CENTRAL CLARK FORK TRIBUTARIES TMDL PROJECT

Watershed Advisory Group Meeting

July 2, 2014 – Missoula, MT

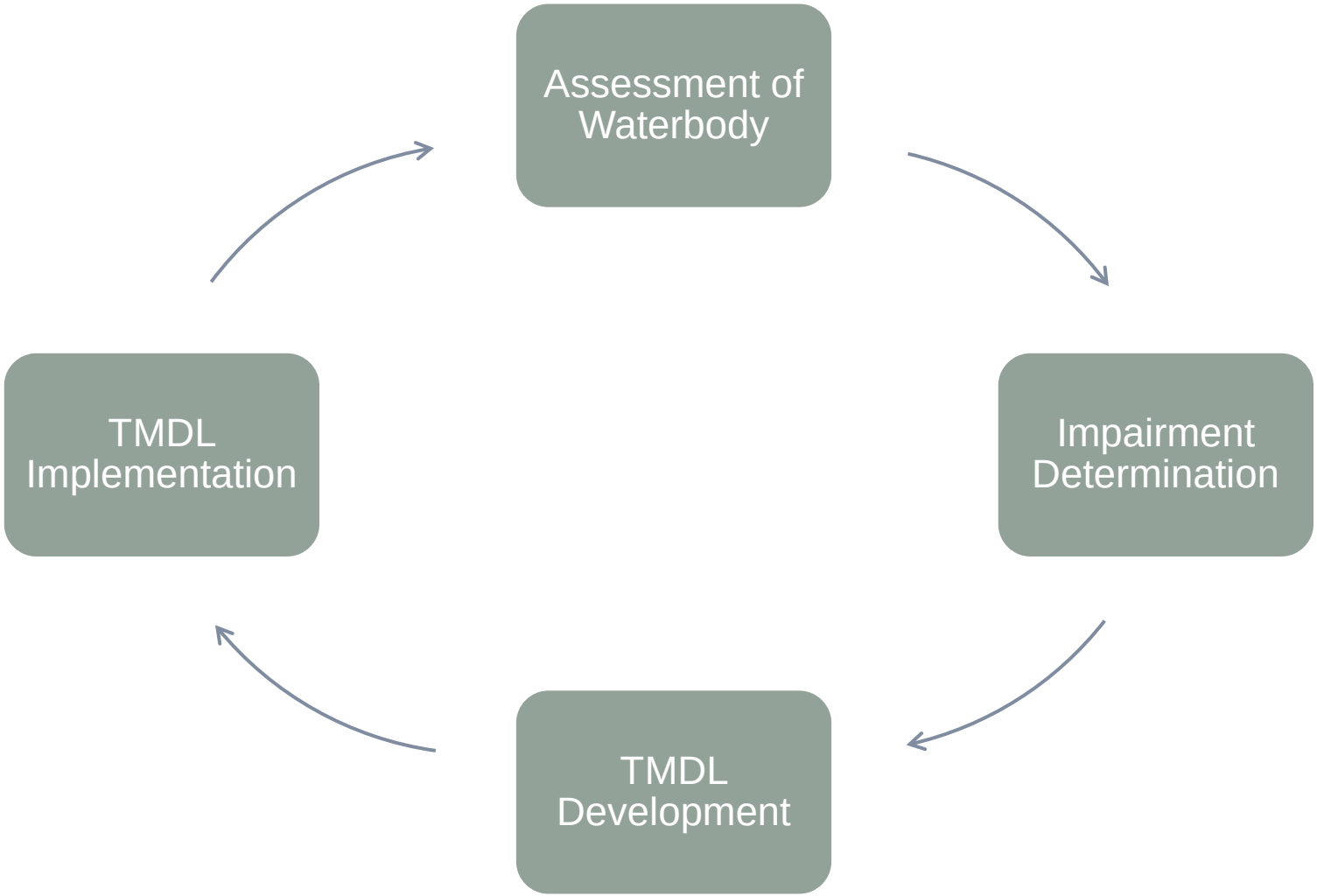
Presentation Outline

- Central Clark Fork Tributaries TMDL Project *(Jordan Tollefson, DEQ)*
- Sediment and Turbidity TMDL Development *(Christian Schmidt, DEQ)*
- Temperature TMDL Development *(Eric Sivers, DEQ)*
- Nutrient TMDL Development *(Katie Makarowski, DEQ)*
- Implementation Strategy and Project Schedules *(Jordan Tollefson, DEQ)*

What is a TMDL?

- A TMDL (or Total Maximum Daily Load) is a calculation of the maximum amount of a pollutant (nutrients, sediment, etc.) that a waterbody can receive from all sources and still meet water quality standards
- Montana State Law and the Federal Clean Water Act require that a TMDL be developed for all waterbodies impaired by a pollutant
- The goals of the DEQ are to develop TMDLs on all waterbodies impaired by a pollutant as an important step to address water quality issues

Steps Involved in Water Quality Planning and Implementation



Water Quality Standards

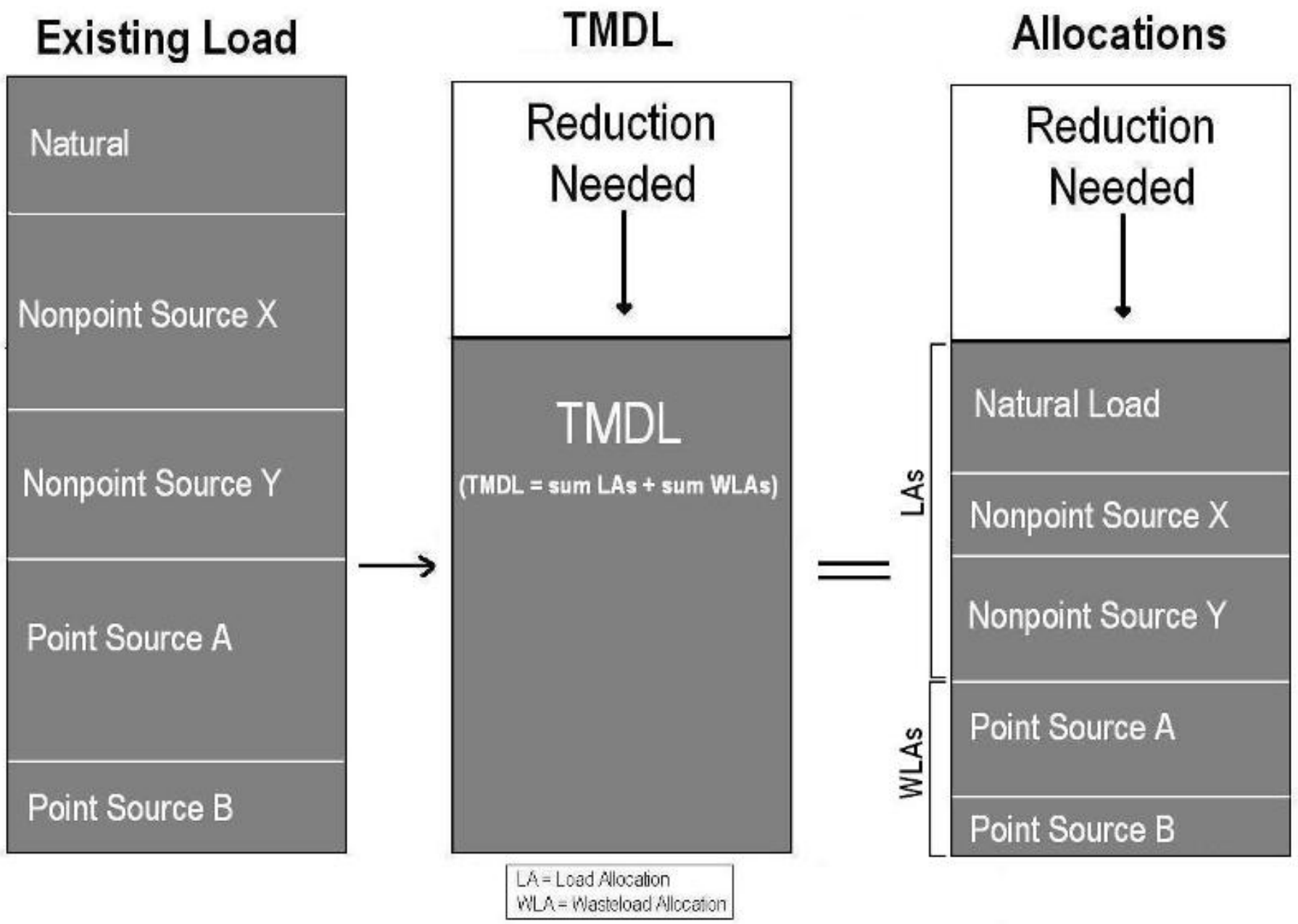
- Can be numeric or narrative and are designed to protect beneficial uses of a waterbody
- Some examples of beneficial uses are: aquatic life, primary and secondary contact recreation, drinking water supply, agricultural water supply, etc.
- Beneficial uses are based on specific waterbody classifications (A-1, B-1, etc.)

Monitoring and Assessment

- DEQ uses monitoring data to assess water quality and compare to applicable water quality standards
- If the data show a water quality problem, the waterbody is put on a list of impaired waters, also known as the 303(d) list
- Waterbodies impaired by a pollutant will require a TMDL to be developed for that particular waterbody-pollutant combination

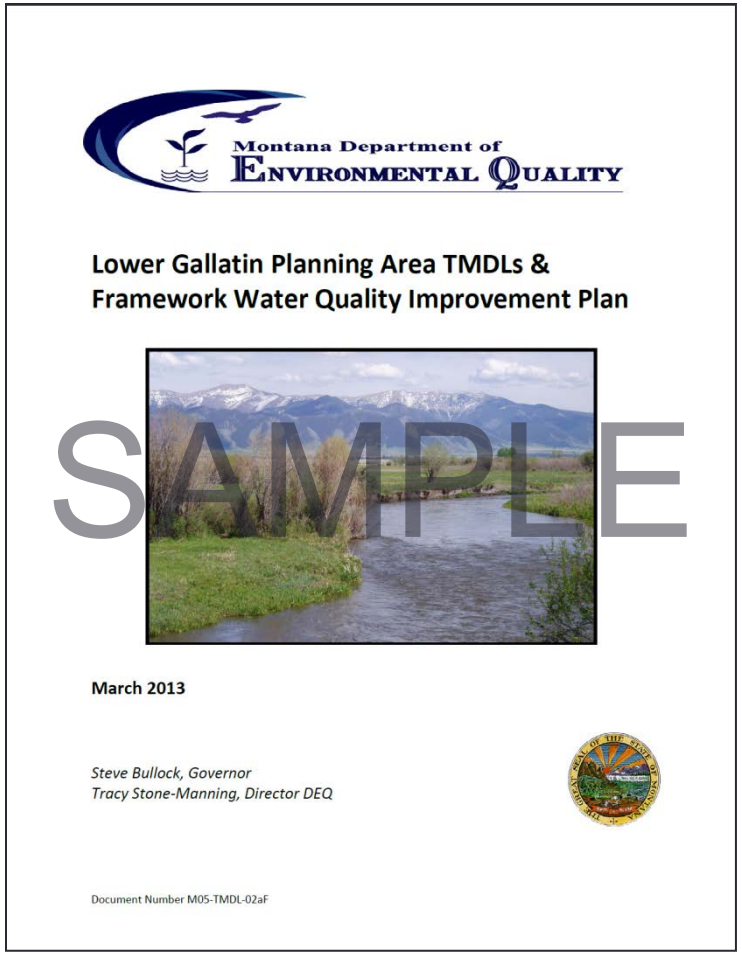
Steps for Developing a TMDL

- Characterize the impaired waterbody's existing water quality conditions and compare those conditions to Montana's water quality standards.
- Quantify the magnitude of the pollutant contribution from each significant source
- Determine the total allowable load of the pollutant to the waterbody
- Allocate the total allowable pollutant load into individual loads for each significant source (referred to as load allocations for nonpoint sources and wasteload allocations for point sources)


Existing Load
Natural
Nonpoint Source X
Nonpoint Source Y
Point Source A
Point Source B
TMDL
Reduction Needed
TMDL
(TMDL = sum LAs + sum WLAs)
LA = Load Allocation
WLA = Wasteload Allocation
Allocations
Reduction Needed
Natural Load
Nonpoint Source X
Nonpoint Source Y
Point Source A
Point Source B
LAs
WLAs

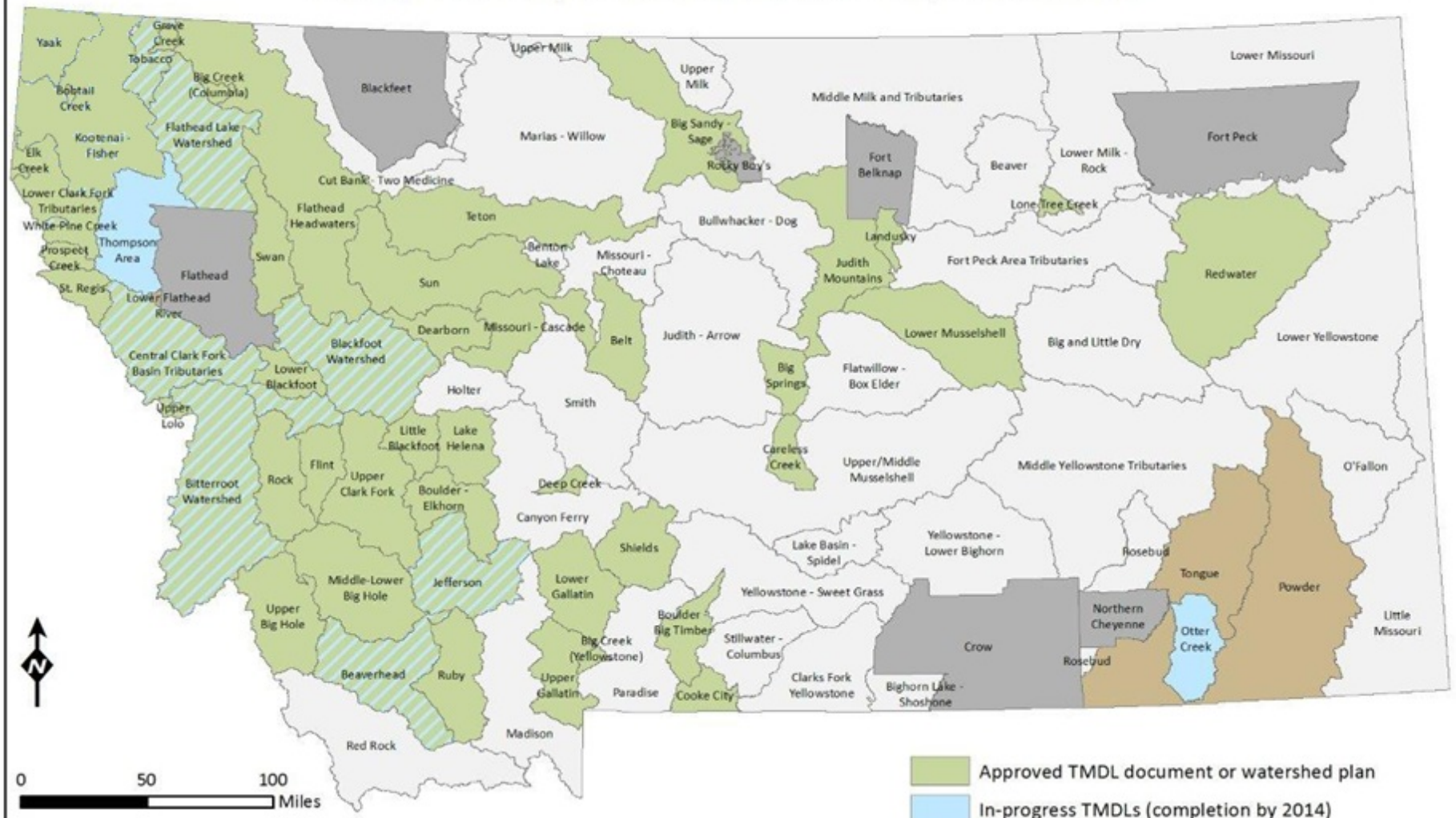
Montana TMDL History

- More than 1,000 approved TMDLs (1998 – present)
- About 60 TMDL documents completed as of June 2014
- Completed documents can be found at:



http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx

Montana TMDL Project Areas & 2014 TMDL Completion Schedule



TMDLs are specific to a waterbody segment - pollutant combination. Some planning areas with completed TMDLs may still require TMDL development for additional waterbody - pollutant combinations. Contact the DEQ at 406-444-5317 or refer to the final TMDL documents at http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx for additional details.

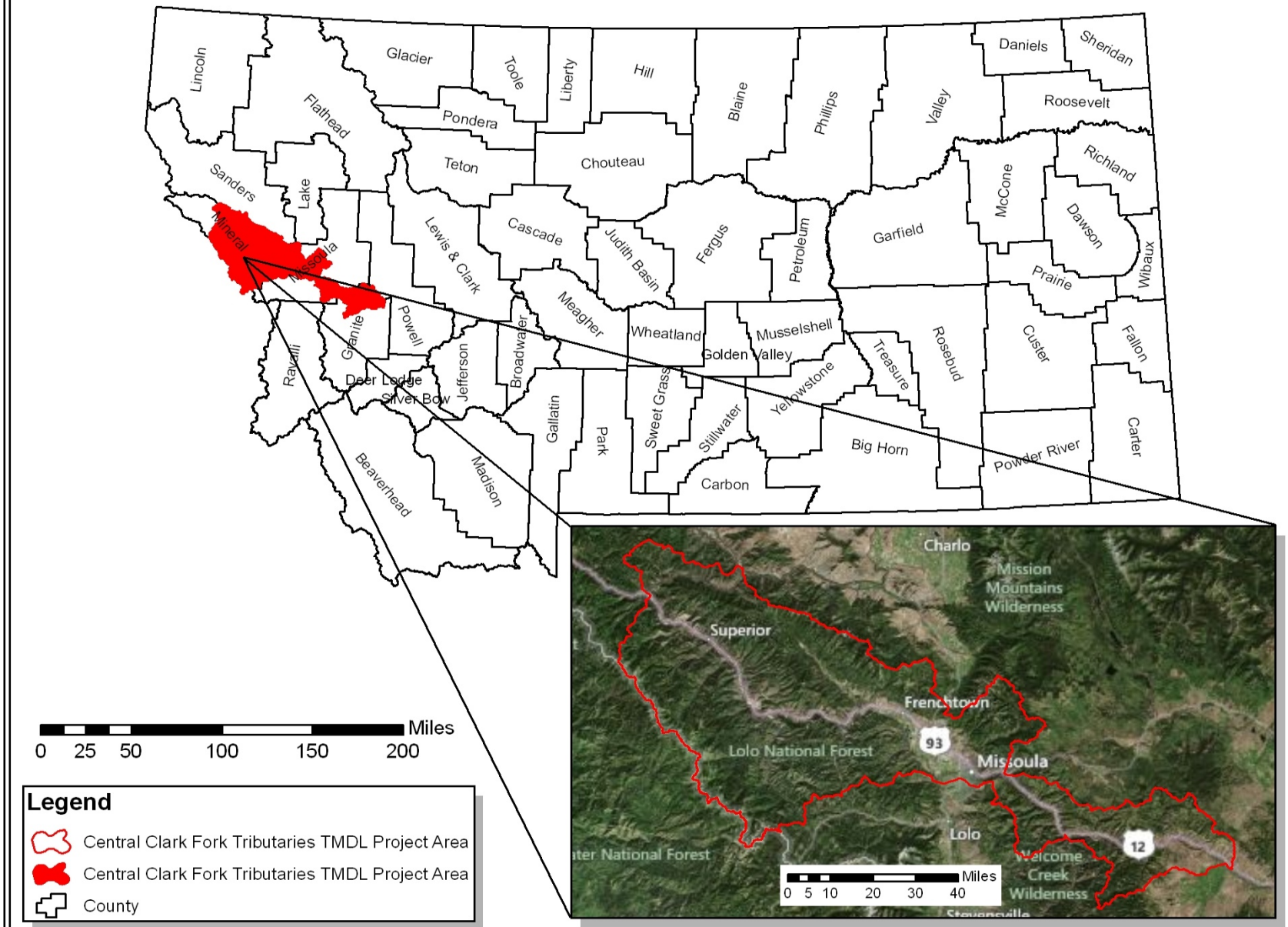
In addition to the watersheds shown on this map, some large rivers and their associated reservoir systems represent separate TMDL project areas. These include the Clark Fork River, the Missouri River, and the Yellowstone River. Pre-TMDL development support work is underway in the Yellowstone River and Missouri River, while the Clark Fork River has a combination of approved and in-progress TMDLs.

- Approved TMDL document or watershed plan
- In-progress TMDLs (completion by 2014)
- Combination approved & in-progress TMDLs
- Additional TMDL priority areas (completion after 2014)
- Not included in 2014 schedule
- Tribal (not under state jurisdiction)

Map updated 5/9/2014

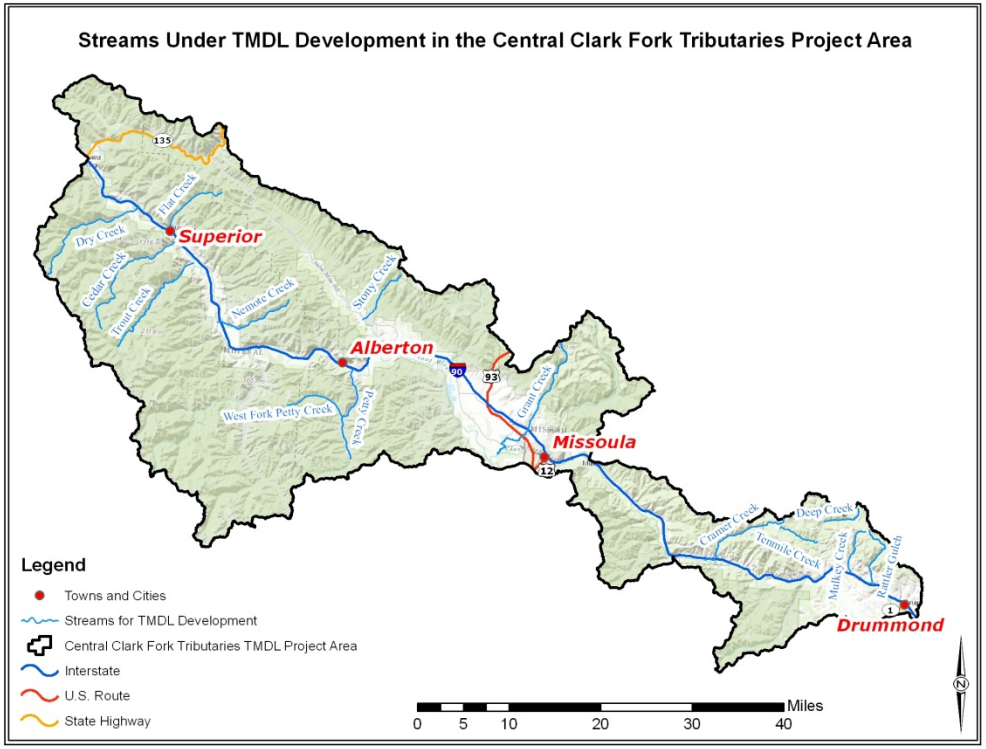

Central Clark Fork Tributaries
TMDL Project

Central Clark Fork Tributaries TMDL Project Area



Central Clark Fork Tributaries TMDL Project

- TMDLs were developed for 13 streams within the project area:
  1. Dry Creek
  2. Flat Creek
  3. Stony Creek
  4. Grant Creek
  5. Nemote Creek
  6. Petty Creek
  7. Trout Creek
  8. West Fork Petty Creek
  9. Cramer Creek
  10. Deep Creek
  11. Mulkey Creek
  12. Rattler Gulch
  13. Tenmile Creek



Central Clark Fork Tributaries Sediment TMDL Development

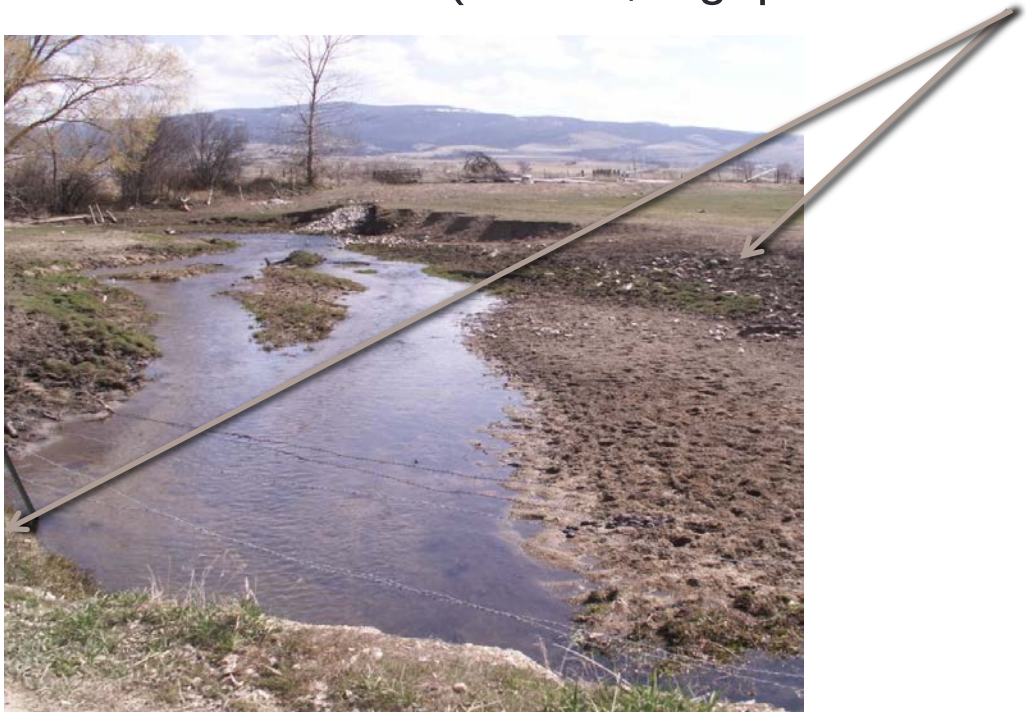
Sediment TMDLs

Sediment: naturally occurring component of healthy and stable stream ecosystems

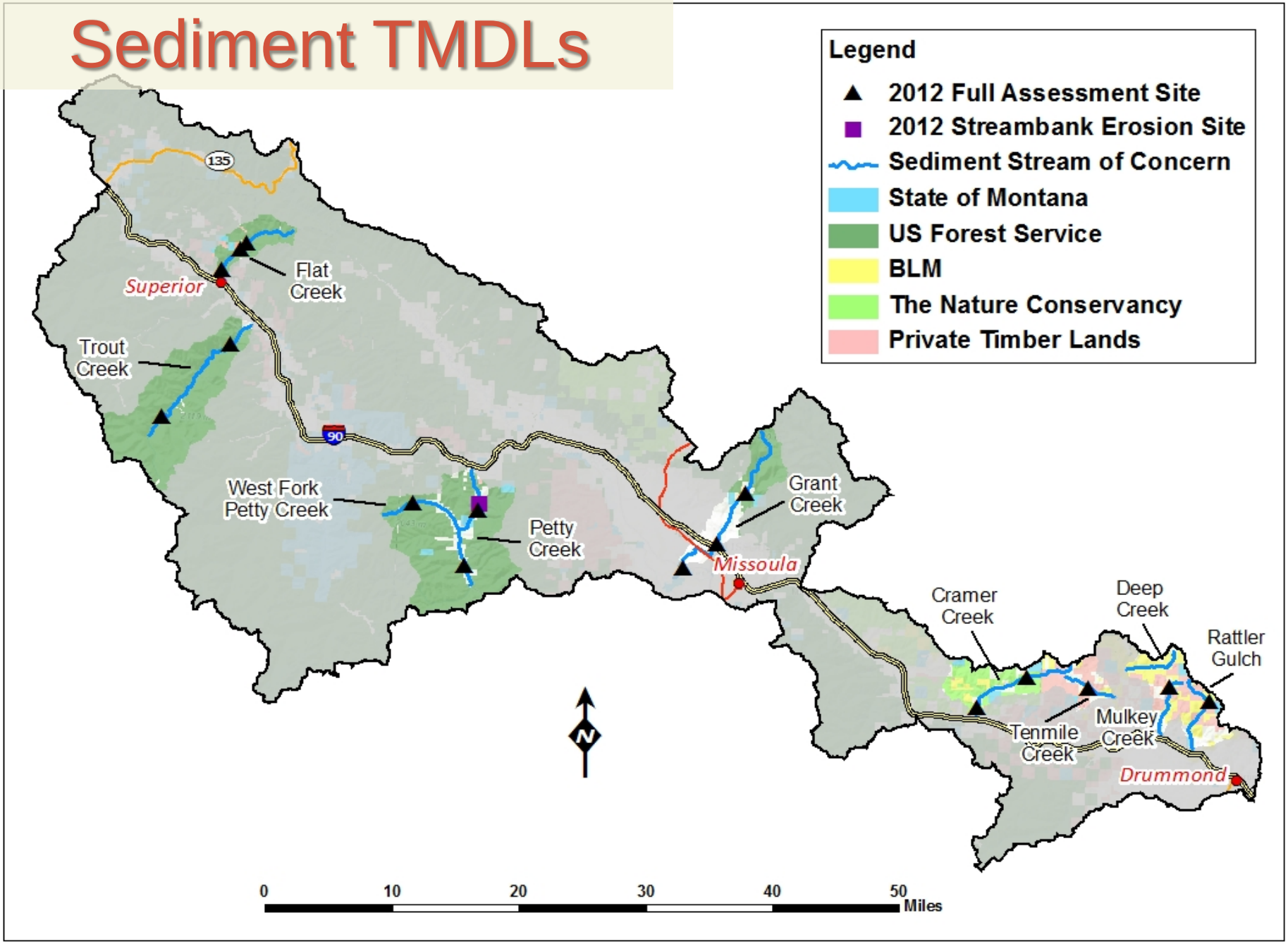
Too much sediment may cause imbalance in the stream

Excess inputs of sediment and impacts to aquatic life:

- high concentrations of suspended sediment
- alter channel form and function (habitat, e.g. pools or stream width)



Sediment TMDLs



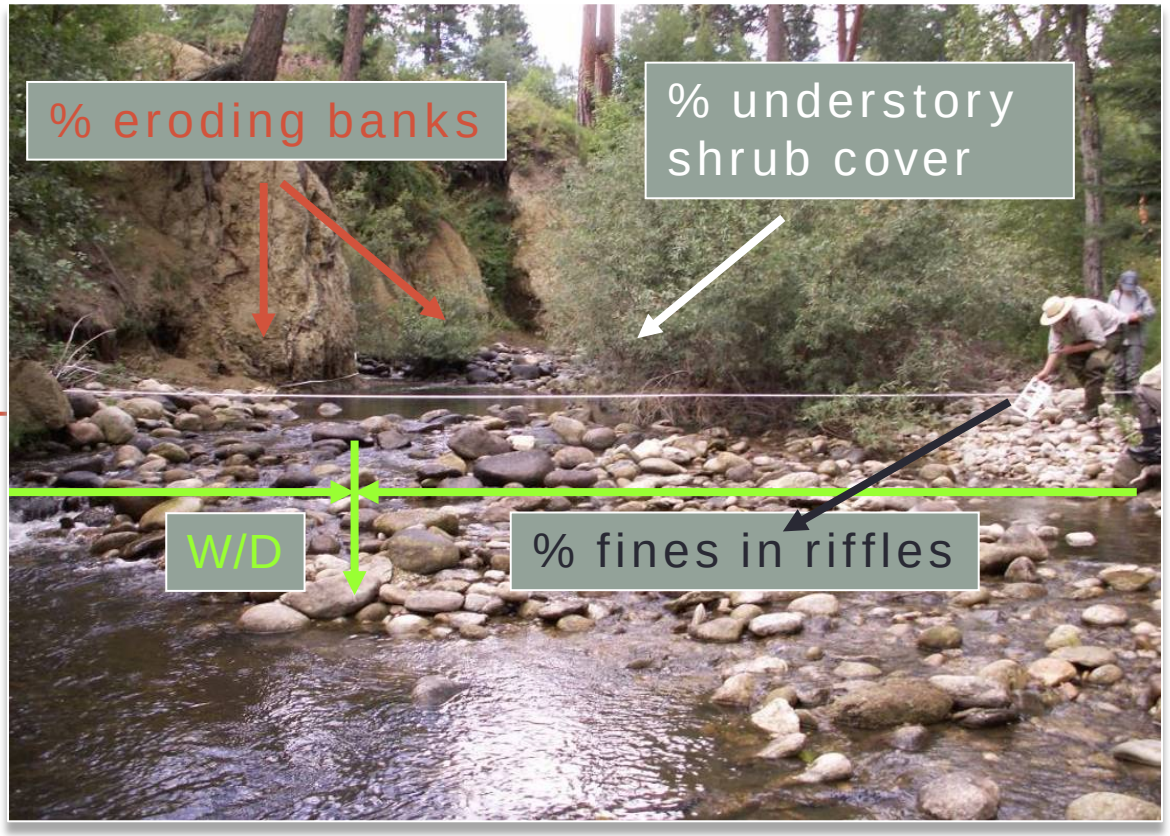
Sediment TMDL Components

1. Water Quality Targets
2. Sediment Source Assessments
3. TMDLs and Allocations

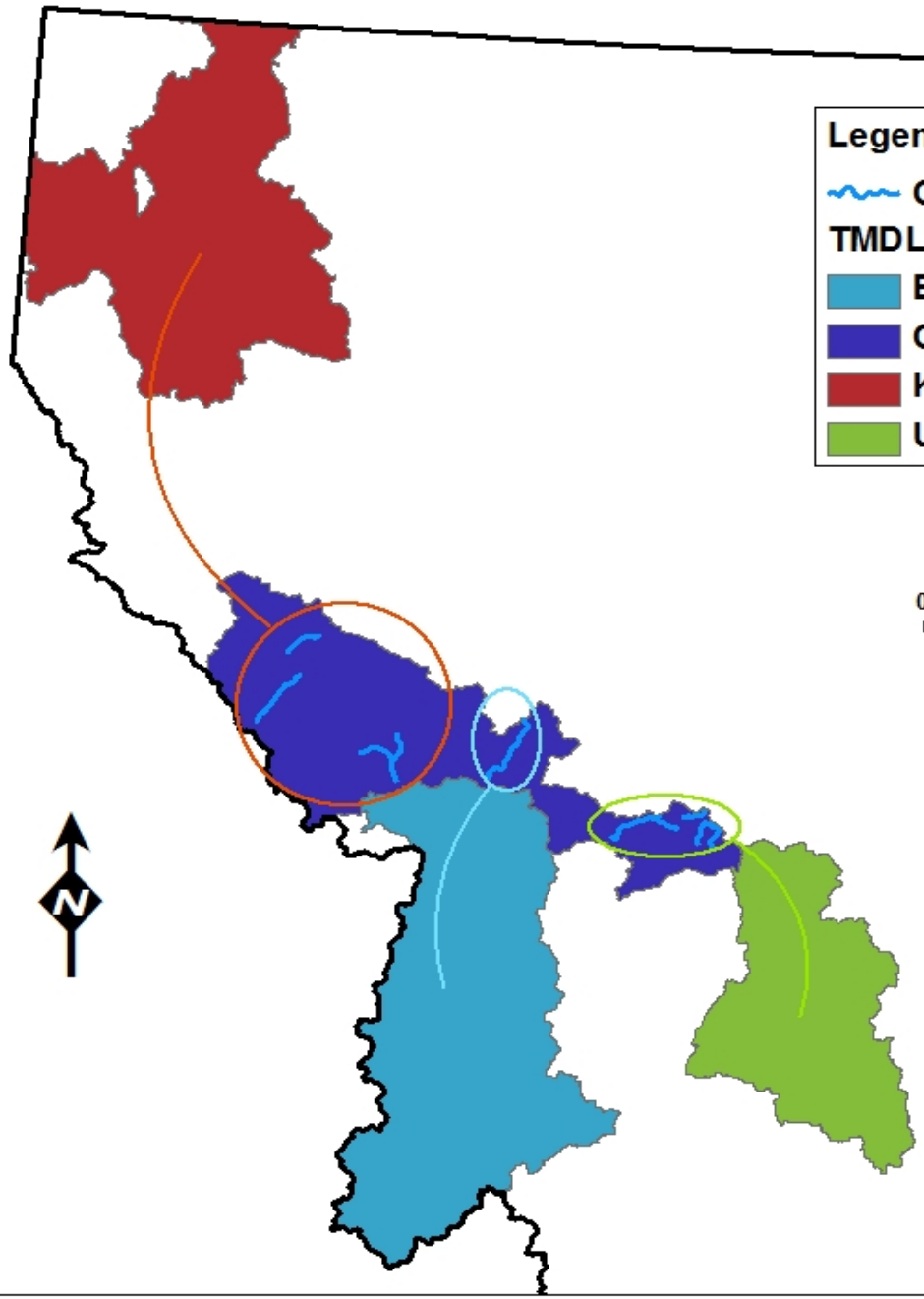
Water Quality Targets: Field Investigations

Parameters of Interest

- Fine sediment
  (<6mm and <2mm in riffles and in pools)
- Channel form stability
  (W/D ratio and entrenchment)
- Instream habitat
  (LWD, pools/mile, and pool depth)
- Riparian health
  (% understory shrub cover, % bare ground)
- Bank Erosion
  (Number of banks, loads, and associated causes and severity)



Parameters of interest are selected for their ability to display response to increases or decreases in sediment loading, and their linkage to effects upon aquatic life/cold water fish



Stream	TPA Sediment Targets Applied
Cramer Creek	Upper Clark Fork Tributaries
Deep Creek	Upper Clark Fork Tributaries
Flat Creek	Kootenai-Fisher
Grant Creek	Bitterroot Tributaries
Mulkey Creek	Upper Clark Fork Tributaries
Petty Creek	Kootenai-Fisher
Rattler Gulch	Upper Clark Fork Tributaries
Tenmile Creek	Upper Clark Fork Tributaries
Trout Creek	Kootenai-Fisher
West Fork Petty Creek	Kootenai-Fisher

Sediment Source Assessments: Why conduct source assessments?

Assessments provide estimated amounts of sediment that are getting to the stream

- Road erosion
- Upland erosion
- Streambank erosion
- Point source assessment

Loads are also estimated with best management practices (BMPs) in place

Desired condition

÷

Existing condition

= X

1-X*100 =
% reduction needed

Grant Creek

TMDLs and Allocations

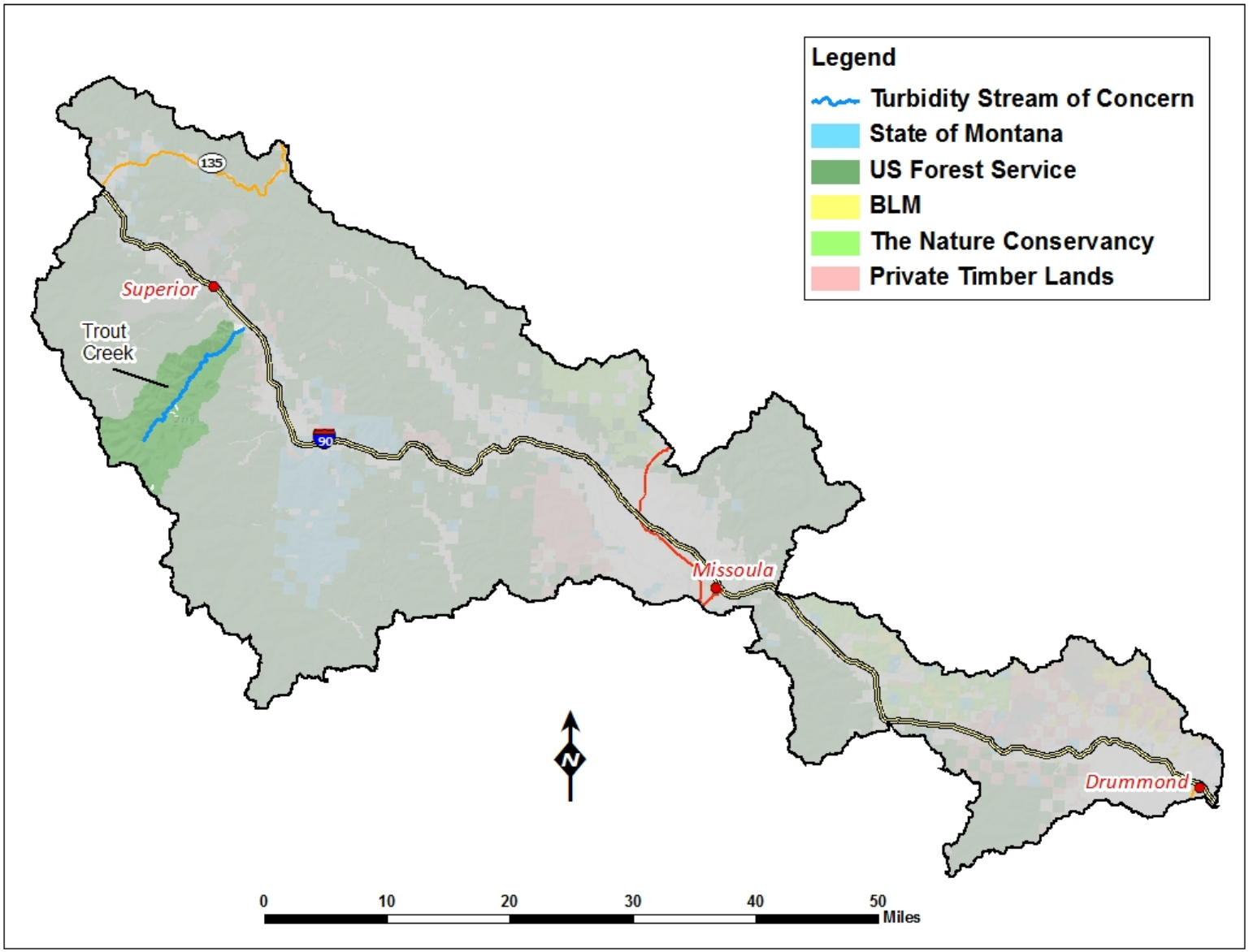
Grant Creek

Sediment Source Assessment, Allocations and TMDL for Grant Creek				
Sediment Sources		Current Estimated Load (tons/yr)[a]	Total Allowable Load (tons/yr)[a]	Percent reduction
LA	Roads	0.4	0.1	75%
	Streambank Erosion	1938.2	1224.5	37%
	Upland Sediment Sources	296	205.1	31%
Point source WLA	Missoula MS4 (MTR040007)	16.6	7.8	53%
	Construction Storm Water Permit (MTR100000)	6.2	2.2	65%
	Industrial Storm Water Permit (MTR000095)	0.6	0.6	0%
Total Sediment Load		2258.6	1440.2	36%
[a] Values were rounded to the nearest tenth, differences in loads presented in this table may not correspond to the identified percent reduction				

Petty Creek

Sediment Source Assessment, Allocations and TMDL for Petty Creek				
Sediment Sources		Current Estimated Load (tons/yr)[a]	Total Allowable Load (tons/yr)[a]	Percent reduction
LA	Roads	3.7	1.0	76%
	Streambank Erosion	3016.7	2103.4	30%
	Upland Sediment Sources	2442.3	1607.2	34%
Point source WLA	Construction Storm Water Permit (MTR100000)	30.1	10.5	65%
	Industrial Storm Water Permit (MTR000095)	5.5	5.5	0%
Total Sediment Load		5498.3	3727.6	32%
[a] Values were rounded to the nearest tenth, differences in loads presented in this table may not correspond to the identified percent reduction				

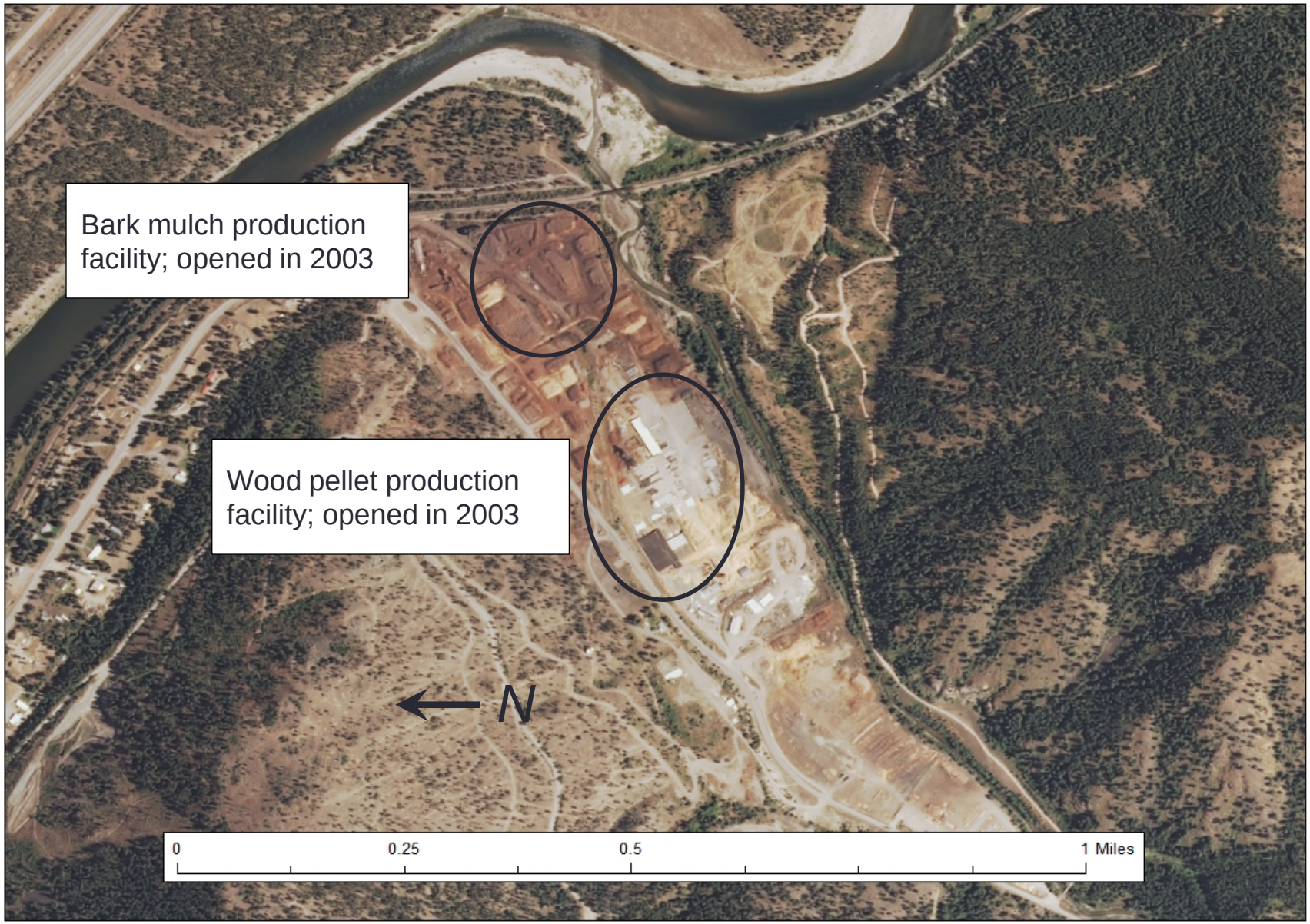
Trout Creek
Turbidity TMDL Development


Legend
Turbidity Stream of Concern
State of Montana
US Forest Service
BLM
The Nature Conservancy
Private Timber Lands
135
Superior
Trout Creek
90
Missoula
Drummond
N
0
10
20
30
40
50
Miles

Turbidity WQ Standard

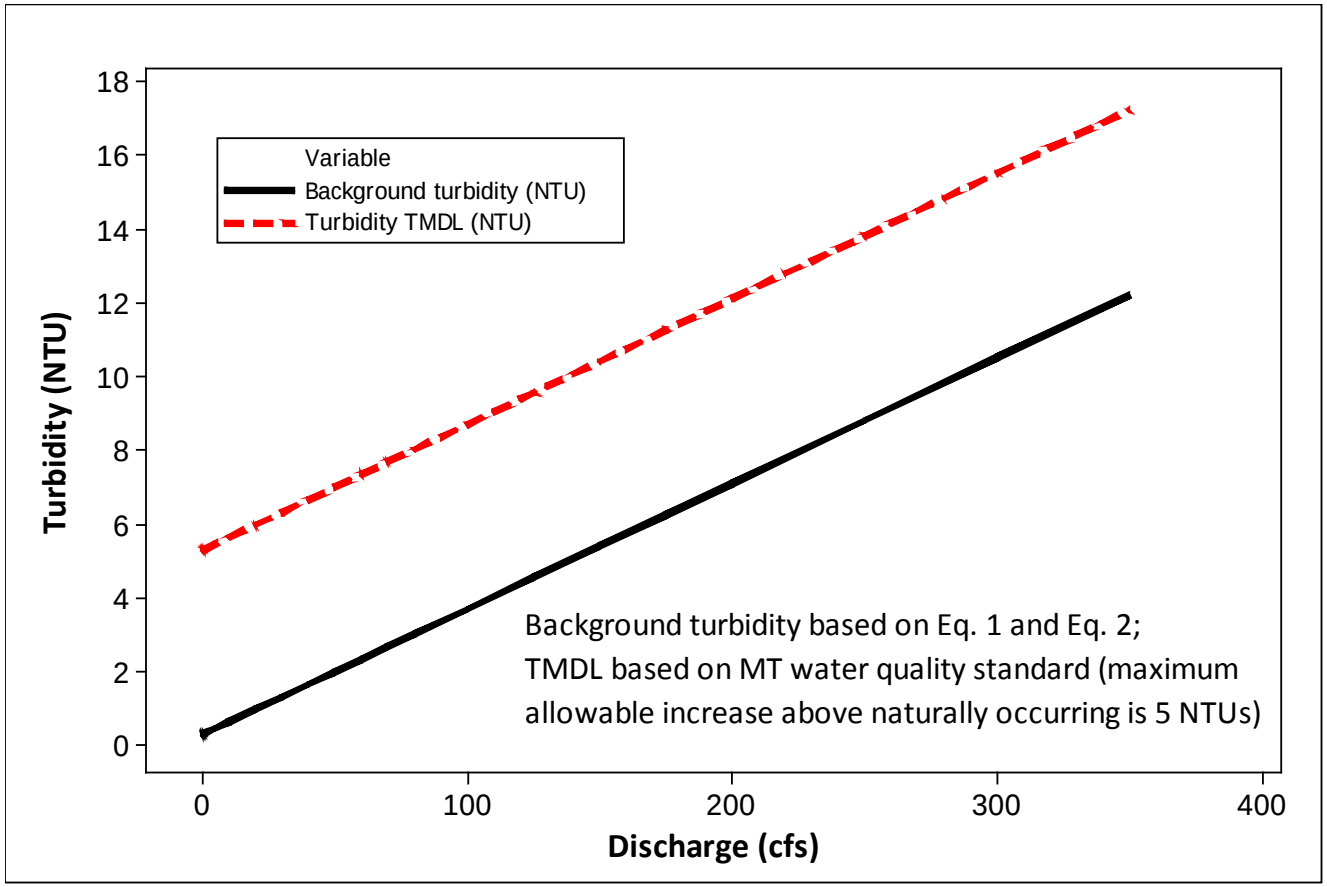
The Montana turbidity standard for B-1 waterbodies specifies:

The maximum allowable increase above naturally occurring turbidity is five nephelometric turbidity units except as permitted in 75-5-318, MCA [17.30.623(d)].


Bark mulch production facility; opened in 2003
Wood pellet production facility; opened in 2003
N
0
0.25
0.5
1 Miles

Turbidity TMDL

- Used reference dataset from inactive USFS experimental watershed (Hayden Creek, ID)
  - Established discharge/turbidity prediction from Hayden Creek for Trout Creek turbidity TMDL



Temperature TMDLs

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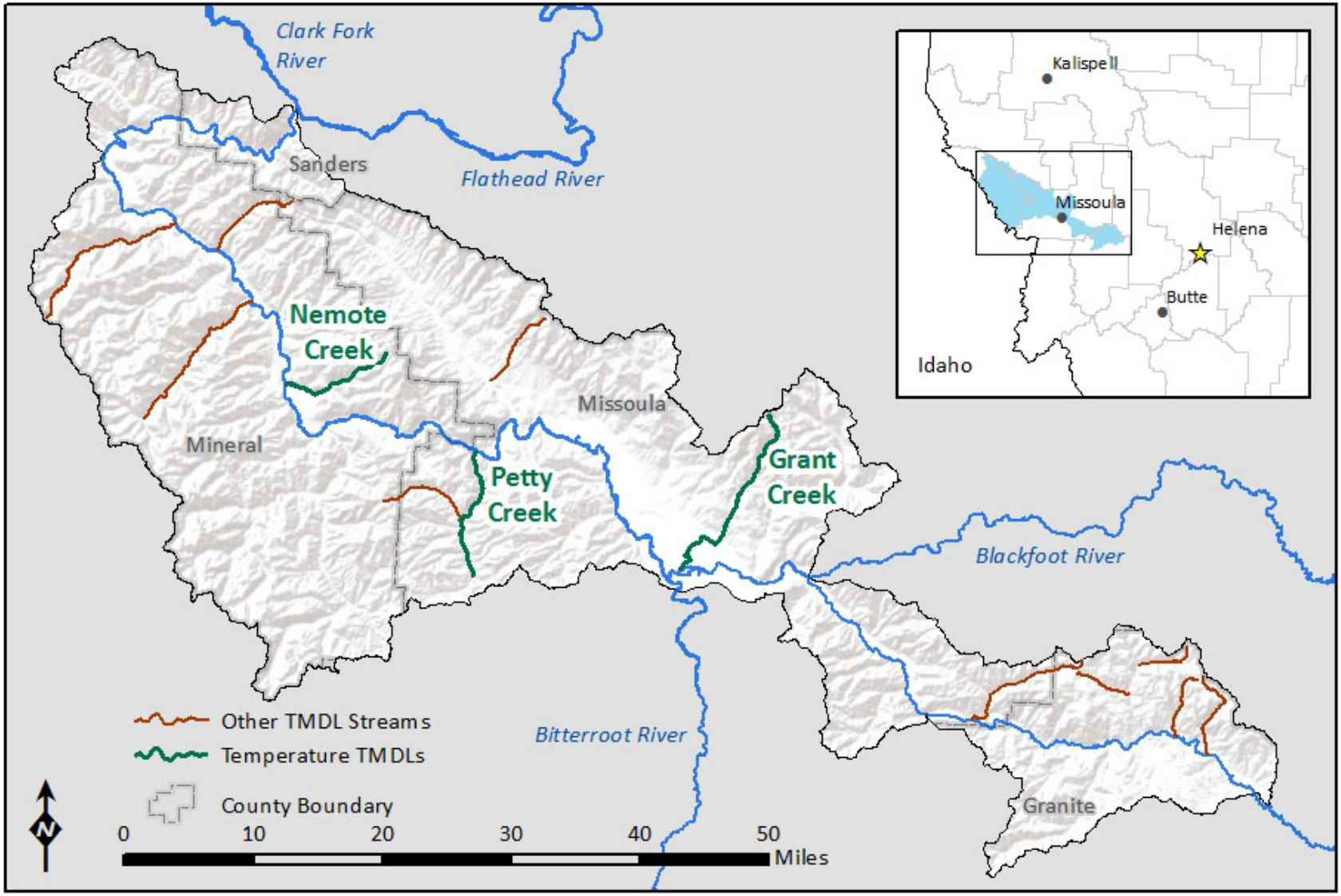
Temperature Impairments



Temperature Standard

- Allowable increase above "naturally occurring"
- Amount of allowable increase varies

Temperature Standard

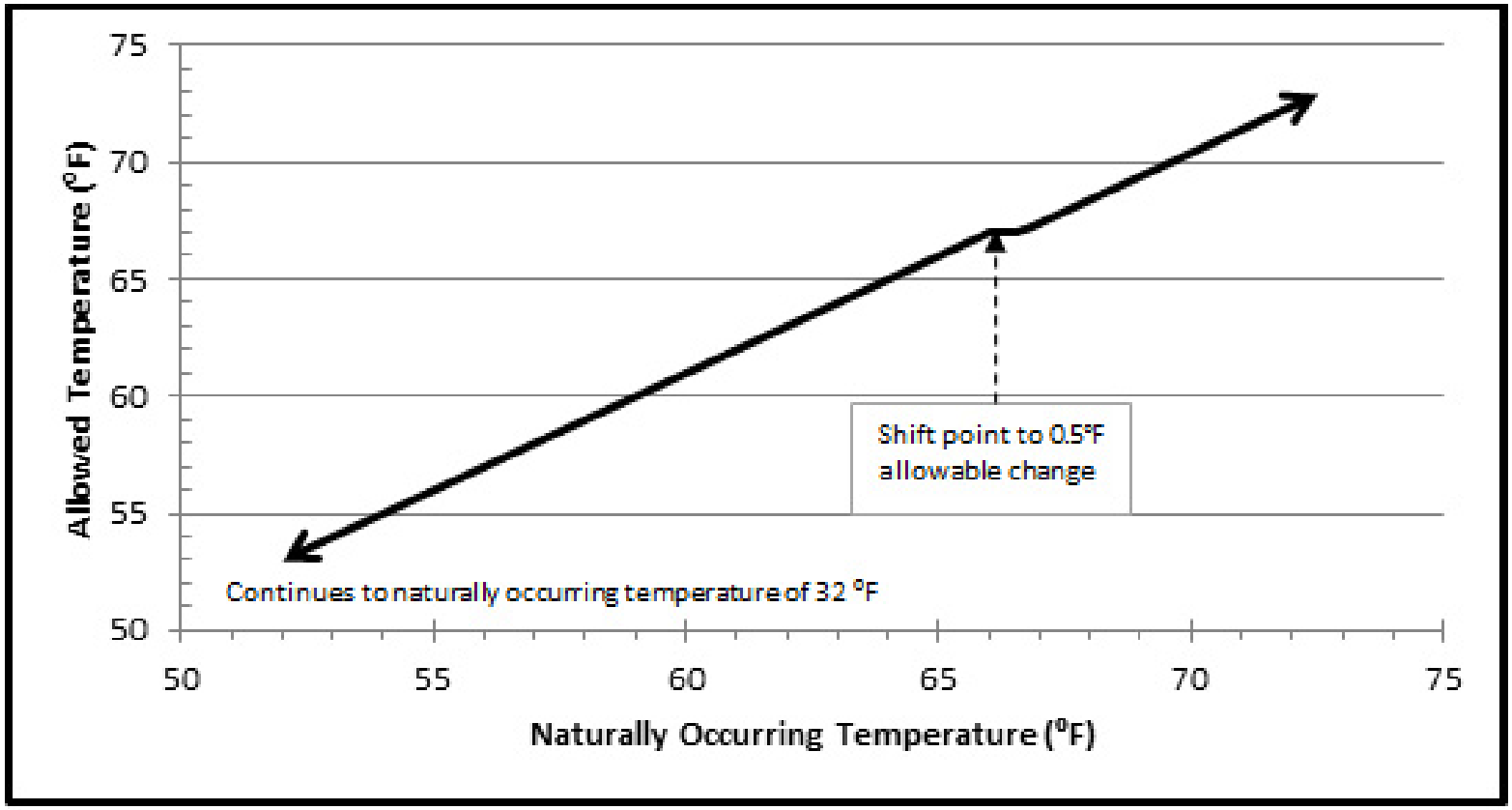
17.30.623(2)(e)

A 1 ^{o}F maximum increase above naturally occurring water temperature is allowed within the range of 32 ^{o}F to 66 ^{o}F;

within the naturally occurring range of 66 to 66.5 ^{o}F, no discharge is allowed which will cause the water temperature to exceed 67 ^{o}F;

and where the naturally occurring water temperature is 66.5 ^{o}F or greater, the maximum allowable increase in water temperature is 0.5 ^{o}F.

Temperature Standard



Naturally Occurring temperatures

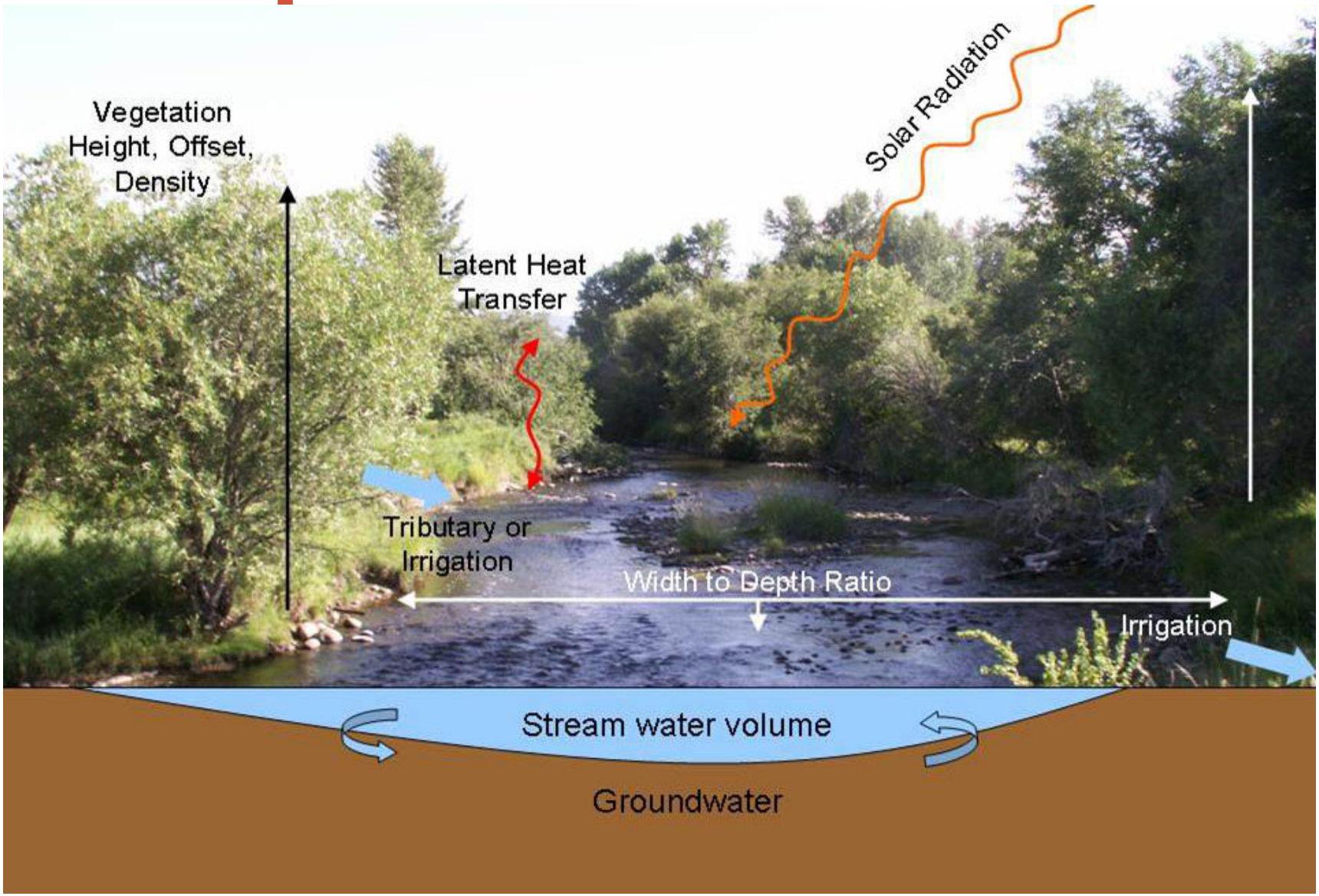
- Those resulting from application of all reasonable land, soil, and water conservation
- Accounts for timber harvest, agriculture, etc.

Source Assessments

Field Data

- Continuous Temperature Monitoring
- Shade
- Stream Flow
- Riparian Condition

Temperature Influences



QUAL2K Modeling

Use data from the hottest part of the year to predict temperature changes

Allows changing scenarios to predict effects of BMP implementation

Predicts *Naturally Occurring* T°

QUAL2K Model Scenarios

Existing (baseline) conditions

15% reduction in withdrawals

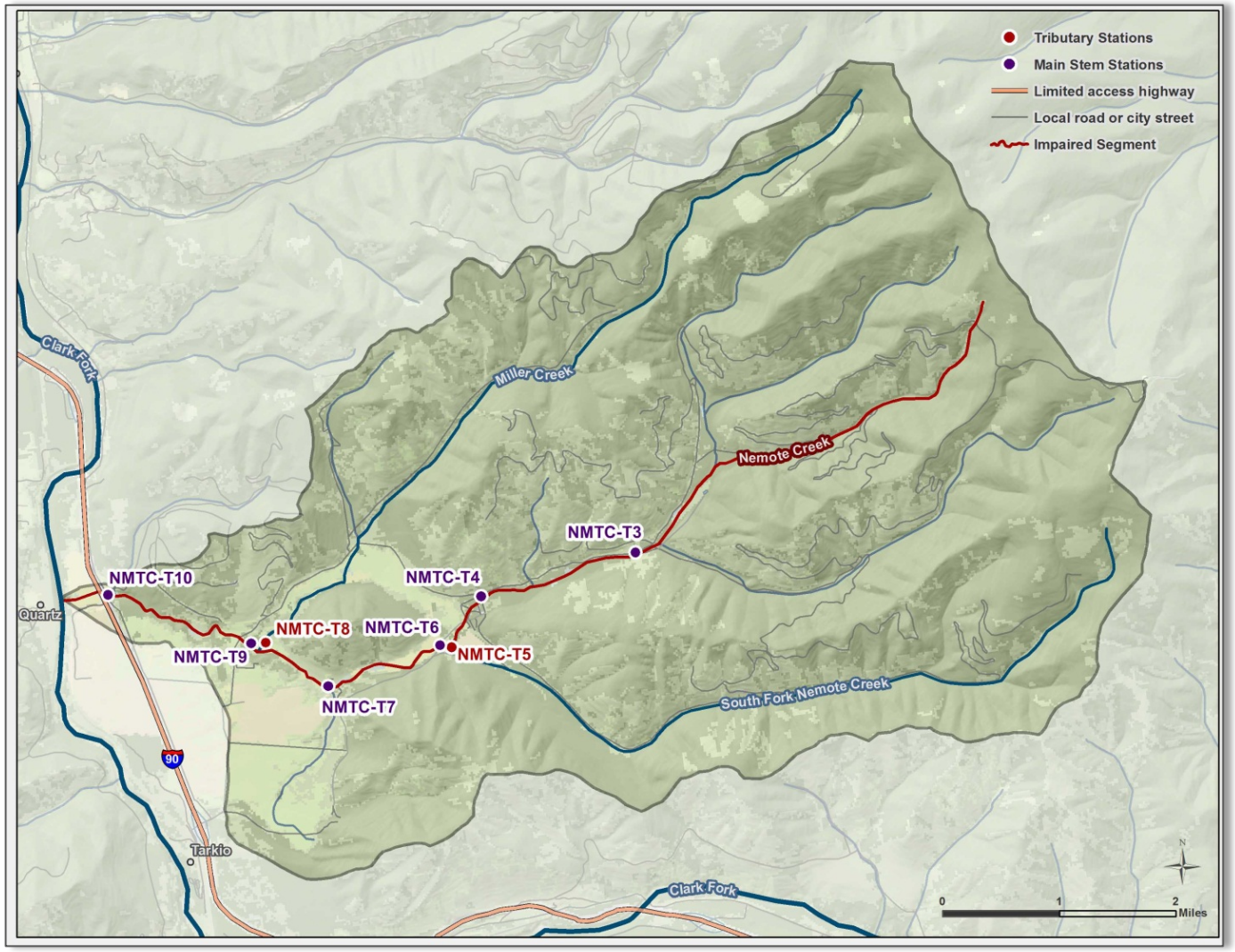
Improved riparian shade

Combination of 2 & 3: naturally occurring conditions

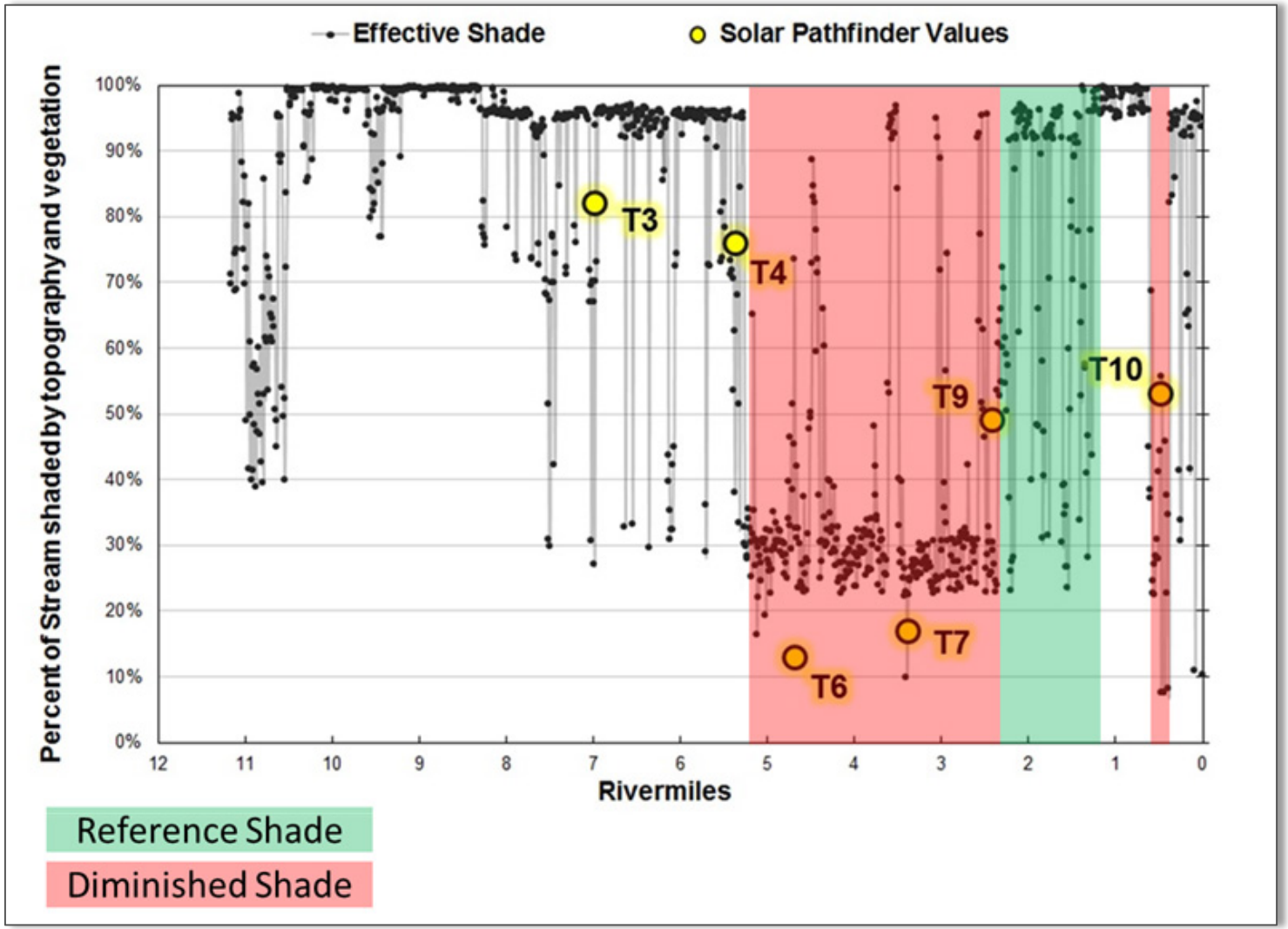
Nemote & Petty Creek Targets

Target Parameter	Target Value
Primary Target	
Allowable Human-Caused Temperature Change	If the naturally occurring temperature is less than 66°F, the maximum allowable increase is 1°F. Within the naturally occurring temperature range of 66–66.5°F, the allowable increase cannot exceed 67°F. If the naturally occurring temperature is greater than 66.5°F, the maximum allowable increase is 0.5°F.
Temperature-Influencing Targets: Meeting both will meet the primary target	
Riparian Health - Shade	X% effective shade based on reference reaches
Width/Depth Ratio	Rosgen B & C stream types with bankfull width < 30ft: ≤ 21 Rosgen B & C stream types with bankfull width > 30ft: ≤ 32

Nemote Creek



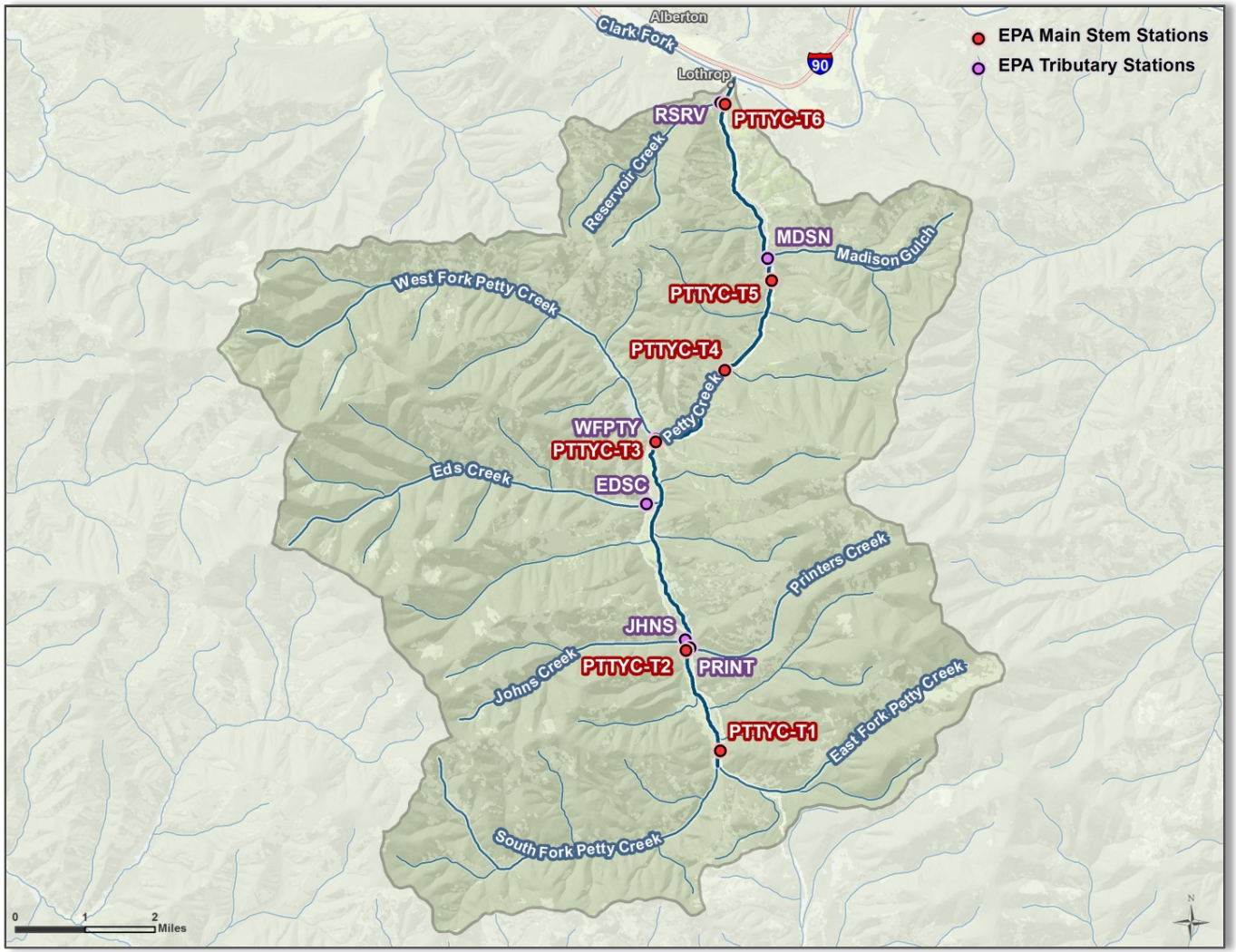
Nemote Shade Scenario



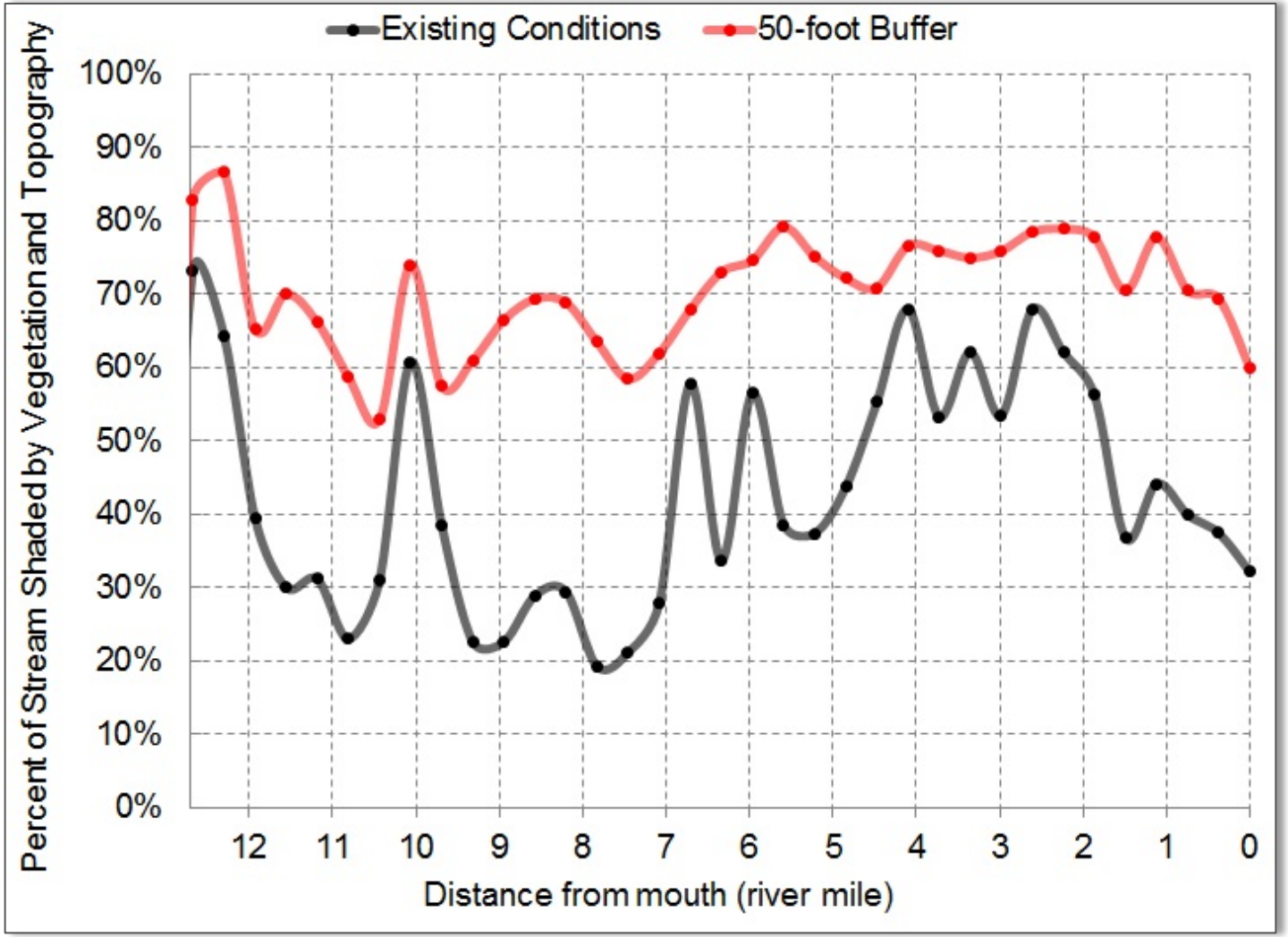
Nemote Creek Targets

Target Parameter	Existing Condition	Target Value
Allowable Human-Caused Temperature Change	Max Δ of 8.6°F	Δ of <1°F (under current maximum temperatures)
Effective Shade	46-77%	77-80%
Water Use	2.33 cfs daily	15% water savings from improved irrigation delivery and application efficiencies (any voluntary water savings and subsequent in stream flow augmentation must be done in a way that protects water rights)
Width-to-Depth Ratio	Unassessed	Rosgen B & C stream types with bankfull width < 30ft: ≤ 21 Rosgen B & C stream types with bankfull width > 30ft: ≤ 32

Petty Creek


EPA Main Stem Stations
EPA Tributary Stations
Alberton
Clark Fork
Lothrop
90
RSRV
PTTYC-T6
Reservoir Creek
MDSN
Madison Gulch
West Fork Petty Creek
PTTYC-T5
PTTYC-T4
Petty Creek
WFPTY
PTTYC-T3
Eds Creek
EDSC
Printers Creek
JHNS
Johns Creek
PTTYC-T2
PRINT
East Fork Petty Creek
PTTYC-T1
South Fork Petty Creek
0
1
2
Miles
N

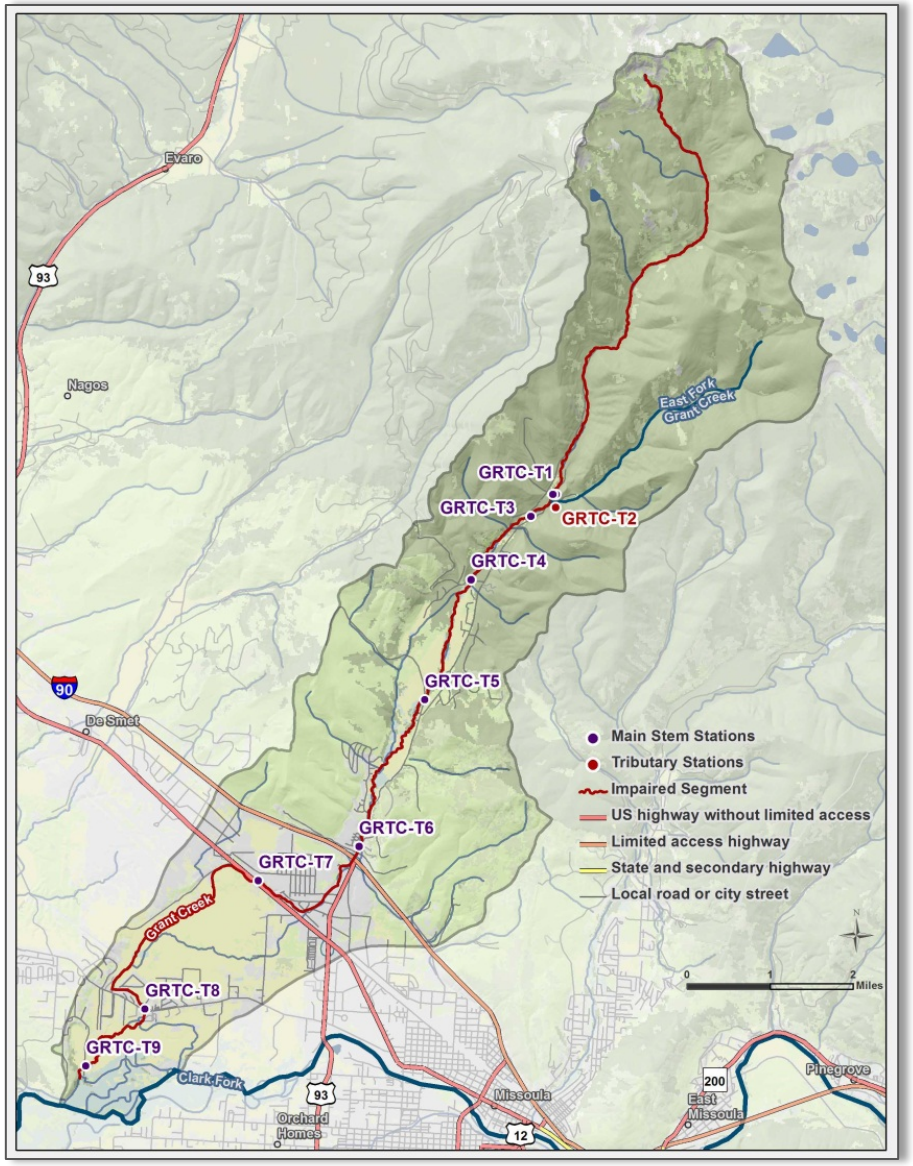
Petty Shade Scenario



Petty Creek Targets

Target Parameter	Existing Condition	Target Value
Allowable Human-Caused Temperature Change	Max Δ of 3.8°F	Δ of <1°F (under current maximum temperatures)
Effective Shade	46-77%	69-83%
Water Use	6.01 cfs daily	15% water savings from improved irrigation delivery and application efficiencies (any voluntary water savings and subsequent in stream flow augmentation must be done in a way that protects water rights)
Width-to-Depth Ratio	Meeting target	Rosgen B & C stream types with bankfull width < 30ft: ≤ 21 Rosgen B & C stream types with bankfull width > 30ft: ≤ 32

Grant Creek


Evaro
93
Nagos
East Fork Grant Creek
GRTC-T1
GRTC-T3
GRTC-T2
GRTC-T4
GRTC-T5
90
De Smet
GRTC-T6
GRTC-T7
Grant Creek
GRTC-T8
GRTC-T9
Clark Fork
93
Orchard Homes
Missoula
12
200
East Missoula
Pinegrove
Main Stem Stations
Tributary Stations
Impaired Segment
US highway without limited access
Limited access highway
State and secondary highway
Local road or city street
N
0
1
2
Miles

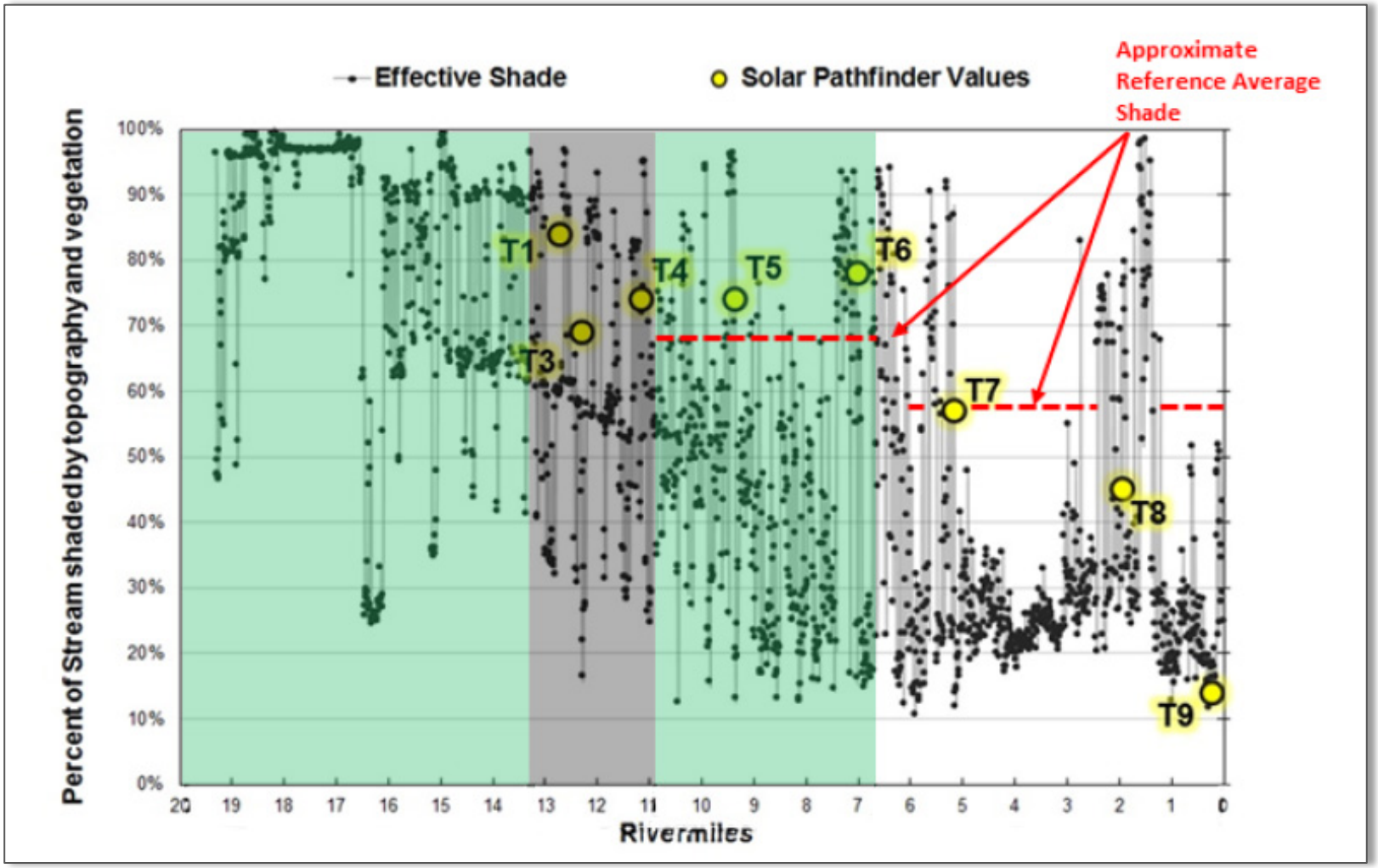
Grant Creek Targets

Target Parameter	Target Value
Primary Target	
Allowable Human-Caused Temperature Change	If the naturally occurring temperature is less than 66°F, the maximum allowable increase is 1°F. Within the naturally occurring temperature range of 66–66.5°F, the allowable increase cannot exceed 67°F. If the naturally occurring temperature is greater than 66.5°F, the maximum allowable increase is 0.5°F.
Temperature-Influencing Targets: Meeting all four will meet the primary target	
Riparian Health - Shade	69%-59% effective shade, based on reference reaches
Width/Depth Ratio	Rosgen types A & B: a width/depth ratio ≤ 15 Rosgen types C & E, where bankfull width > 12ft: a width/depth ratio ≤ 22
Missoula MS4	Follow the minimum control measures provided in the MPDES permit authorization for permit MTR04007, or any updated runoff reduction or initial flush stormwater capture control measures in subsequent permit renewals. Renewed permits must contain initial flush mitigation measures.
MPDES Permit MT0029840	Follow the conditions of the permit: 60 gpm (0.13 cfs), no warmer than 58°F.

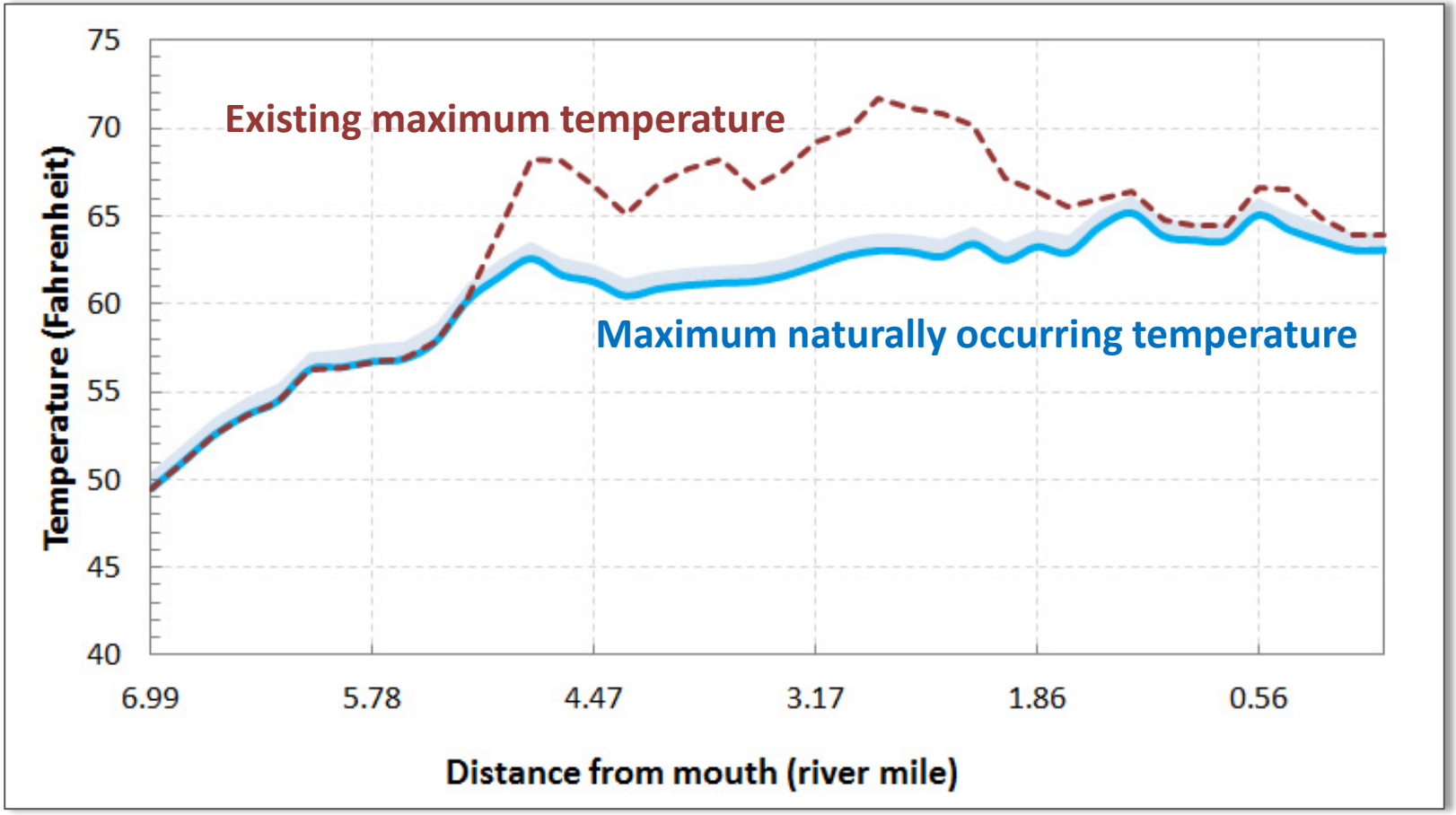
Grant Creek Targets

Target Parameter	Existing Condition	Target Value
Allowable Human-Caused Temperature Change	Max Δ of 2.1°F	Δ of <1°F (under current maximum temperatures)
Effective Shade	34-69%	59-70%
Water Use	24.6 cfs daily	15% water savings from improved irrigation delivery and application efficiencies (any voluntary water savings and subsequent in stream flow augmentation must be done in a way that protects water rights)
Width-to-Depth Ratio	Not meeting target in upper/middle	Rosgen types A & B: a width/depth ratio ≤ 15 Rosgen types C & E, where bankfull width > 12ft: a width/depth ratio ≤ 22
Missoula MS4		
MPDES Permit MT0029840	Average 55 gpm; daily max temp 52°F	Follow the conditions of the permit: 60 gpm (0.13 cfs), no warmer than 58°F.

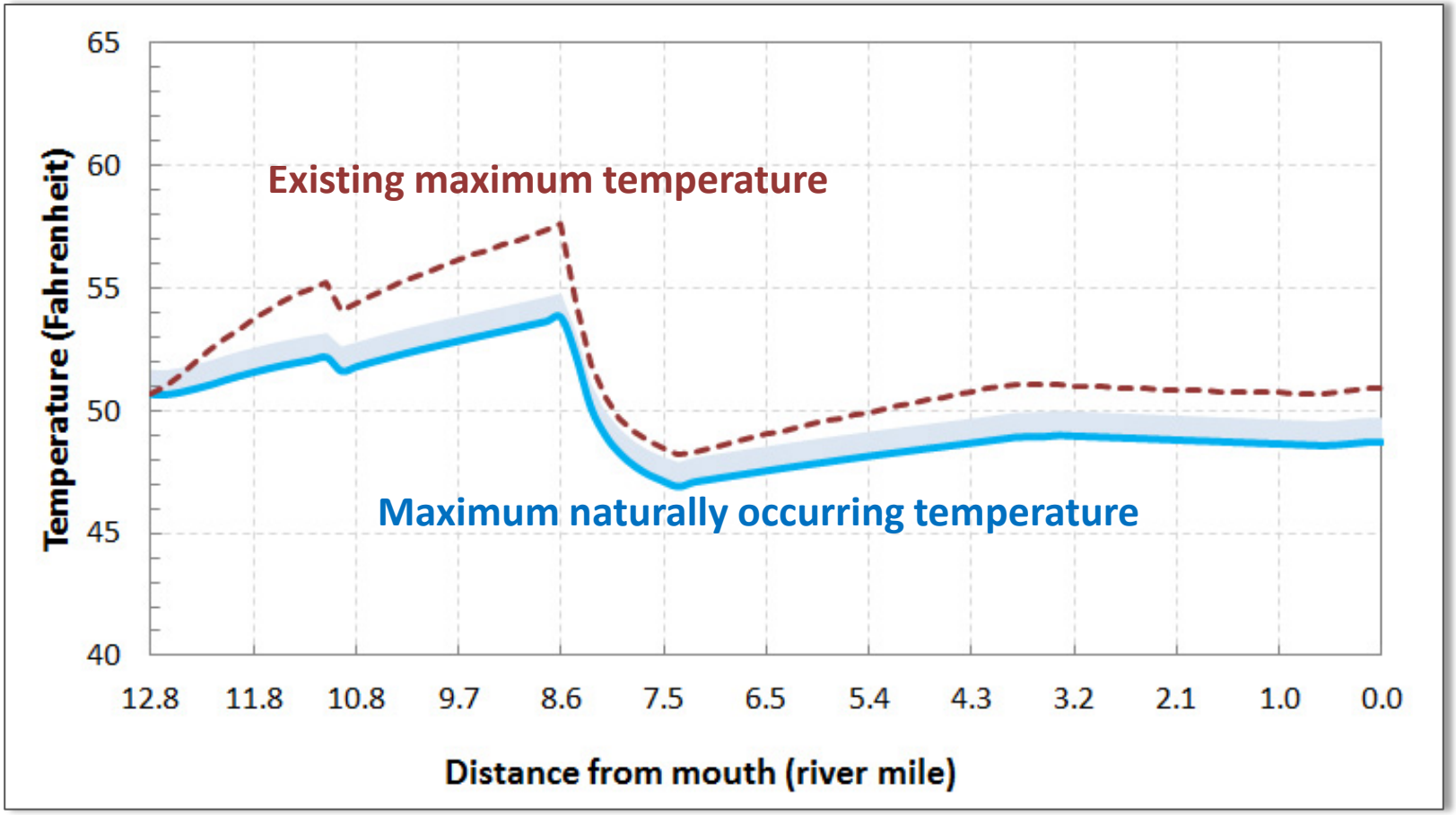
Grant Shade Scenario



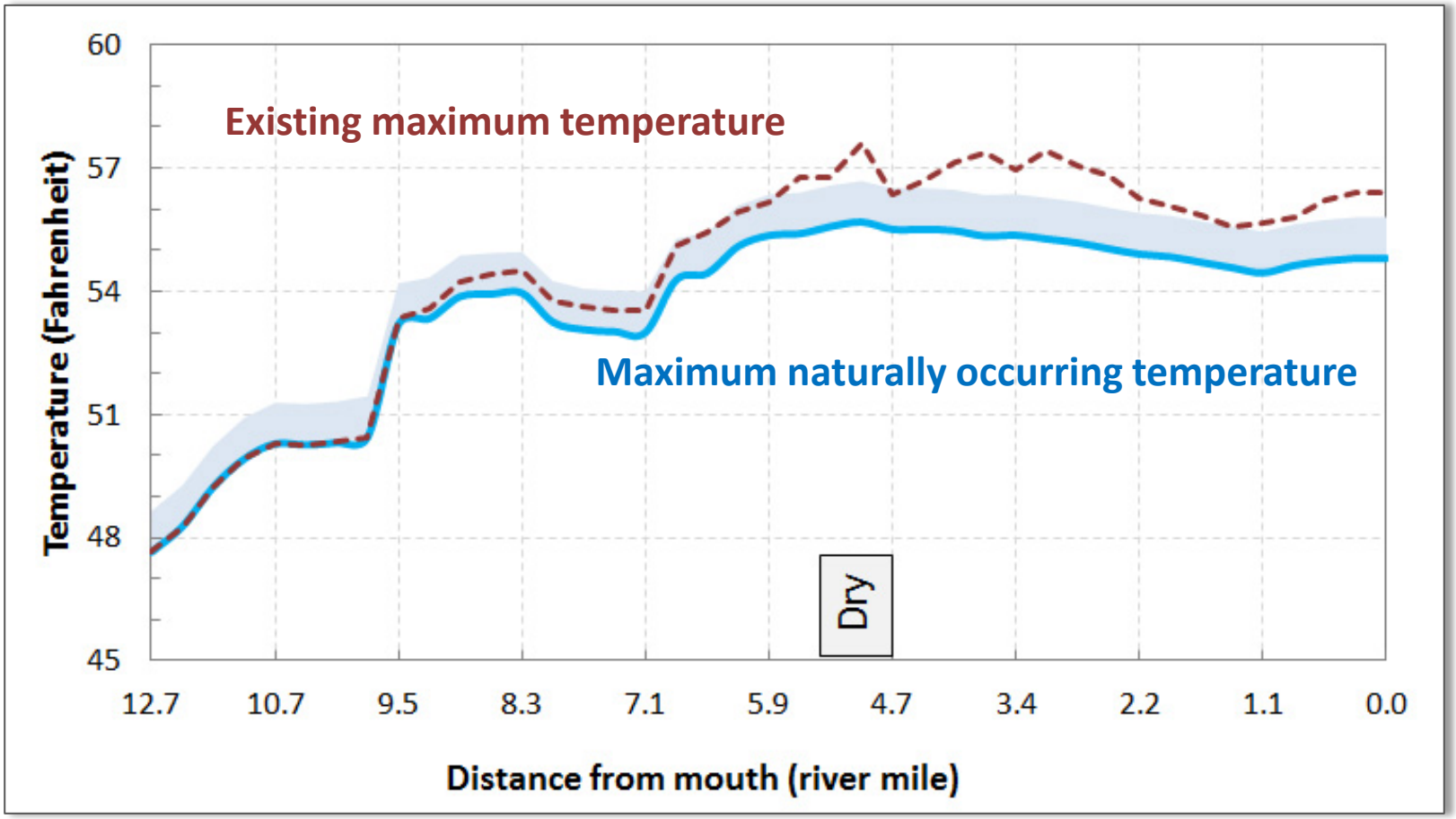
Nemote Allowable T°



Petty Allowable T°



Grant Allowable T°



Temperature TMDLs

Nemote & Petty Creeks:

$TMDL = LA_{Composite}$

Grant Creek:

$TMDL = LA_{Composite} + WLA_{MS4} + WLA_{MT0029840}$

TMDL = Sum of all allocations

Grant Temperature TMDL

Hot, dry summer: Flow of 1.23 cfs at river mile 3.13
Modeled naturally occurring temperature of 53.3°F

The example instantaneous TMDL is:
TMDL = ((53.3 + 1.0) - 32)*(5/9) *1.23 * 28.3 = 450 kcal/s

The example instantaneous WLA $_{MT0029840}$ is:
TMDL = ((58.0) - 32)*(5/9) *0.13 * 28.3 = 53 kcal/s

The example instantaneous LA $_{composite}$ is:
TMDL = 450 kcal/s - 53 kcal/s = 397 kcal/s

Converted to a daily load, the TMDL is:
TMDL = 450 kcal/s * 86,400 s/day = 38,880,000 kcal/day

Nutrient TMDLs

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Summary of Nutrient TMDL Development

Waterbody Segment	2014 Nutrient Impairment Causes	TMDLs Prepared
DRY CREEK	TN	TN
NEMOTE CREEK	TN, TP, Chlorophyll-a[1]	TN, TP
WEST FORK PETTY CREEK	TP, Chlorophyll-a[1]	TP
STONY CREEK	TP	TP
GRANT CREEK	TN, NO_3+NO_2, Excess Algal Growth[1]	TN[2]
TENMILE CREEK	TP	TP
DEEP CREEK	NO_3+NO_2, Chlorophyll-a[1]	NO_3+NO_2
RATTLER GULCH	TP, Chlorophyll-a[1]	TP

[1] Non-pollutant; addressed via nutrient TMDLs

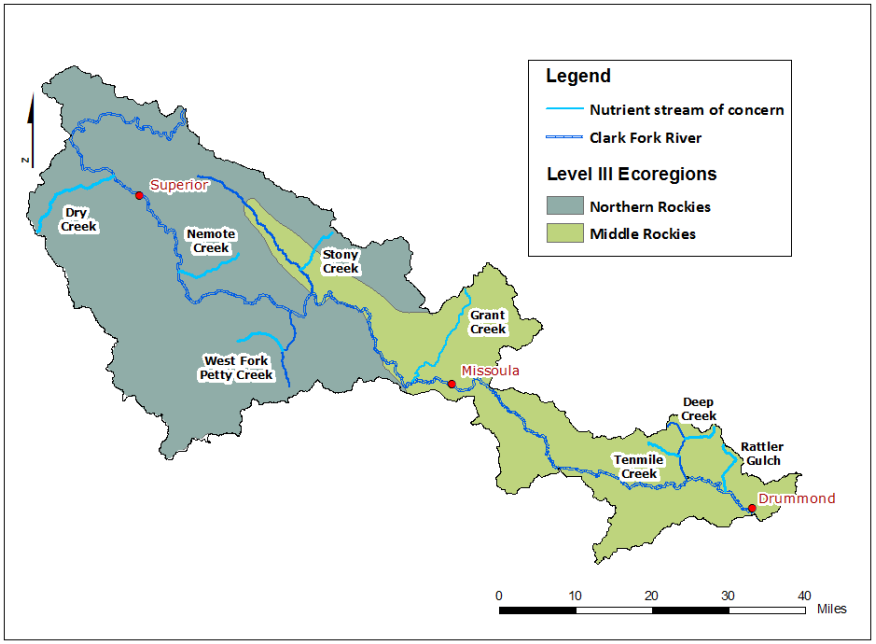
[2] NO_3+NO_2 remains a nutrient impairment for Grant Creek; the TN TMDL will address both TN and NO_3+NO_2.

Cedar and Petty Creeks were reassessed for nutrients during the 2014 cycle and found to be not impaired for nutrients; no nutrient TMDLs were written for them.

Numeric Nutrient Water Quality Targets

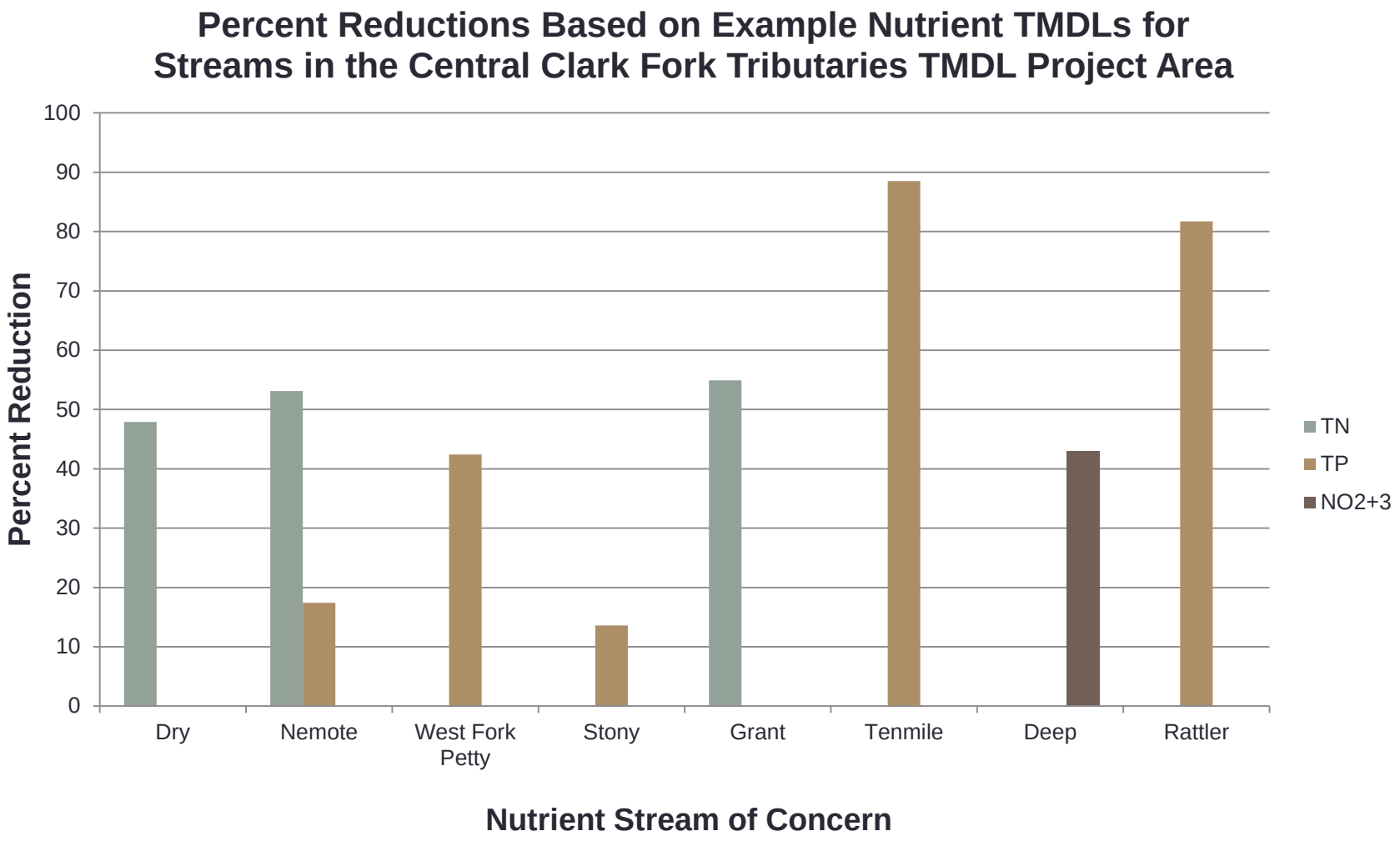
Based on Level III Ecoregion:

Nutrient streams of concern in the Central Clark Fork Tributaries TMDL Project Area are in the Middle Rockies and Northern Rockies Ecoregions



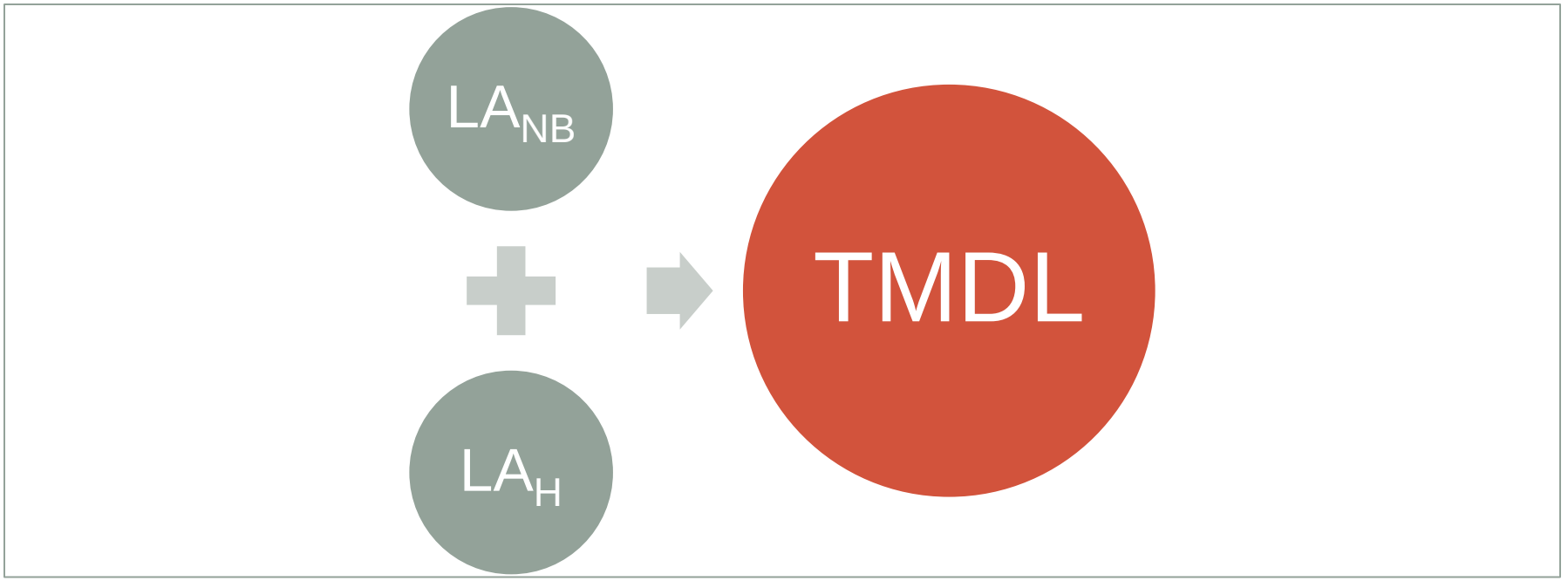
Parameter	Target Values	
	Northern Rockies (Level III)	Middle Rockies (Level III)
Total Nitrogen (TN)	≤ 0.275 mg/L	≤ 0.300 mg/L
Total Phosphorus (TP)	≤ 0.025 mg/L	≤ 0.030 mg/L
Nitrate/Nitrite (NO_3+NO_2)	≤ 0.100 mg/L	≤ 0.100 mg/L

Central Clark Fork Tribs Nutrient Reductions



Allocations

TMDL = Load allocation to all nonpoint sources including natural background sources



Grant Creek is the only TMDL in this project area with a point source discharge for nutrients:

$$TMDL = LA_{NB} + LA_{H(ag/mining/forest/septic)} + WLA_{MissoulaMS4}$$

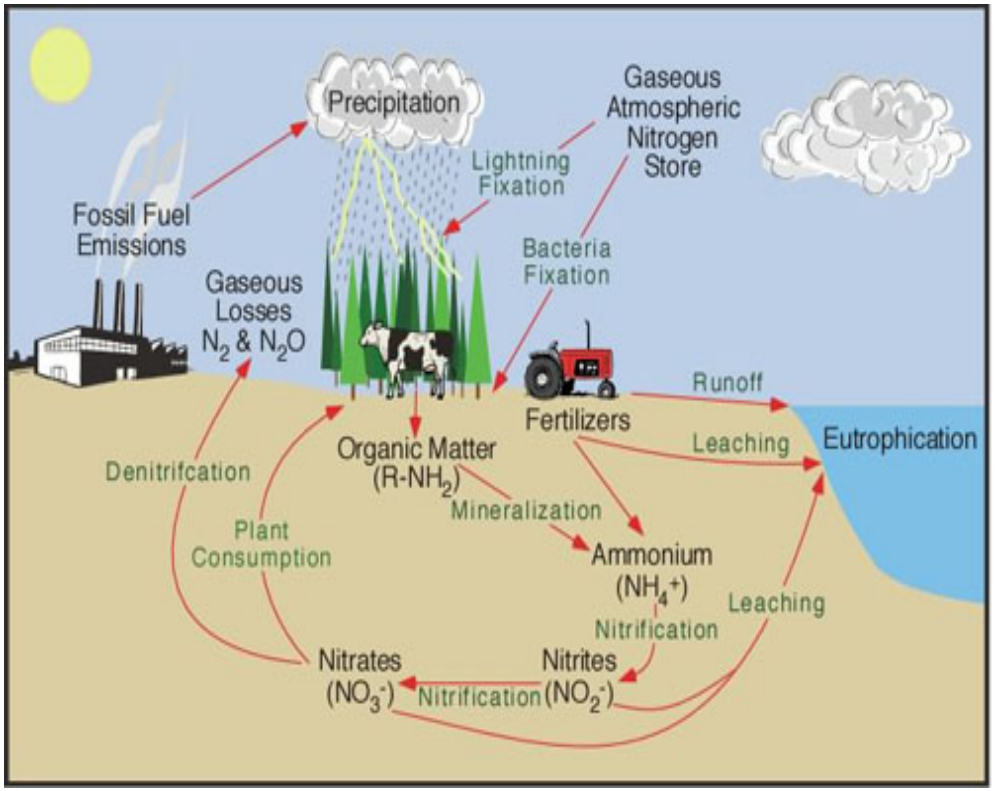
Nutrient Sources

Natural Sources (natural background)

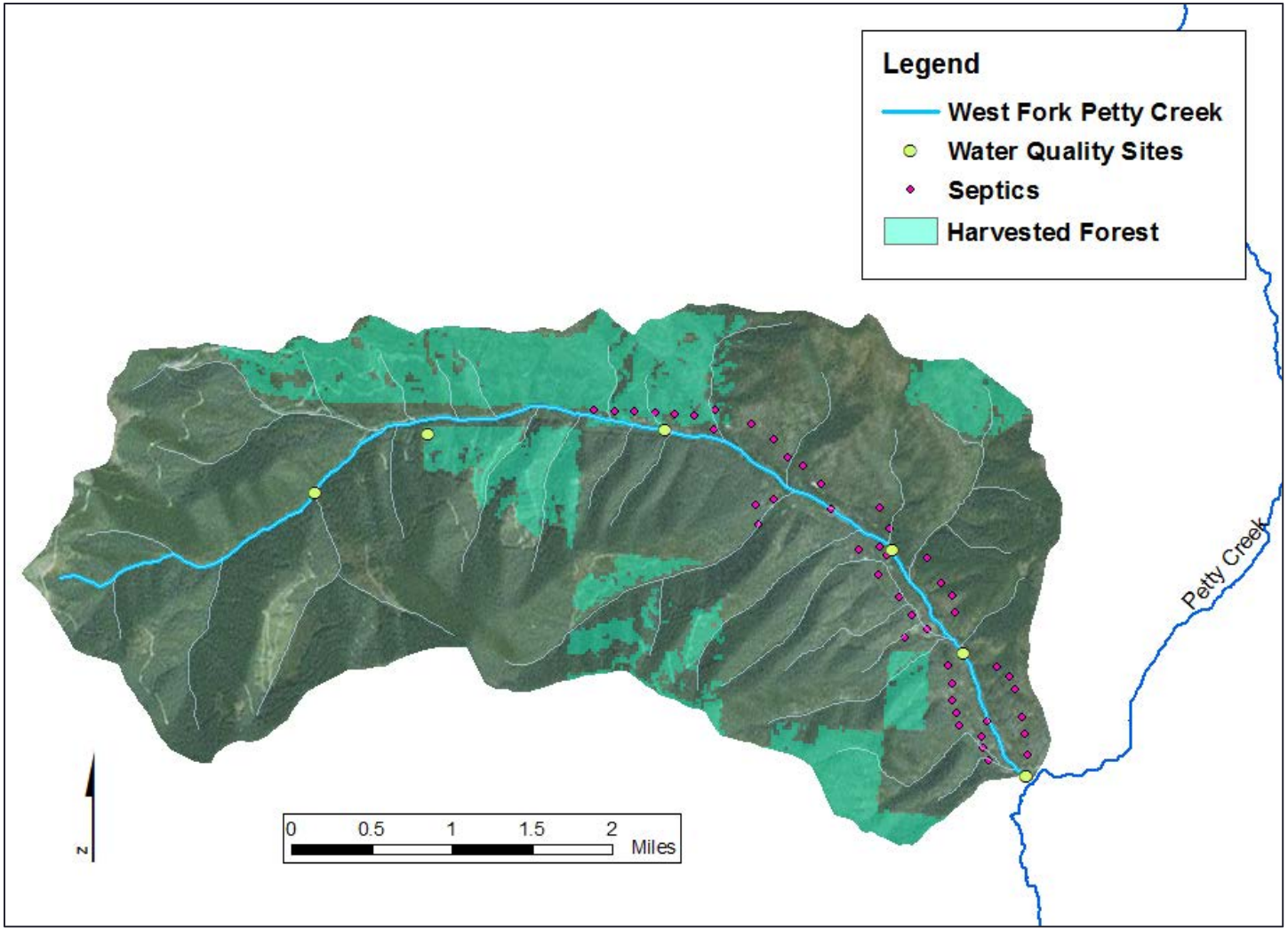
- Result of regional and local geology, soils, climatic and hydrologic processes (Tenmile Creek, Rattler Gulch)
- Natural biochemical processes
- Natural vegetative decay

Potential Human Caused Sources

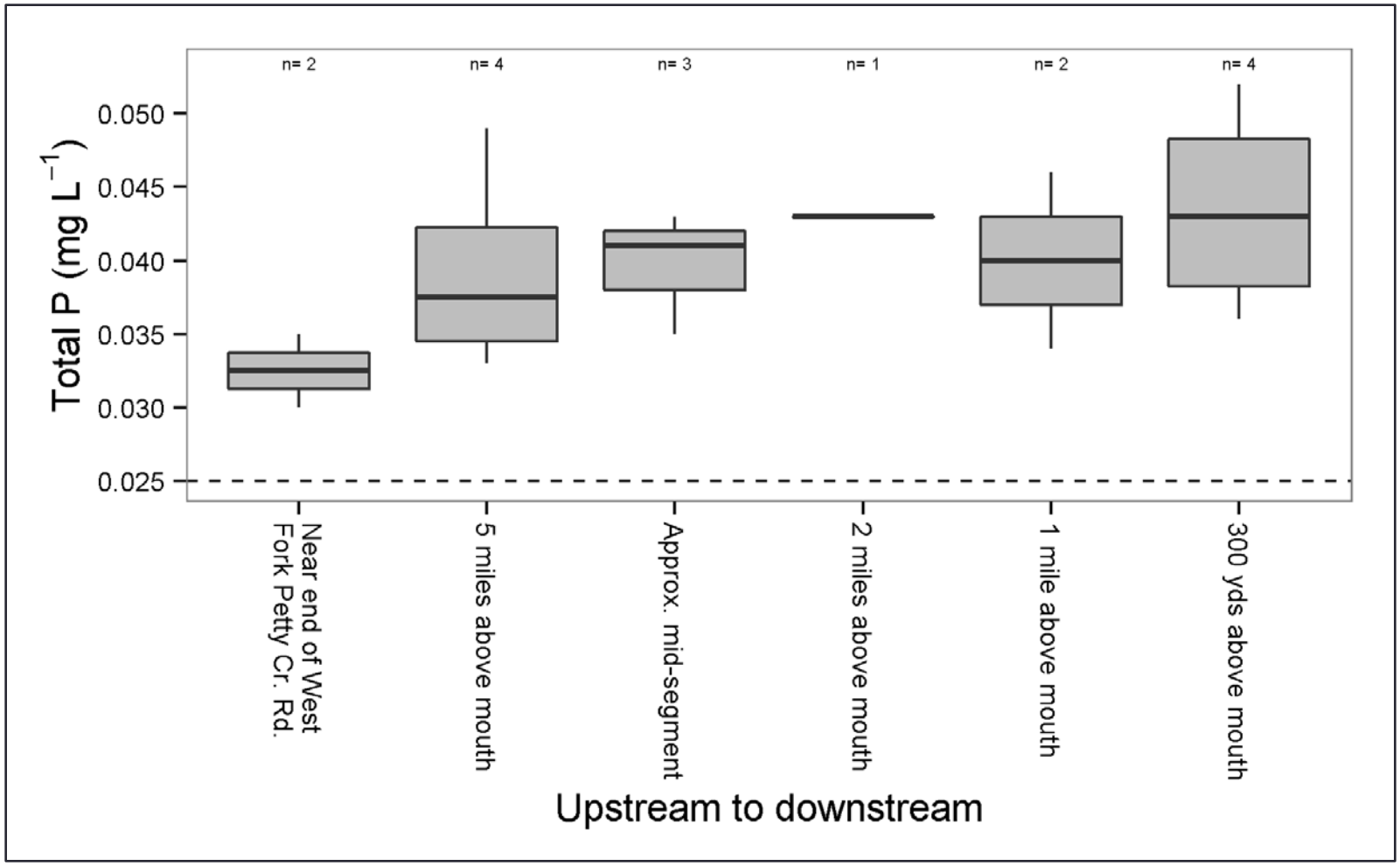
- Agricultural Land Use
  - Grazing practices
  - Domestic animal waste
  - Vegetative decay (feeding operations, crops)
  - Crop production & fertilization
- Historical Mining and Milling
  - 1860's- 1960's (lead, zinc, gold, silver, Iron)
  - Waste rock and tailings still present
- Silvicultural Practices
  - Timber harvest
  - Forest Fires/Prescribed Burns
- Septic systems
- Residential Development



West Fork Petty Creek – TP TMDL



West Fork Petty Creek TP



West Fork Petty Creek Source Assessment

- Source assessment examined forest practices, agriculture, mining and septic density
- Identified sources based on aerial images, land use information, water quality data assessments (i.e., nutrient concentrations from upstream to downstream), and field observations
- The primary land uses and most likely significant nutrient sources in West Fork Petty Creek watershed are silviculture activities and septic.

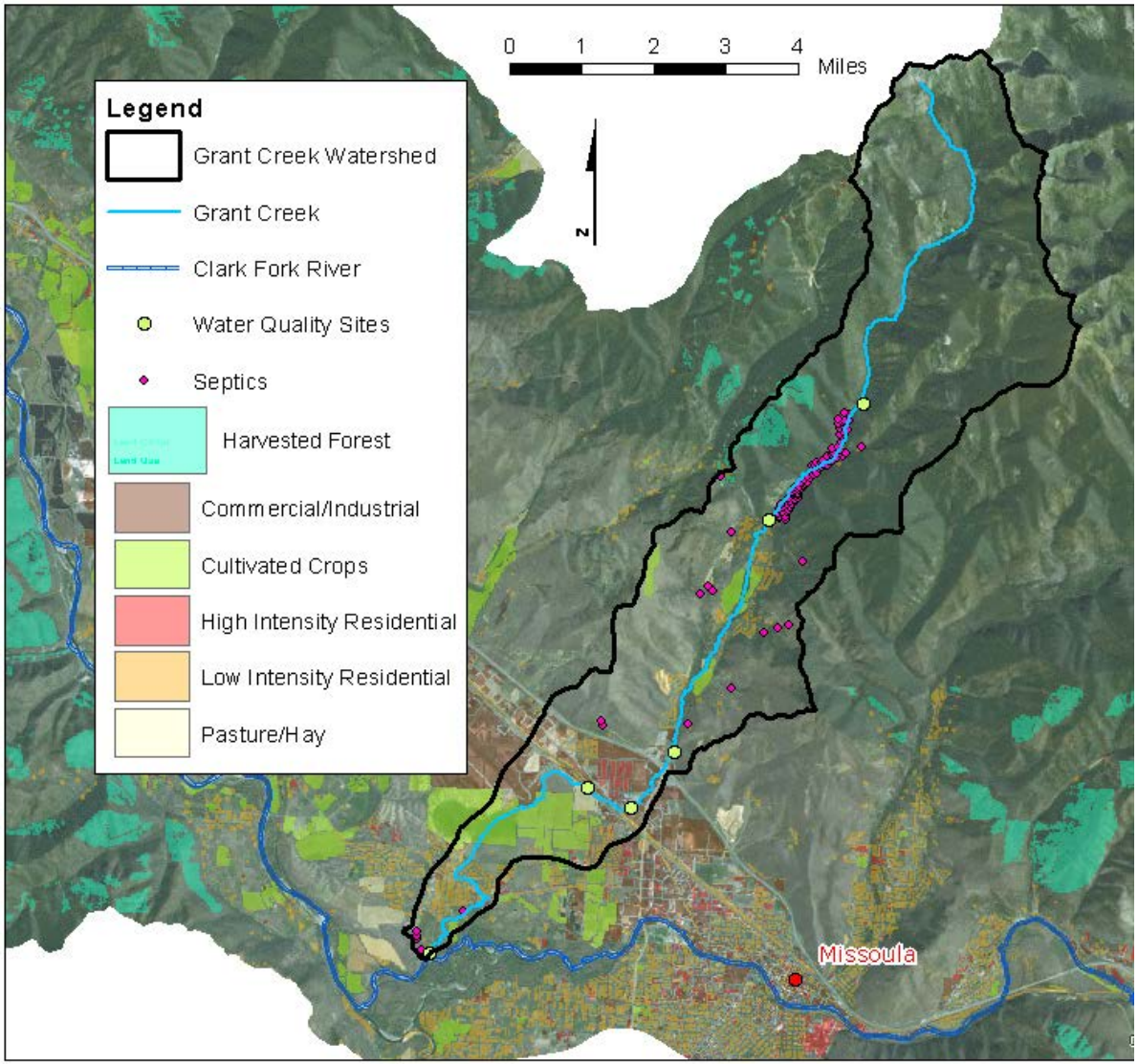
West Fork Petty TP TMDL

- Example TMDL calculated based on the flow that is associated with the median concentration of samples that exceed the target
- Natural Background = 0.006 mg/L

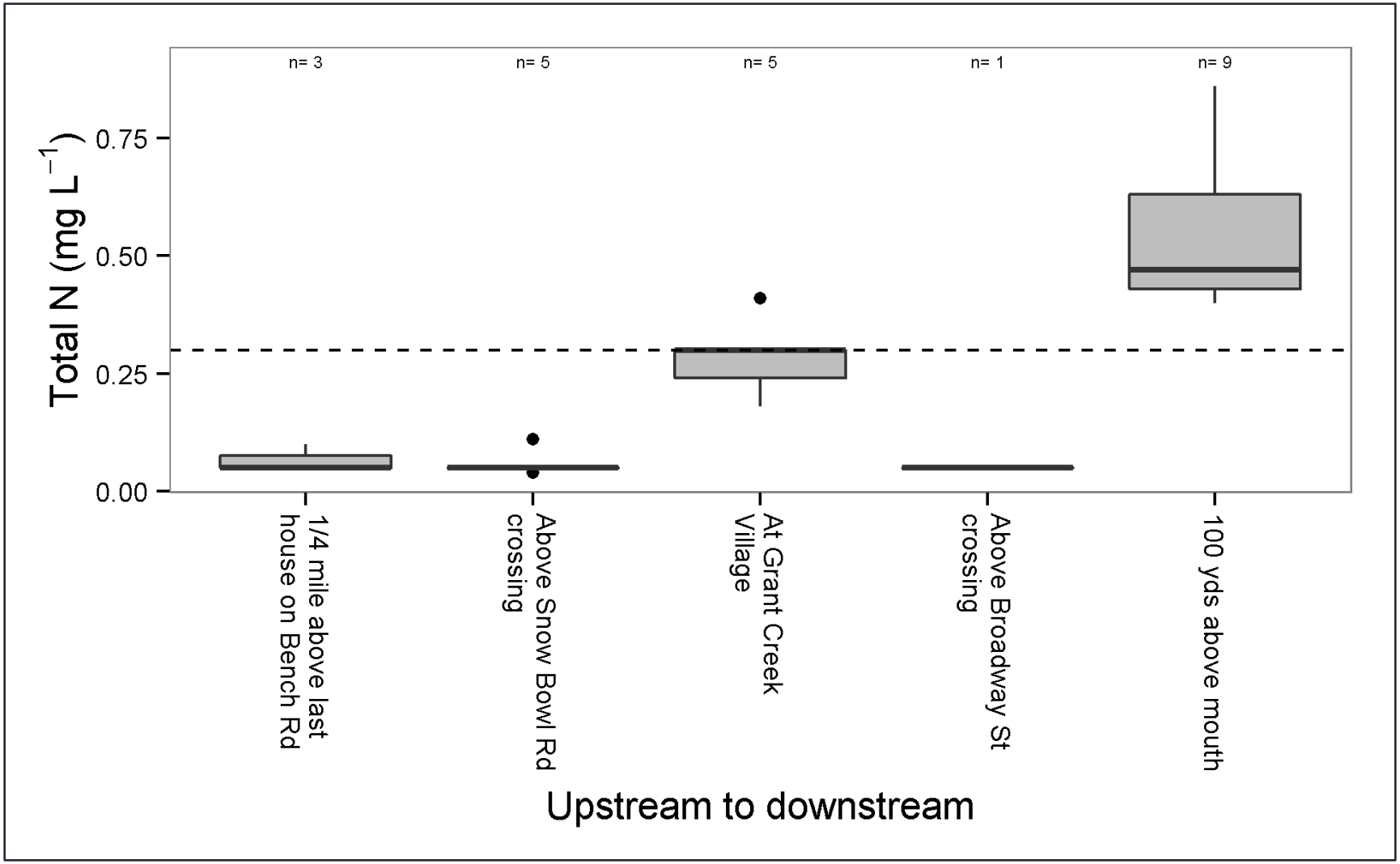
Source Category	Allocation & TMDL (lbs/day)[a]	Existing Load (lbs/day)[a]	Percent Reduction
Natural Background	0.13	0.13	0%
Human-caused (primarily silviculture and septic)	0.43	0.74	42.4%
	TMDL = 0.56	Total = 0.87	Total = 35.9%

[a] Based on growing season flow of 4.12 cfs

Grant Creek – TN TMDL

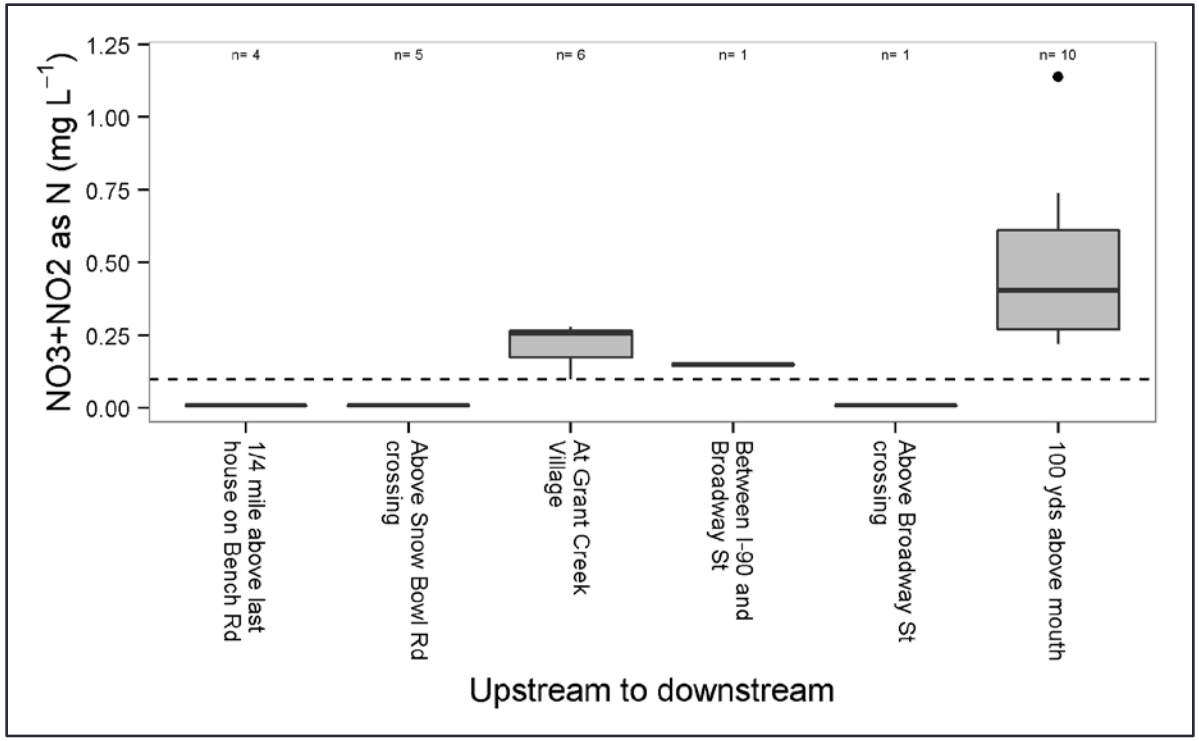


Grant Creek TN



Grant Creek – NO_3+NO_2

- NO_3+NO_2 is component of TN and loading sources and reduction methods are essentially the same
- TN TMDL provides a surrogate TMDL for NO_3+NO_2 in Grant Creek
- Allocations apply to the same source categories



Grant Creek Source Assessment

- Non-point source assessment examined forest practices, agriculture, mining and septic density
- Identified sources based on aerial images, land use information, water quality data assessments (i.e., nutrient concentrations from upstream to downstream), and field observations
- The primary land uses and most likely significant non-point nutrient sources in Grant Creek watershed are agriculture, residential development, and septic.

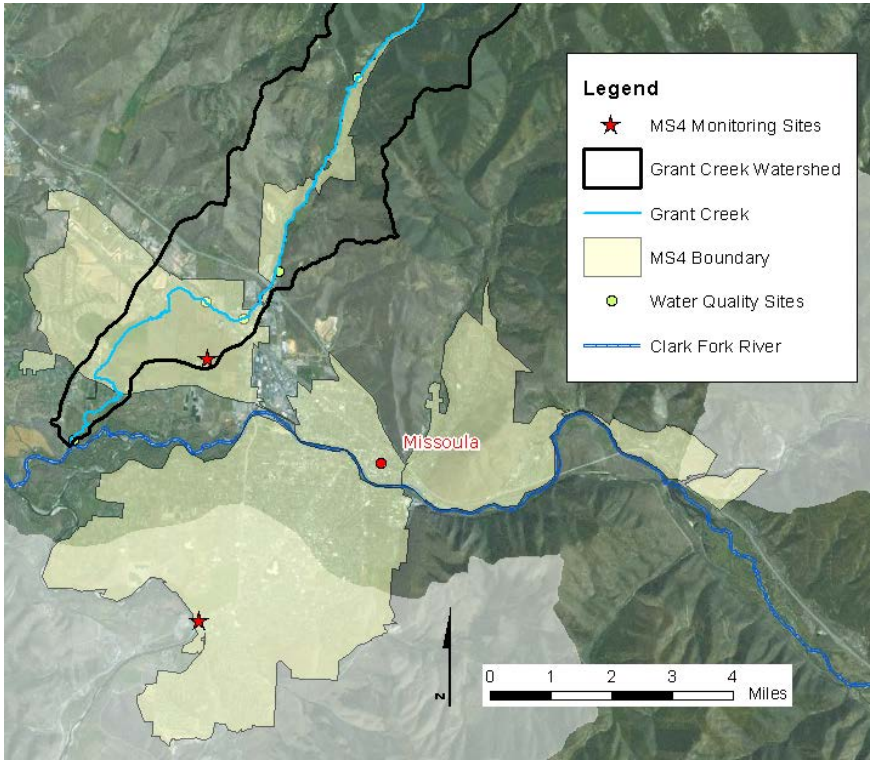
Grant Creek Source Assessment, continued

Missoula MS4 Stormwater – permitted, discharges to Grant Creek, has reasonable potential to contribute to nutrient load

- drains an area of approximately 29.7 mi^2 and closely approximates the urban limit boundary (25.3 mi^2)
- 2.29 mi^2 (1,467 acres) of stormwater catchment discharge to Grant Creek

Permit:

- does not include effluent limits
- requires a Storm Water Management Program to minimize nutrient loading to surface waters via minimum control measures
- requires semiannual monitoring at 2 sites: 1 residential and 1 commercial/industrial



Missoula MS4 Load

Existing load =

Summer stormwater discharge * TN Concentration

Estimated annual summer discharge (ft^3/summer):

- stormwater discharge area = 1,467 acres
- average annual summer precipitation (1984-2013) = 3.1 inches
- estimated total precipitation draining to surface water = 8%

TN concentrations in stormwater runoff from representative sampling locations required in the permit

(80^{th} percentile concentration of TN in stormwater runoff)

- 40% commercial/industrial areas = 5.58 mg/L
- 60% residential/open areas = 4.61 mg/L

Total load for TN (lbs/summer) =

commercial load + residential load

Estimated per storm event load =

- "storm event" = 0.25 inches of precipitation; occurs average 4 times per summer

TN Load Commercial (lbs/summer)	**184.3**
TN Load Residential (lbs/summer)	**228.4**
Total TN Load (lbs/summer)	**412.7**
Per-event Load (lbs/event)	**103.2**

MS4 Wasteload Allocation & Reductions

Loading reductions are desirable and possible via full implementation of stormwater BMPs consistent with the MS4 general permit requirements

WLA percent reduction =

Looked at International Stormwater BMP Database to identify a reasonable % reduction based on the BMPs most effective at decreasing TN concentrations in stormwater

= 29% reduction (median)

WLA =

per storm event load - (per storm event load * %reduction from BMPs)

= (103.18 – (103.18*0.29))

= 73.3 lbs/summer

When MS4 is activated, load reductions are based on the successful implementation of a SWMP. **Since the system should not be actively discharging during typical summer low flow conditions, both the existing load and WLA are defined as 0.0 (zero) lbs/day for TN in the example TMDL for Grant Creek.**

Grant Creek – TN TMDL

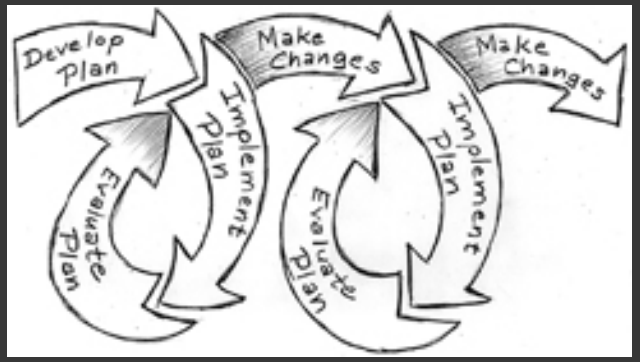
Source Category	Allocation & TMDL (lbs/day)[a]	Existing Load (lbs/day)[a]	Percent Reduction
Natural Background	10.05	10.05	0.0%
Human-caused LA (primarily silviculture, agriculture and subsurface wastewater disposal)	21.67	48.10	54.9%
WLA	0.00	0.00	0.0%
	TMDL = 31.72	Total = 58.15	Total = 45.5%

[a] Based on a growing season flow of 19.58 cfs

Implementation Strategy and Project Schedule

Watershed Restoration Plans

- WRP are now required by EPA in order to be eligible for Clean Water Act Section 319 (Nonpoint Source) funding
- Nine elements ensure an effective integrated approach to water quality restoration and protection
- Locally lead planning effort to prioritize activities based on needs, concerns, and local interest



- *Identify sources and causes of problems, determine changes necessary to attain standards*
- *Identify the actions necessary to make the changes, the partners and assistance needed for those changes*
- *Develop timeframe, milestones, and criteria to keep on track or make necessary adjustments*

MONTANA Watershed Protection

9 Minimum Elements

1. Identify causes and sources of pollution
2. Estimate pollutant loading into the watershed and the expected load reductions
3. Describe management measures that will achieve load reductions and targeted critical areas
4. Estimate amounts of technical and financial assistance and the relevant authorities needed to implement the plan
5. Develop an information/education component
6. Develop a project schedule
7. Describe the interim, measurable milestones
8. Identify indicators to measure progress
9. Develop a monitoring component

http://water.epa.gov/polwaste/nps/upload/watershed_mgmnt_quick_guide.pdf

MONTANA Watershed Protection

Resources

- EPA Website and Handbook
  - Handbook for Developing Watershed Plans to Restore and Protect Our Waters – with a shorter Quick Guide
    - http://water.epa.gov/polwaste/nps/handbook_index.cfm
  - Incorporating Wetlands into WRPs
    - http://www.epa.gov/region5/agriculture/pdfs/wetlands-in-watershed-planning-supplement-region-5-201302.pdf
- DEQ Staff and Website
  - Wiki Site (http://montananps319grants.pbworks.com/w/page/40496302/Watershed%20Restoration%20Plans)
  - Staff with Expertise (http://svc.mt.gov/deq/staffdir.asp#wqp)
- 319 Call for Proposals (2015) Webinar
  - June 19th – 1-2pm
- Other
  - NRCS – EQIP
  - Montana Watershed Coordination Council (MWCC)
    - http://www.mtwatersheds.org/
  - DNRC
  - FWP – Future Fisheries
  - Other planning efforts
  - Volunteers
  - Big Sky Watershed Corps
  - State and federal agency personnel, consultants, other experts
  - Other watershed groups with WRPs

MONTANA Watershed Protection

Watershed Protection Contacts

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  rray@mt.gov

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- Water Quality Specialist

  406.444.0531

  etrum@mt.gov

MONTANA Watershed Protection

Project Schedule

- Draft TMDL document is out for stakeholder review
  - Stakeholder review period ends July 4th
- 30 day public comment on draft TMDL document with a public meeting
- Final document expected to be complete shortly after public comment period for submittal to EPA for approval

What to Expect from a Completed TMDL?

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

- Implementation of the TMDLs by the use of appropriate BMPs will improve the water quality of addressed waterbodies

- A Watershed Restoration Plan (WRP) may be developed by stakeholders to implement the goals of the TMDL

TMDL Project Website and DEQ Website

- Specific TMDL information can be found online at the Montana DEQ TMDL Project Website:
  - http://montanatmdlflathead.pbworks.com/
- General DEQ information, water quality information, rules and regulations, and public comment opportunities can be found on the DEQ website at:
  - http://deq.mt.gov/default.mcpx

TMDL Home

last edited by Christina Staten 4 weeks 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	Otter Creek
Bitterroot	Central Clark Fork Tributaries	Judith Mountains	Rock
Blackfoot Watershed	Flathead	Kootenai – Fisher	Thompson
COMPLETED TMDL PROJECTS			
Pages from previous projects that have been completed and have approved documents are still available and can be found on the Completed Projects page			

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

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How to Navigate This Site & Request Access
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Link to the DEQ Nonpoint Source & 319 Grants Wiki
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Current Projects:
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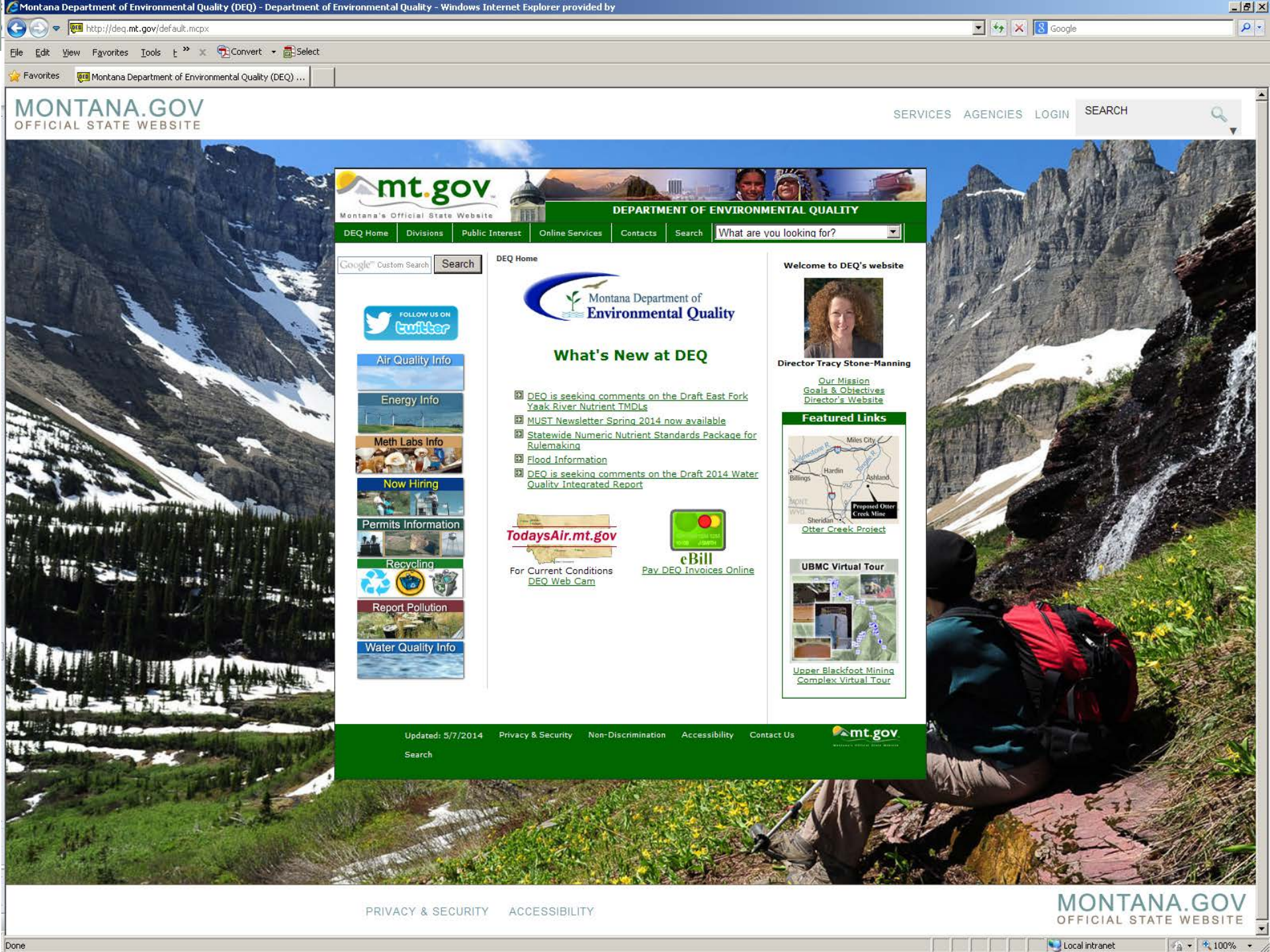
Bitterroot
Blackfoot Watershed
Boulder-Elkhorn
Central Clark Fork Tributaries
Flathead
Flint
Judith Mountains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MUST Newsletter Spring 2014 now available
Statewide Numeric Nutrient Standards Package for Rulemaking
Flood Information
DEQ is seeking comments on the Draft 2014 Water Quality Integrated Report
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Questions?