TMDL Project Home Page

Project Contacts *Outreach*

Documents for Watershed Advisory Group Review

As part of this project, and in an effort to better understand the water quality in the project area, the Montana Department of Environmental Quality and the U.S. Environmental Protection Agency are collecting metals, nutrient, sediment, and temperature data. Pollutant source assessment tools will consist of water quality data analysis and water quality models, depending upon the pollutant. The following TMDL assessment work will be completed:

Metals (Project Manager: Lou Volpe, 406-444-6742)

DOCUMENT	DOCUMENT DESCRIPTION	DATE
2011 2012 Sampling Locations	Maps and tables of monitoring locations	Will be available spring, 2012
Monitoring Data	One event (low-flow) of metals sampling was completed in 2011. Three rounds will be completed in 2012 (1 high-flow; 2 low-flow events). Contact Lou Volpe for data.	

Nutrients (Project Manager: Lisa Kusnierz, 406-457-5001)

DOCUMENT	DOCUMENT DESCRIPTION	DATE
2011 and 2012 Sampling Locations	Maps and tables of monitoring locations	Will be available spring, 2012
Monitoring Data	One event (low-flow) of nutrient sampling was completed in 2011. Three rounds will be completed in 2012 (low-flow sampling). Contact Lisa Kusnierz for data.	

Sediment (Project Manager: Lisa Kusnierz, 406-457-5001)

DOCUMENT	DOCUMENT DESCRIPTION	DATE
Sampling & Analysis Plan for Sediment and Habitat Assessment (612 kb)	Instream fine sediment data was collected and streambank erosion assessments were performed during the summer of 2011. This document defines the sampling objectives, sampling process and methods, and data analysis and record keeping requirements.	October, 2011 Final
Sediment and Habitat Assessment and Streambank Erosion Assessment	This document summarizes the methods used and the data that was collected from the 2011 sediment and habitat assessment field work. A map of sampled sites is included in the report. This document also includes	Will be available summer, 2012

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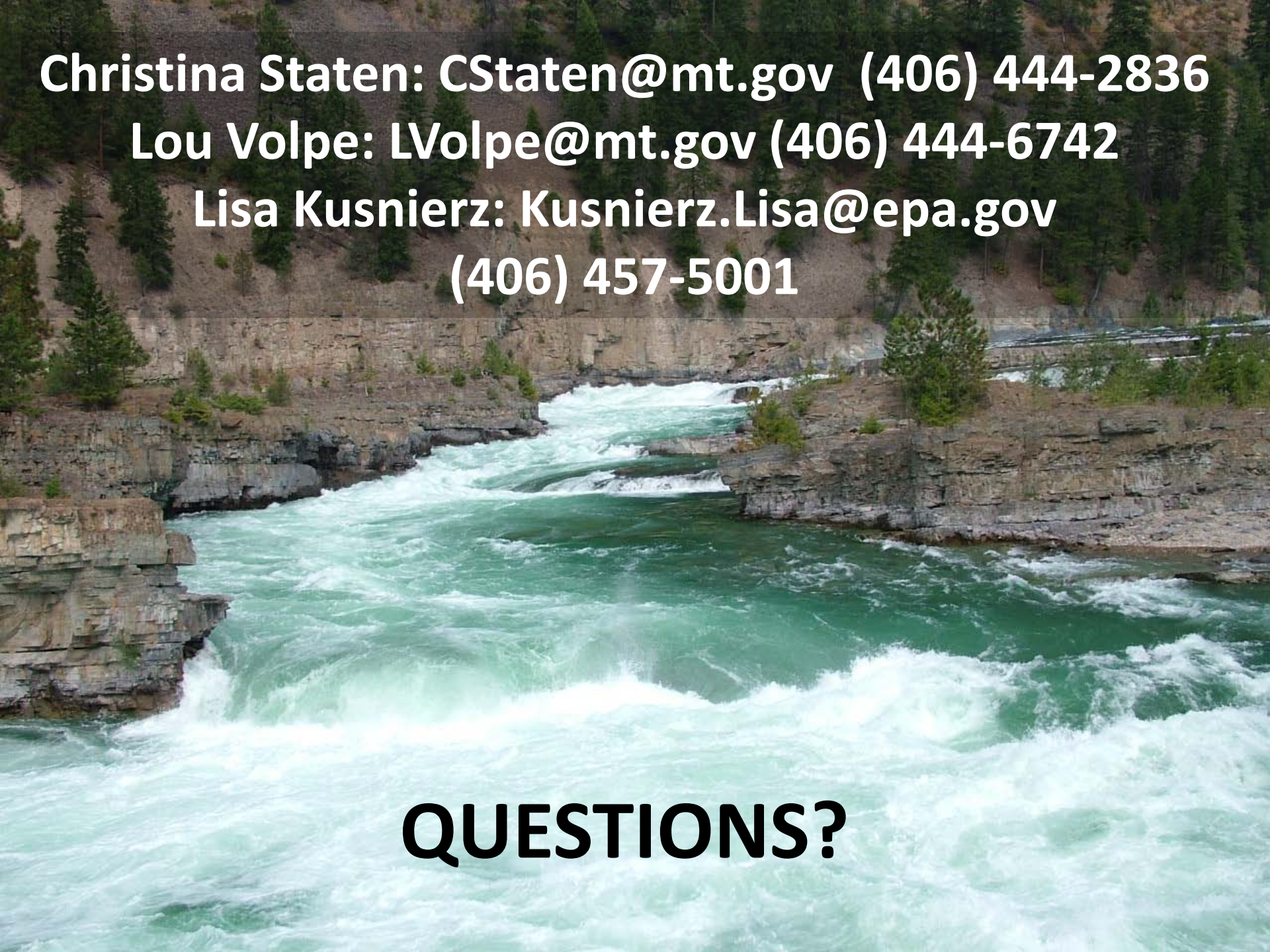
Request for Data

Please let us know if you have, or know of, available monitoring data



Christina Staten: CStaten@mt.gov (406) 444-2836
Lou Volpe: LVolpe@mt.gov (406) 444-6742
Lisa Kusnierz: Kusnierz.Lisa@epa.gov
(406) 457-5001

QUESTIONS?