

## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8 1595 WYNKOOP STREET DENVER, COLORADO 80202 http://www.epa.gov/region8

SEP 0 3 2009

Ref: 8EPR-EP

Mr. George Mathieus Director Planning, Prevention and Assistance Division Montana Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901

Re: TMDL Approvals Middle and Lower Big Hole TPA

Dear Mr. Mathieus:

We have completed our review of the total maximum daily loads (TMDLs) as submitted by your office for the Middle and Lower Big Hole River TMDL Planning Areas (TPA). The TMDLs are included in the document entitled *Middle and Lower Big Hole Planning Area TMDLs and Water Quality Improvement Plan* transmitted to us for review and approval on July 31, 2009. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq.*), we approve all aspects of the TMDLs as developed for the Middle and Lower Big Hole TPAs. Enclosure 1 to this letter provides a summary of the elements of the TMDLs and Enclosure 2 provides details of our review of the TMDLs.

Based on our review, we feel the separate TMDL elements listed in Enclosure 2 adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety. In approving these TMDLs, EPA affirms that the TMDLs have been established at levels necessary to attain and maintain the applicable water quality standards and have the necessary components of approvable TMDLs.

**RECEIVED** 

SEP 0 9 2009

DEQ Planning Division Thank you for submitting these TMDLs for our review and approval. If you have any questions, the most knowledgeable person on my staff is Ron Steg and may be reached at (406) 457-5024.

Sincerely,

Carl S. Cargbell
Carol L. Campbell

Assistant Regional Administrator Office of Ecosystems Protection and Remediation

# **Enclosures**

cc: Claudia Massman, Attorney
Montana Department of Environmental Quality
P.O. Box 200901

Helena, MT 59620-0901

Dean Yashan Montana Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901

Robert Ray Montana Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901

Michael Pipp Montana Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901

Carrie Greeley Montana Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901

Enclosure 1 - Middle and Lower Big Hole TMDL Summary.

Water body & Stream
Description
Big Hole River between Divide
Cr and Pinlar Cr (Middle
segment) Big Hole River between Divide ('r and Pintlar ('r (Middle segment) Big Hole River between Divide Cr and Pintlar Cr (Middle segment) Big Hole River between Divide MT41D001\_020 Cr and Pintlar Cr (Middle segment) Big Hole River between Divide MT41D001\_020 Cr and Pintlar Cr (Middle segment) MT+1D001 020 Water body # MT41D001 020 MT41D001\_020 z z z z z Aquatic Life Z z z z z z z z ъ T T Agriculture n Industry Ψ, First Usted N 2000 Ν 2000 2000 Alteration in stream-side or littoral vegetative covers Low flow alterations Temperature Copper Lead Temperature Politonant for which TMDL has been prepared Copper X Ν× Lead Addressed
by
lemperature
TMDL
Addressed
by sediment
&
temperature
TMDLs TMDL TMDL. TMDL DEQ. Irrigation Efficincey impr in Watershed W/D Ratio - Pintlar Creek to Deep Creek Montana Temperature Standard for A-1 and B-1 Streams Riparian Shade - Butte Diversion To Mouth Riparian Shade - Piltlar Creek to Wise River Chronic aquatic life (ug/L) at hardness = 25 mg/L CaCO<sub>1</sub> Chronic aquatic life (ug/L) at hardness = 25 mg/L CaCO<sub>3</sub> Inflow to stream NA ΝĀ improvement in irrigagiton efficincy (mid June-August) No human caused surface water inflow in single or combination will increase temperature more than 1/2°F ≥ 7.4% effective shade < 0.5°F above naturally occurring Threshold Values NA Z Z 0.54 2.85 WLA: NA Š × × Ν Permitted Facilities (Permit Number) × Š Z × NA Middle Big Hole naturally occurring and historic mining sources Middle Big Hole naturally occurring and historic mining sources Human Caused French Creek TMDL Jerry Creek TMDL French Creek TMDI. Wise River TMDL Jerry Creek TMDL Wisc River TMDL Natural Š × Source Riparian grazing, suburban development hay production 1.750 at 3820 c/s NA NA NA 3.85\*10° kilocal/day 53.800 kilocal/sec 9.389 at 3820 cfs 9.234 at 3820 cfs 2.861 nt 3820 cfs 3.263 at 3820 cfs 5.47\*10° kilocal/day 633 kilocal/sec 43.432 at 3820cfs Ş z > Ę 3.91\*10" kilocal/day 54,400 kilocal/second 58.79 at 3820 cfs 11,139 at 3820 cfs TMDL' N × Implicit Implicit Implicit MOS NA X

Big Hole River from Divide Cr   M to the mouth at Jefferson River (Lower segment)		Big Hole River from Divide Ct M to the mouth at Jefferson River (Lower segment)		Big Hole River from Divide Cr M to the mouth at Jefferson River (Lower segment)	Big Hole River from Divide Cr M to the mouth at Jefferson River (Lower segment)						Big Hole River from Divide Cr M to the mouth at Jefferson River (Lower segment)		9	River between Divide ntfar Cr (Middle	Big Hote River between Divide M Cr and Pintar Cr (Middle segment)
WL41D007_010	MT41D001_010	MT41D001_010	M141D001_010	MT41D001_010	MT41D001_010						MT41Doo1_010			MT41D001_020	MT41D001_020
z		Z	z	z	z						z	-		z	z
z	Z	z	z	z	z						z			z	z
υ,	P	Ţ	- G	-	-						4	1		~~~~~~ ~	-
# #	a a	i.	7	7									·	TO.	-
Z A	NA.	2000	F 2000	F 2000	2000			2000					>2008		Z N
Physical substrate habitat allerations	Low flow allerations	0 Zinc	0 Lead	0 Соррег	0 Codmium			0 Темретацие					% Sedimentation/Siltation	ara tauta ara ta	Physical substrate habitat alterations
N.A	NA	NA	NA	NA.	Z.			Temperature					Sediment		×
Addressed by Restoration Strategy	Addressed by temperature TMDL	Investigated - No Action	Investigated - No Action	Investigated - No Action	Investigated - No Action			TMDL					TMDL		Addressed by sediment TMDL
AN	NA	ŅĄ	NA,	УN	NA	Indow to stream	Irrigation Efficincey improvement in Watershod	W/D Ratio - Pintlar Creek to Deep Creek	Riparim Shade - Butte Djversion To Mouth	Riparian Shade - Pilitar Creek to Wise River	Montana Temperaure Standard for A-1 and B-1 Streams	% fines <6mm in spawning gravel Pool Frequency	%rille surface lines <2mm Width/Depth Ratio	% reach composite surface fines <6mm	NA
ΝN	X.	N.A.	NA	NA	N.	No human caused surface surface water inflow in single or combination will increase temperature more than 1/2°F	I5% improvement improvement in irrigaction cfficincy (mid June- August)	≤60	≥7.4% effective shade	≥3.5% e∏ective shade	< 0.5°F above naturally occurring	S14 25.5	<u> </u>	≤29	N A
NA.	N N	ž	N <sub>A</sub>	N <sub>A</sub>	¥			₹ *				,	N A		X
ŅĄ	N A	NA.	NA	N <sub>A</sub>	×			Ž A					z >	1	z. >
٧N	VN	٨٨	VN	NA.	NA		Human Cooped				Temp.	Bank Erosion	Hillstope Erosion	Unpaved Roads	. NA
							grazing, grazing, suburban development, hay production	R D D D D D D D D D D D D D D D D D D D				ion	OSTOIL	oads	me in principal and the control of t
\$	3	Å	N <sub>A</sub>	NA	Ň		7.25*10 kilocal/day 838 kilocal/scc				5.76*10° kilocal/day 66.600 kilocal/sec	72.926	03.209	1.849	NA
Ž	N.	\$	₹	NA.	NA.		kilocal/second	5.83*10° kilocal/day 67.400					137,984		Z
₹ .	Z Z	N A	Ą	₹	N <sub>A</sub>			Implicit					Implicit		N N

	Z >	N	<b>N</b>	Z A	N P			Addressed	6	Touthidie	-	7	z	2	z	z	MT41D003_070	California Creek from headwaters to mouth (French
						>5.5	Pool Frequency		AND THE PERSON OF THE PERSON O	make and markly and by translational transla			-	1	-	1.	THE CASE OF THE PARTY AND THE	and the second of the second o
		+07	Dally Excessed			≤19	% lines <6mm in spawning gravel											
		Ė	Ronk Grosson			≥3.7	Entrencliment Ratio											
_	907			NA	A	57	Width/Depth Ratio	TMDL	Sediment	Sedimentation/Siltation	1992			_				
		492	Hillstope Erosion	,,		≤15	% riffle surface fines <2mm											tomp con
		6.2	Unpaved Roads	*******		≤38	% reach composite surface fines <6mm					7	z	Z 	z	z	MT41D003_070	California Creek from headwaters to month (French
		1.0 at 51 cfs	Source Area 2 (remainder of w/s)		4		natidiess ~ 57 mg/L caco,		E descriptions of call the factor of the fac	ANY THE RESTAURT OF STREET, ST				-	-	_		
51 Implicit	1.140 at 51	0.140 at 51 cfs	Source Aren I (Oregon Creek)	NA .	N N	4.13	Chronic aquatic life (ug/L) at	TMDL	Copper	Copper	>2008		z		z	z	MT41D003_070	California Creek from headwaters to mouth (French Cr-Deep Cr)
	z >	N	<b>N</b> >	N N	z >	X X	NA	Investigated - No Action	N N	iron	1992	-	2	_	<del> </del> -	1	MITHIDANS GAG	Cr-Deep-Cr)
	-	2.268 at 51 cfs	Source Area 2 (remainder of w/s)	1000	The state of the s		A 11 to 4 to 11 to 11 to 11 to 11 to 11 to 12 to		and a lateral section of lateral section of	COMPANY OF THE PROPERTY OF THE		1		-		+	Maria de la companya	
SI Implicit	2.759 at 51	0.491 at 51 cfs	Source Area I (Oregon Creek)	N A		Io .	Human health standard (ug/L)	TMDL	Arsenic	Arsenic	1992	9	z	Z 	z	z	MT41D003_070	California Creek from headwaters to mouth (French Cr-Deep Cr)
- 11	N.	N.	۸۸	₹.	NA.	NA.	ΝA	Addressed by sediment TMDL	NA	Physical substrate habitat alterations	NA	-	-1	10000			MT41D002_100	Birch Creek from National Forest Boundary to mouth (Big Hole R)
	\$	ž	VN	X.	Ν	ž	Š	Addressed by sediment TMDL	ΑΝ	Other anthropogenic substrate alterations	NA	*1	79	Ti Z	z	z	MT41D002_100	Birch Creek from National Forest Boundary to mouth (Big Hole R)
	Z.	Ϋ́Λ	۸۸	×	Ž	V.	۸ĸ	Addressed by sediment TMDL	Ä	Alteration in stream- side or litioral vegetalive covers	ž	79	•	z z	z	z	MT41D002_100	Birch Creck from National Forest Boundary to mouth (Big Hole R)
	NA .	X	NA	NA.	ž	\$	×	Addressed by Restoration Strategy	\$	Low flow alterations	¥	7		z			MT41D002_100	Birch Creek from National Forest Boundary to mouth (Big Hole R)
						≥5.5	Pool Frequency						V.	32 7 ( )				
		1231	Bank Erosion			ž.	Entremehment Ratio											
Į.	3,010			NA.	Ϋ́Α	2	Width/Depth Ratio	TMDL	Sediment	Sedimentation/Siluation	>2008							
		1,760	Hillslope Erosion			S13	% riftle surface fines <2mm											ioc N
		19.5	Unpaved Roads			ĭ.	% reach composite surface fines <a href="mailto:surface"></a>					7	7	দ স	z	z	MT41D002_100	Birch Creek from National Forest Boundary to mouth (Big
	Z >	N >	. Z A	NA	y Z	N A	. NA	Addressed by sediment TMDL	NA	Physical substrate habitat alterations	Ž.	т.		т. т.	סי	9	MT41D002_090	Birch Creek headwaters to the National Forest Boundary
	Z >	N A	NA .	NA	X	NA A	NA	Addressed by sediment TMDL	NA	Alteration in stream- side or littoral vegetative covers	NA	מי	. 13	T T	7	2	MT41D002_090	Birch Creek headwaters to the National Forest Boundary
	, N N	NA	NA	X	X	NA	NA.	Addressed by Restoration Strategy	NA	Low flow alterations	NA	T		71	٣	ļ	MT41D002_090	Birch Creek headwaters to the National Forest Boundary
		The state of the s				≥5.5	Pool Frequency			A STATE OF THE STA			-	-		+		AND THE PARTY AN
		730	Bank Erosion			4	% fines <6mm in spawning gravel											
	1.749			Ä	NA	×1.8	Width/Depth Ratio	TOWIT	Sediment	Sedimentation/Siluation	1990							
	-	1,005	Hillslope Erosion	,		\$13	% riffle surface fines <2mm											
	-	Ξ.	Unpayed Roads				comm .	_				_	_	_				Authorize a carear exemiserary

Charcoal Creek tributary of the Big Hole R	Charcoal Creek tributary of the Big Hole R	Charcoal Creek tributary of the Big Hole R	Canyon Creek from headwaters to mouth (Big Hole	Camp Creek from headwaters to mouth (Big Hole R)	Camp Creek from headwaters to mouth (Big Hole R)	Camp Creek from headwaters to mouth (Big Hole R)		Camp Creek from headwaters to mouth (Big Hole R)					Camp Creek from headwaters to mouth (Big Hole R)					Camp Creek from headwaters to mouth (Big Hole R)	Camp Creek from headwaters to mouth (Big Hole R)	California Creek from headwaters to mouth (French Cr-Deep Cr)	California Creek from headwaters to mouth (French Cr-Deep Cr)	California Creek from headwaters to mouth (French Cr-Deep Cr)	California Creek from headwaters to mouth (French Cr-Deep Cr)
MT41D003_010	MT41D003_010	MT41D003_010	MT41D002_030	MT41D002_020	MT41D002_020	MT41D002_029		MT41D002_020					MT41D002_020				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	MT41D002_020	MT41D002_020	MT41D003-070	MT41D003 070		M1-4110005_070
P	Р	Þ	×	P	*	P		Ψ.					Ψ.					۳ ت	** ***	z	z	z	
ъ +	P	To Ta	×	v Z	ъ 2	P Z		۰ ح					z					z	z	z	z	z	
-	-1	75	7	P	•	-		٥					۳.		117			٠,	٦	٦	7	۳	
76	77)	-	×	45,0000	-	7		۳					P	V.				-0	٦	z	z	-	
٠,	P	70	73	Ð	9	۳		P					סי					•	۳	۵	P		
2006	2006	2006	z >	X	Ž	2006	2000				>2008*					2006			2006	Z >	×	× ×	Z >
Sedimentation/Siliation	Phosphorus (Total)	Nitrogen (Total)	Low flow alterations	Alteration in stream- side or littoral vegetative covers	Low flow alterations	Solids (suspended/bediond)	months and an analysis				Total Nitrogen					Tojal Phosphorus			Arsonic	Physical substrate habitat alterations	Other anthropogenic substrate alterations	Alteration in stream- side or littoral vegetative covers	Low flow alterations
N.	ΝN	NA	×	N.	Ň	Sodiment		•			Total Nitrogen					Total Phosphorus			ΝA	×	Z >	NA	N
Investigated No Action	No Action	No Action	Investigated No Action	Addressed by sediment TMDL	Addressed by Restoration Strategy	Addressed by sediment TMDL		Ž D			TMDL					JMPL			Investigated - No Action	Addressed by sediment TMDL	Addressed by sediment TMDL	Addressed by sediment TMDL	Restoration Strategy
NA.	NA	A.V.	VN	NA	NA	NA		same as Middle Big Hole			Chlorophyll a (mg/m²)		Total Nitrogen (mg/L) 20% exceedance rate cap	Canocopuju a (ang) in	Chlorophyll a (ma/m²)		Total Phosphorus (mg/L) 20%		NA	NA	NA	NA	NA
¥	¥	ž	AN	*	N.	ž	Big Hole	sec Middle			I 80		0.32		150		0.049	N	N.	NA .	N/	NA	Z
N.	Ň	Ν̈́	NA	NA	¥	\$		ζ.			X					*			N.	N	N	N N	×
N.A	NA	N.A	N.	ž	NA.	N.		ΝA			XÀ					\$			NA	N <sub>A</sub>	×	×	NA
VN	NA	NA.	NA	XA	NA.	3	Bank Erosion	Unpaved Roads	Developed	Stream Banks	Forest	Shrub and Dry Grassland	Hay/Pasture	Developed	Sırçanı Bunks	Parest	Shrub and Dry Grassland	Hoy/Pasture	NA	NA	NA	NA	2
V	^	^	A				OSION	Roads	Suburban	Grazing, Hay. Natural	Grazing Timber Harvest, Natural	Grazing. Natural	Fernitzer, Natural	Suburban	Grazing, Hay, Natural	Timber Harvest. Natural	Grazing, Natural	Fertilizer, Natural	-		The state of the s		The state of the s
NA.	NA	NA A	×	NA.	N.	Ş	1,026	24.6	69		2,170	2,768	280	12		306	778	12		×	N A	××	177
NA	\$	Ϋ́N	N	NA	X	NA		12.45							1	F.19 <b>4</b>			7	N.	NA	NA	
NN	20	NA	NA	× ×	NA A	NA.		Implicit								implicit			NA	N A	NA	N	

				to mouth (Big Hole R)			Divide Creek from headwaters to mouth (Big Hole R)	Delano Creek from headwaters to mouth (Jerry Cr)	and the same of th	Delano Creek from leadwaters to mouth (Jerry Cr)	to mouth (Big Hole R)	to mouth (Big Hole R)			Deep Creek from headwaters to mouth (Big Hole R).	Corral Creek from headwaters to mouth (Deep Cr)	Corral Creek from headwaters to mouth (Deep Cr)	The state of the s		-	Corral Creek from headwaters MT41D003_130 to mouth (Deep Cr)
				R)			headwaters R)	headwaters	The same of the same of the same	headwaters	R)	R)			cadwaters R)	headwaters	headwaters				headwaters
				MI + IDOUZ 000			MT41D002_040	MT41D663_030		MT41D003_030	M111D003 040	W141Doog 040			MT41D003_040						MT41D003_130
				*	-		70		<u>.                                    </u>	7	~				٥	7	7				ە ،
				•	-		т Т	<del> </del>	_	T:			+		۳ ۳	-		+			7
		130 S			100		٥			70	-	+			-	-					7
		3.22 (2.42)			-		*** ****		_	77	1	-	+		71	-		-			7
	2006					1990		N >	2000	1992	\$	χχ		1990		z >	Z A			1992	
	Temperature					Sedimentation/Siliation		Alteration in stream- side or linoral vegetative covers	THE REAL PROPERTY AND PERSONS ASSESSED.	Sedimentation/Siltation	Alteration in stream- side or littoral vegetative covers	Low flow alterations		Sedimentation/Sittation		Physical substrate habitat afterations	Alteration in stream- side or littoral vegetative covers		-	Sedimentation/Siliation	
	Temperature					Sediment		NA		Sediment	NA	N.		Sediment		×	NA			Sediment	
	TMDL					TMDL		Addressed by sediment TMDL		TOMIT	Addressed by sediment TMDL	Addressed by Restoration Strategy		TMDL		Addressed by sediment TMDL	by sediment TMDL			TMDI.	
initiow to stream	to Deep					Same as California Creek		NA		Same as Corral Creek	NA	NA.		Sume as California Creek		NA	NA	Pool Frequency	Width/Depth Ratio % fines <6mm in spawning gravel	% riffle surface lines <2mm	% reach composite surface fines <6mm
No human caused surface water inflow in single or combination will increase temperature more than 12°F	improvement in irrigaqiton efficiacy (mid Juno- August)	<u> </u>	≥ 27% effective shade	<0.5°F above naturally occurring		California	Seo	NA		See Corral Creek	X	NA.		California	Sec	N	NA	>5.5	\$14 \$10	≤13	≤24
	NA.					NA NA		ΑN		Α×	×	X		ΝA		NA	NA			Z	
	ξ					Ą		NA		N	×	NA		NA		N A	NA	and in the second second	-	Z >	
pod	Rij gra suti dovei		Human Coused	Natural	Bank Erosion	Hillslope Erosion	Unpaved Roads	NA	Bank Erosion	Unpaved Roads Hillslope Erosion	NA	NA.	Bank Erosion	Hillslope Erosion	Unpaved Roads	N A	NA		Bank Erosion	Hillstope Erosion	Unpaved Roads
	Riparian grazing suburban development,																				
Ailocal/sco	3.06*10* kilocal/day 3.54			2.03*10' kitocal/day 27.4 kitocal/sec	2.270	1,852	88.2	N	8.9	1.1	VN	NA.	3,225	4,389	33.2	N	VN	The second second second second	109.7	227	ţ
	2.06*10' kilocal/day 278 kilocal/second					4,210		NA		107	N.	NA.		7,647		N.	NA .			¥	
	Implicit					Implicit		N >		Implicit	X	ž		Implicit		N N	N			Implicat	-

Fishirap Creek confluence of West & Middle Fks to mouth (Big Hole)	Fishtrap Creek confluence of West & Middle Fks to mouth	(Constitution of the Constitution of the Const	West & Middle Fks to mouth	Fishtrap Creek confluen		mouth (Jacobson Cr-Wise R)	Elkhorn Creek headwar	Elkhorn Creek headwaters to mouth (Jacobson Cr-Wise R)	Elkhorn Creek headwaters to mouth (Jacobson Cr-Wise R)	Elkhurn Creek headwaters to mouth (Jacobson Cr-Wise R)	Elkhorn Creek headwaters to mouth (Jacobson Cr-Wise R)	Elkhorn Creek headwaters to mouth (Jacobson Cr-Wise R)	Divide Creek from headwaters to mouth (Big Hole R)	Divide Creek from headwaters to mouth (Big Hole R)					Divide Creek from headwaters to mouth (Big Hole R)					Divide Creek from headwaters to mouth (Big. Hote R)
nce of MT41D003_160 touth	nce of MT41D003_160 touth			nce of MT41D003_160			lers to MT-41Dato3, 220	ers to MT-11D003_220	MT41D003	crs to MT41D003 220	ers to MT41D003_220 c R)	ers to MT41D003_220 c R)	waters MT41D002_040	waters MT41D002_040					vaters MT41D002_040					alcrs MT41D002_040
160 P	160 P			160 P			220 N	220 V	220 N	220 N	220 N	220 N	¥ •	\$ 					- t					
7	۳			P			z	z	z	z.	z	z	۳.	-					P					P F
7	P P			F			T:	77	- 17	T.	77	L.	7 P	7					T.		Y Y			-
7	70			7	_		7	75	ъ	77	77	Ti	•	40					-					7
77	70					_	-	-	- 1	T.	-	-	<b>-</b> 1	41			<u>y</u>		7			28		<b>T</b>
×	2006		1996			1996	-	1996	1996	9661	9661	1996	ž	NA A			2006					2006		
Low flow alterations	Phosphorus (Total)		Sedimentation/Siltation			Sedimentation/Siltation	And a second of the second of the second sec	Zinc	Cadmium	Copper	Lend	Arsenic	Alteration in stream- side of littoral vegetative covers	Low flow alterations			Total Kjeidahi Nitrogen (TKN)					Total Phosphorus		
N <sub>N</sub>	Z Z		Sediment			Sediment		Zinc	Cadmium	Copper	Lead	Arsenic	ž	Z,			Total Nitrogen					Total Phosphorus		
Addressed by Restoration Strategy	No Action		TOWIT			TMDL		TMDL.	TMDL	TMDL	TMDL	JUMI	Addressed by sediment & temperature TMDLs	Addressed by temperature TMDL			JAMPL					TMDL		
VN.	XN		Same as Upper Birch Creek			Same as Upper Birch Creek		Chronic equatic life (ug/L) at hardness = 25 mg/L CaCO.	Chronic aquatic life (ug/L) at hardness ≈ 25 mg/L CaCO <sub>3</sub>	Chronic aquatic life (ug/L) at hardness = 25 mg/L CaCO.	Chronic aquatic life (ug/L) at hardness =: 25 mg/L CaCO <sub>3</sub>	Human health standard (ug/L)	3	Š			Chlorophyll a (mg/m²)		Total Nitrogen (mg/L) 20% exceedance rate cap	Cilitary payma (mpm.)		exceptions are sup-	Total Phosphorus (mg/L) 20%	
<b>š</b>	N.		Birch Creck			Birch Creek		37.02	0.01	2.85	0.54	10	X	ž			150		0.32		081		0.049	
<b>š</b>	AN		×			NA		10.35 at 82 cfs	0.004 at 82 cfs	0.695 at 82 cfs	0.038 at 82 cfs	3.551 at 82 cfs	3	×			ž					NA.		
NA A	N.		ž			N A		N	NA	NA	N A	NA	ž	\$			ξ					\$		
X	NA NA	Bank Erosion	Hillslope Erosion	Unpaved Roads	Bank Erosion	Hillslope Erosion	Unpaved Roads	Naturally occurring	Naturally occurring	Naturally occurring	Naturally occurring	Naturally occurring	3	N.	Developed '	Stream Banks	Forest	Shrub and Dry Grassland	Hay/Pasture	Developed	Stream Banks	Forest	Shrub and Dry Grassland	Hay/Pasture
		rosion	Erosion	Roads	rosion	Erosion	Roads	xeurring	ecurring	ecurring	courring	ccurring			Suburban	Natural	Grazing Timber Harvest, Natural	Grazing. Natural	Fertilizer, Natural	Suburban	Grazing, Hay, Natural	Grazing Timber Harvest, Natural	Grazing, Natural	Grazing, Hay, Fertilizer, Natural
×	Z,	580	2066	2.9	113	261	×.5	4.439 at 82 cfs	0.036 at 82 cfs	0.444 m 82 cfs	0.178 at 82 cfs	0.444 at 82 cfs	XA	-X	288		7,240	2.806	527	40	522	950	666	15
×	¥			3 240		ğ	<u> </u>	16.432 at 82 cfs	0,044 at 82 cfs	1,265 at 82 cfs	0.240 at 82 cfs	4,439 at 82 cfs	₹.	NA			I.					2,193		
NA.	AN					, and it		Explicit: 1.643 at 82 cfs	0.004 at 82 cfs	Explicit 0.127 at 82 cfs	0.024 at 82 cfs	0.444 at 82 cfs	Evalied NA	Ž			applical					Implicit		

92.5 Implicit	A STANDARD OF THE STANDARD OF	Bank Erosion						_						-		
	-		Bank E			×19	of fines from in graveing gravel									
						>3.7	Enranchment Patio			500				_		
	71.7			Z >	N	>10	Width/Depth Ratio	JUMPI.	Sediment	Sedimentation/Siltation	1988					
	101	Hillslope Erosion	Hillslope			£15	% riffle surface fines <2mm									
	-3	d Roads	Unpaved Roads			:20	% reach composite surface fines <6mm					TI TI	<u>ئ</u> ج	060 P	MT41D002 060	Gruse Creek from headwaters to mouth (Big Hole R)
	0.5	Suburban	Developed	The second second	The second second second second	THE PERSON NAMED IN COLUMN	THE RESIDENCE AND ASSESSMENT OF THE PARTY OF	The same of the sa								
	16	Grazing, Hay, Natural	Stream Banks													
	01	Grazing. Natural	Forest	,		150	Chlorophyll a (mg/m²)		Nitrogen	-						
	56	Grazing. Natural	Shrub and Dry Grassland	NA	Z A			TMDL	Total		SCHOC					
	10	Fertilizer, Natural	Hay/Pasture			0.32	Total Nitrogen (mg/L) 20% exceedance rate cap				The state of the s	70	TI TI	060 P	MT41D002_060	Grose Creek from headwaters to mouth (Big Hole R)
AND AND ADDRESS OF THE PARTY OF	0.1	Suburban	Developed				MARKET MARKET CONTROL OF SET THE SET OF SET SET OF			-						
	7.0	Grazing, Hay, Natural	Stream Banks			150	Chlorophyll a (mg/m²)									
17.2 Implicit	NA	Crazing. Timber Harvest, Natural	Forest	×	N			TMDL	Total Phosphorus	Total Phosphorus	2006					
	10.0	Grazing. Natural	Shrub and Dry Grassland			0.049	Total Phosphorus (mg/L) 20% exceedance rate cup			,						
	0,1	Ferlihzer, Natural	Hay/Pasturc									**:	т	9 P	MT41D002_060	Gruse Creek from headwaters to mouth (Big Hole R)
AN AN	X	<b>∃</b>	ZA	Z	×	Z,	NA	Addressed by sediment TMDL	NA.	Alteration in stream- side or littoral vegetative covers	₹.	- T	7	230 P P	MT41D003_230	Gold Creek from headwaters to mouth (Wise R)
NA NA	NA.	*	NA	¥	AK	ž	N.	No Action	N <sub>A</sub>	Phosphorus (Total)	2006	*10	, ,	230 P P	MT41D003_230	Gold Creek from headwaters to mouth (Wise R)
	57	rosion	Bank Erosion													
592 Implicit	535	d Roads Erosion	Unpaved Roads Hillstope Erosion	N.	NA	Sec	Same as California Crock	TMDL	Sodiment	Sedimentation/Siltation	1990	77	-13 -13	230 P P	MT41D003_230	Gold Creek from headwaters to mouth (Wise R)
	1.293	rosion	Bank Erosion			Store Ster	des de la companya de conservaciones de conserva									
2,928 Implicit		d Ronds	Unpaved Roads	Z	N A	See Middle	Same as Middle Big Hole	TMDL	Sediment	Sedimentation/Siluation	2000	×	z	050 X X	MT41D003_050	French Creek from headwaters to mouth (Deep Cr)
	1.41 at 123 cfs	-	Source Area 3 (lower French)	×	NA	And white And Appropriate Section Sect							-			
2.861 at 123   Implicit	<u> </u>	-	Source Area 2 (upper French)	Z Z	N A	4.5	Chronic aquatic life (ug/L) at hardness = 40 mg/L CaCO <sub>1</sub>	TMDL	Copper	Copper	>2008					
	1.140 at 123 cfs		Source Area I (California Creek)	N N	N	delicate of decidates and deci			The state of the s	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		×	z	050 X X	MT41D003 050	French Creek from headwaters to mouth (Deep Cr)
	2.895 at 123 cfs		Source Area 3 (lower French)	NA	NA											
6.653 at 123 Implicit	0,999 at 123 6.6: cfs		Source Area 2 (upper French)	N N	N	0.0	Human health standard (ug/L)	JUMDI.	Arsenic	Arsenic	1990					
	2.759 at 123 cfs		Source Area I (California Creek)	z	N A							×	z	080 X X	MT41D003 050	French Creek from headwaters to mouth (Deep Cr)
NA NA			٨N	N N	χ×	NA.	NA	Addressed by sediment TMDL	N A	Alteration in stream- side or littoral vegetative covers	ž	**************************************	7	- P	MT41D003_160	Fishtrap Creek confluence of West & Middle Fks to mouth (Big Hole)

•

٠,

Moose Creek from licadwaters to mouth (Big Hole R at Maiden Rock)	Lost Creek in the Lower Big Hole Watershed		-	Hole Watershed					Hole Watershed	water or all market and the contract of the contract of the fact that they got to quick an				Lost Creek in the Lower Big Hole Watershed	Lost Creek in the Lower Big Hole Watershed	Jerry Creck from headwaters to mouth (Big Hole R)	Jerry Creek from headwaters to mouth (Big Hole R)	to mouth (Big Hole R)		to mouth (Big Hole R)	Jerry Creek from headwaters	Jerry Creek from headwaiers to mouth (Big Hole R)	Jerry Creek from headwaters to mouth (Big Hole R)	Jerry Creek from headwaters to mouth (Big Hole R)	Grose Creek from headwaters to mouth (Big Hole R)	to mouth (Big Hale R)
as MT+1D002_050				M1415005 180	1		arror assession		M141D002 180	_				MT41D002_180						1	rs MT41D003_020	rs MT41D003_020	1			
×		-								+-				- 6 - 7		z		1	-		z	ë z	z	z	. P	5
×				-					7	,				٥٠	P	z	z	2			z	z	z	z		7
×	Z	+		- Z	┿				z	+				Z 		Z -		-	124		ν 9	z	Z	Z ~e		7
×		+		 	+					+			_	7	2	71					1	7 7	- T	מי	· 4	
				-	-				_					77,	Ψ,	71	7				-	71	70	'n	77	
>2008	N	ļ.	1996					2006				2006			2006	NA	N A	¥		>2008		Z	2000	2000	N A	z
Sedimentation/Siltation	Alteration in stream- side or littoral regetative covers	AND AND ADDRESS OF THE PROPERTY OF THE PARTY	Scannenadowsmanon		Parties of the state of the sta			Total Nitrogen		THE PERSON CHARGE AND ADDRESS OF THE PERSON		Total Phosphorus			Arsenic	Excess Algal Growth	Physical substrate habitat alterations	Alteration in stream- side or littoral vegetative covers		Sedimentation/Siltation		Law flow alterations	Load	Copper	Alteration in stream- side or littoral vegetative covers	Other flow regime aherations
Sediment	NA	and the same of th	Sediment	:	and the second district statements		Na OBou	Total		The state of the s		Total Phosphorus			Arsenic	N <sub>N</sub>	Š	NA.		Sediment		Š	NA.	Copper	Z >	×
TOWL	Addressed by sediment TMDL	-	IMDI	į				TMDI.				TOWI			TMDL	Investigated - No Action	Addressed by sediment TMDL	Addressed by sediment TMDL		JMDL	Strategy	Addressed by Restoration	Investigated - No Action	TMDL	Addressed by sediment TMDL	Addressed by Restoration Strategy
Same as Upper Birch Creek	NA	e e la company de la company d	Same as Grose Creek		expenses and a second for a second for the state of a second seco		Chlorophyll a (mg/m²)		Total Nitrogen (mg/L) 20% exceedance rate cap		Chlorophyll a (mg/m²)	A	Total Phosphorus (mg/L) 20% exceedance rate cap		Human health standard (ug/L)	X	NA	N		Same as Upper Birch Creek		NA.	ŽĄ	Chronic aquatic life (ug/L) at hardness * 64 mg/L CaCO,	×	NA
See Upper Birch Creck	N A		Crock	Sec Grose			150		0.32		150	ALTO THE PROPERTY OF THE PROPE	0,049		10	NA.	Ä	¥	District Chapter	See Upper		<b>*</b>	NA	6.36	NA.	Z >
ΝA	N	AND THE PERSON OF STREET	2	É	ALLEGE AMERICAN			Z		A THE PERSON NAMED OF PERSONS ASSESSED.		× ×			NA	Š	N.	N.		×		Z >	NA	NA	N	ΝA
X	N.		2					×	,			×		ga dining a construction of the construction o	N A	NA	X	×		N.		Ă	N A	NA	N	N.
Unpaved Roads	NA	Bank Erosion	Hillslope Erosion	Unpaved Roads	Developed	Stream Banks	Forest	Shrub and Dry Grassland	Hay/Pasture	Developed		Forest	Shrub and Dry Grassland	Hay/Pasture	Naturally occurring and historic mining sources	NA.	N.A.	NA.	Bank Erosion	Unpayed Konds	4.5	Z,	X	Naturally occurring and historic mining sources	. NA	NA
ads.		On	xion	unds	Suburban	Grazing, Hay. Natural	Grazing Natural	Grazing, Natural	Grazing, Hay, Fertilizer, Natural	Suburban	Grazing, Hay, Natural	Grazing. Timber Harvest. Natural	Grazing. Natural	Grazing, Hay, Fertilizer, Natural	and historic				on	onces				and historic ccs		The state of the s
35.9	NA NA	80.7	495	×	34	136	579	705	93	9		. 63	210	19	0,0648 at 1.2 cfs	NA	NA.	\$	718	1.87	3	ž	NA	3.263 at 95 cfs	NA	×
1.778	N.	And the last	3	2			,	1547	1		. \$	359			0.0648 at 1.2 cfs	Ž	Ş	3		2,159		¥	N.	3.263 at 95 cfs	N	NA A
Implicat	NA		Implicit					Implicit		-		Implicit			Implicit	X	NA.	NA.		Implicit		Ž	NA	Implicit	X	N

.

7)	Rochester Creek from headwaters to mouth (Big Hole	Rochester Creek from headwaters to mouth (Big Hole R)	Rochester Creek from headwaters to mouth (Big Hole R)	Rochester Creek from headwaters to mouth (Big Hole R)	Rochester Creek from hendwaters to mouth (Big Hole R)	Pintlar Creek, headwaters to mouth (Wise River)	Pintlar Creek, headwaters to mouth (Wise River)	Pintlar Creek, headwaters to mouth (Wise River)	Pintlar Creek, headwaters to mouth (Wise River)	Pattengail Creek from headwaters to mouth (Wise R)	Pattengall Creek from headwaters to mouth (Wise R)		Pattengail Creek-from headwaters to mouth (Wise R)	Oregon Creek headwaters to mouth (California Cr - French Cr - Deep)	Oregon Creek headwaters to mouth (California Cr - French Cr - Deep)	Oregon Creek headwaters to mouth (California Cr - French Cr - Deep)	Oregon Creek headwaters to mouth (Catifornia Cr - French Cr - Deep)	Oregon Creek headwaters to mouth (California Cr - French Cr - Deep)	Oregon Creek headwaters to mouth (California Cr - French Cr - Deep)	Oregon Creek headwaters to mouth (California Cr - French ('r - Deep)	Moose Creek from headwarers to mouth (Big Hole R at Maiden Rock)	
	MT41D002_160	MT41D002_160	MT41D002_160	MT41D002_160	MT41D002_160	MT41D003_170	MT41D003_170	MT41D803_170	MT41D003 170	MT41D003_210	MT41D003_210		MT41D003_210	WLA1D003 080	MT41D003_080	080 E00CL11M	W111D003 (80)	MT-11D003_080	MT41D003_080	MT41D003_080	MT41D002_050	
	P P		P	9	ų q	-	7	ت ت	P P		PP			z	z		z z	z		-		+
	z		z	z	z	77	771	71	TI.		т		*11	z	z		z	z		z		+
	71 7	T.	# #	# #	71		-	т Т			יי אל		- T)	m Z	71 Z		7) Z	 				+
	-	51	ф	7	70	71	77:	-11	ম	ri e	Ŧ		70	73	71	Ŧ	п	म	T.	77	4	1
	1661	2000	2000	2000	2000	> N	×	×	2000	\$	X.		2002	N N	N N	Ν̈́	1990	2000	2000	2000	N <sub>A</sub>	
	Sedimentation/Siltation	Mercury	Lead	Соррог	Arsenio	Physical substrate habitat alterations	Other flow regime alterations	Low flow alterations	Temperature	Physical substrate habitat alterations	Alteration in stream- side or littoral vegetative covers		Sedimentation/Silution	Physical substrate habitat alterations	Other anthropogenic substrate afterations	Alteration in stream- side or fittorat vegetative covers	Sedimentation/Siltation	Lead	Соррег	Arsenic	Low flow alterations	
	Sediment	Mercury	Load	Сорраг	Arsonic	NA	NA	NA	N.A.	AN	NA		Scomment	N N	N.	N N	Sediment	Lead	Copper	Arsenic	N.A.	
	Jami	TMDL	TMDL	TMPL	TMDL	No Action	No Action	No Action	No Action	Addressed by sediment TMDL	Addressed by sediment TMDL		JOME	Addressed by sediment TMDI.	Addressed by sediment TMDL	Addressed by sediment TMDL	ומשנ	Investigated - No Action	JUMIL	TMDL	Addressed by Restoration Strategy	
	Same as California Creek	Human health standard (ug/L)	Chronic aquatic, life (ug/L) at hardness = 227 mg/L CaCO.	Chronic aquatic life (ug/L) at hardness = 227 mg/L CaCO.	Human health standard (ug/L)	NA	NA	NA	YA	NA	NA.		Samo as Upper Birch Creek	NA	NA	NA ,	Same as Grose Creek	Z >	Chronic aquatic life (ug/L) at hardness = 25 mg/L CaCO <sub>3</sub>	Human health standard (ug/L)	NA.	
Creck	See California	0,05	9.03	18.8	Ī0	N	Ν	NA	Ϋ́	ŅĄ	NA A	Difful Crieds	See Upper	Ν	NA	×	Same as Grose Creek	Z,	2.85	10	¥	
	NA.	ΑN	Rochester: 0,0014 at 0,04 cfs	Rochester: 0.0034 at 0.04 cfs	Rochester: 0.0014 at 0.04 cfs	NA	NA	NA	N	NA	NA.		Z	N N	Z >	z >	Z >	N A	NA	NA	Ž	
	¥	ΑN	NA.	N <sub>A</sub>	N A	×	NA	N N	Z >	Z >	NA A		Z-A	× ×	N N	Ν	×	Z A	NA	NA A	NA NA	
Hillstope Erosion	Unpayed Roads	Naturally occurring and historic mining sources	Naturally occurring	Naturally occurring	Naturally occurring	NA	NA	NA	ŅŅ	A.K.	NA	Bank Erosion	Unpaved Roads	NA	NA	NA .	Unpaved Roads Hillstope Erosion Bank Erosion	N >	Naturally occurring and historic mining sources	Naturally occurring and historic mining sources	Ň	Andrew Control of the
953	183	0.04001 at	0.0004 at 0.04 cfs	0.0003 at 0.04 cfs	0.0006 at 0.04 cfs	NA	NA	NA	N >	N.A.	NA.	1,192	2.2	N A	N	NA	0.6 103 27.4	N >	0.14 at 9 cfs	0.491 at 9 cfs	NA A	
	1,555	0,00001 at 0,04 cfs	0.0020 at 0.04 cfs	0.0041 at 0.04 c/s	0.0022 at 0.04 cfs	VN	NA	Ν̈́	N >	NA.	NA.		2.412	N	NA .	NA	131	χχ	0.14 at 9 cfs	0.491 at 9 cfs	NA	+
	Implicit	Implicit	Explicit: 0,0002 at 0.04 cfs	Explicit: 0,0004 at 0.04 cfs		NA	×	N N	N N	NA.	X		Implicit	N N	NN	NA	Implicit	N N	Implicit	Implicat	3	

mouth (Big Hole R)			***************************************		mouth (Big Hole R)	The second secon			- :-	Soap Creek from headwaters to mouth (Big Hole R)	Sixnile Creek from headwaters to mouth (California Cr)					to mouth (California Cr)	Sevenmile Creek from headwaters to mouth (Deep ('r)		Sevenmile Creek from headwaters to mouth (Deep Cr)	Sawlog Creek tributary to Big Hole R		Sawlog Creek tributary to Big Hole R	Sawlog Creek tributary to Big Hole R	Sawlog Creek iributary to Big Hole R	Sassman Gulch from headwaters to mouth (Big Hole R)	headwaters to mouth (Big Hole R)	The state of the s
MT41D002_140	;				M1412002_140	·				MT41D002 140						MT41D003_090			MT4112003_110			MT41D004_230	MT41D004_230	MT41D004_230	MT41D002_070		The court of the
					,					70	٠					פי	1		70	z		z	z	1	z	1	+
т ——	├					-				<del>ت</del> بر	7	-		-		ים דו			7	z		z		-	z	-	-
	-					<del></del>										, L.	<b> </b>		75 71			- Z	7			7	+
T)	-					-				т.	V A to					75	<del> </del>		Tì		<u></u>	<b>7</b> 3	-				+
71					**					יד	7					77	7		T	7			75		71	7	
1994				2008				2006			AA		所義	2002			N N	920		ξ		1996	2006	2006	8861	X	
Sedimentation/Siltation	AND THE PROPERTY OF THE PROPER			Total Nitrogen				Total Phosphorus			Physical substrate habitat alterations			Sedimentation/Siliation			Alteration in stream- side or littoral vegetative covers	Sedimentation/Sittation	7	Alteration in stream- side or littoral vegetative covers		Sedimentation/Siliation	Phosphorus (Total)	Arsenic	Arsenic	Physical substrate habital alterations	
Sediment			,	Total				Total Phosphorus			NA.			Sediment			NA	Scamen	,	Ž Ž		Sediment	×	NA	νχ	X	
TMDL				JUMPI.		Managed of calculations		TMDL			Addressed by sediment TMDL			ושטנ	1		Addressed by sediment TMDL	N.		Addressed by sediment TMDL		TWD	No Action	Investigated - No Action	Investigated - No Action	Addressed by sediment TMDL	
Same as California Creek			Chlorophyll a (mg/m²)		Total Nitrogen (mg/L) 20% exceedance rate cap	The same of the sa	Chlorophyll a (mg/m²)		Total Phosphorus (mg/L) 20% exceedance rate can		NA	Pool Frequency	% lines <6mm in spawning gravel	Entrenchment Ratio	% riffle surface fines <2mm	% reach composite surface fines	Z A	Same as California Creek		N/V	Committee of the commit	Same as California Creek	NA	NA	NA	NA	The same of the sa
See			150		0.32	and and a second and a second and a second	1) 20% 0.049			š	≥5.5	14	\$ [\$	212	25	NA	Creek	Sec	×χ	Crock	See	۸۸	VN	XX	3	1	
NA				NA		-		N N			NA.			NΑ			NA	Z	:	N.		Ž	NA	ΑN	N	N A	
×				X				×			N <sub>A</sub>			Z			N	Z	:	AN		X X	NA	Ν̈́Α	Z Z	N A	
Unpaved Roads	Developed	Stream Banks	Forest	Shrub and Dry Grassland	Hay/Pasture	Developed	Stream Banks	Forest	Shrub and Dry Grassland	Hay/Pasture	XA		Bank Erosion		Hillstope Erosion	Unpaved Roads	NA	Hillslope Erosion Bank Erosion	Unpaved Roads	×	Hillstope Erosion Bank Erosion	Unpaved Roads	NA	AN	N	VN	Bank Erosion
Coads	Suburban	Grazing, Hay, Natural	Grazing Natural	Grazing. Natural	Fertilizer, Natural	Suburban	Grazing, Hay, Natural	Grazing, Timber Harvest, Natural	Grazing. Natural	Grazing, Hay, Fertilizer, Natural			OSION		Frosion	Roads		Erosion osion	Roads		Erosion osion	Roads					noteo
17.7	13	147	320	1085	73	2	72.	ŧ	338	2	NA		93.3		307	0.7	N N	269	0.6	×	224 81.9	1.1	NA.	VN	×	×	584
1.011				1638		-	i	+63			N A			į			NA	ž	i	VN		307	N	NA	Ž	×	
Implicit				Implicit				Implicit			X			Implicit			N N	ітрііся		×		Implicit	N.	N.	N N	Z >	1

_	Wise River naturally occuring and historic mining sources Elkhorn Creek TMDL	N	N N	10.0	Chronic aquatic life (ug/L) at hardness = 25 mg/L CaCO,	TAMT	Cadmium	Cadmium	>2008		77	ت بر	————	7	MT41D003_200	Wise River from leadwaters to mouth (Big Hole R)
Roads Erosion rosion	Unpaved Reads Hillslope Erosion Bank Erosion	N <sub>A</sub>	Z	See Lower Birch Crock	Same as Lower Birch Creek	TMDL	Sediment	Sedimentation/Siltation	~2008				<del> </del>	<del></del>	MI 4 (DOU).	·
	NA	NA.	3	Š	X	Addressed by Restoration Strategy	VN	Low flow internations	×	×		-	-	1 1 1 1	MJ+110002_[10	-
	VN	N	VN	NA	NA	No Action	ΝX	Alteration in stream- side or littoral vegetative covers	X	т.		<del> </del>		1-	MT41D002_120	Wickiup Creek Tributary to Cump Cr (Big Hole R)
	NA.	NA	NA	N	NA .	No Action	N	Bottom Deposits	1994	Τ.		Z	z	z	MT41D002_120	Wickiup Creek Tributary to Camp Cr (Big Hole R)
	NA	N	ΝΆ	NA	N <sub>&gt;</sub>	No Action	N	Phosphorus (Total)	2006	77	-	7	z	z	MT41D002_120	Wickiup Creek Tributary to Camp Cr (Big Hole R)
-	NA	N	NA	N	NA	Investigated - No Action	N,	Мегенгу	1994	75	-	z T	-	z	MT41D002_120	Wicking Creek Tributary to Camp Cr (Big Hole R)
	. N>	N N	N <sub>A</sub>	NA	N>	Investigated - No Action	NA	Lend	1994	73	70		z		MT41D002_120	Wickinp Creek Tributary to Camp Cr (Big Hole R)
	Naturally occurring	N A	Wickiup: 0,030 at 1.8cfs	4.53	Chronic aquatic life (ug/L) at hardness = 43 mg/L CaCO <sub>3</sub>	TMDL	Copper	Copper	1994	73		z т	z	z	MT41D002_120	Wickiup Creek Tributary to Camp Cr (Big Hole R)
	NA	N	NA	N	NA	No Action	N	Sedimentation/Siltution	1992	-5		TI TI	٣		MT41D003 120	Twelvemile Creek from headwaters to mouth (Deep Cr)
	NA	N <sub>A</sub>	×	¥.	<b>X</b> A	Addressed by sediment TMDL	\$	Physical substrate habitat alterations	X	7	7	2	z	z	MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
	NA	×	ž	₹	ŊĄ	Addressed by sediment TMDL	, 2	Alteration in stream, side or littoral vegetative covers	N N	7	,	2 -	z		MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
	NA	N.	NA.	Ŋ	N.	Addressed by Restoration Strategy	ž	Low flow afterations	ž					<del> </del>	MT41D002_010	(Big Hole
	Bank Erosion			Crock										-		200
	Unpaved Roads	Z >	Z >	See	Same as California Creek	TMD.	Sedimont	Sedimentation/Siltation	2000	-	7,	Z P	z	z	MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
oric	Naturally occurring and historic mining sources	NA	NA	232.6	Chronic aquatic life (ug/L) at hardness ~ 97 mg/L CaCO <sub>6</sub>	TMDL	Zinc	Zinc	1990	-			z		MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
oric	Naturally occurring and historic mining sources	NA.	X	ù.	Chronic aquatic life (ug/L) at hardness = 97 mg/L CaCO,	TOWE	Lead	Lead	1990	7			-	-	MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
5	Naturally occurring and historic mining sources	X	Ž	27	Chronic aquatic life (ug/L) at hardness ≈ 97 mg/L CaCO₁	TOME	Copper	Copper	1990	- 1	71	. Z	z	z	MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
oric	Naturally occurring and historic mining sources	Ž	NA	0.8	Chronic aquatic life (ug/L) at hardness = 97 mg/L CaCO <sub>3</sub>	JUMB	Codmium	Cadmium	>2008	7	73	Z 7		-	MT41D002_010	Trapper Creek from hendwaters to mouth (Big Holo R)
toric	Naturally occurring and historic mining sources	N	Z >	10	Human bealth sumdard (ug/L)	TMDL.	Arsenio	Arsenc	>2008	73	<b>9</b> FI	z	z	z	MT41D002_010	Trapper Creek from headwaters to mouth (Big Hole R)
	N A	. N	× ×	Ą. V.	N.	Addressed by sediment TMDL	Z N	Alteration in stream- side or littoral vegetative covers	×	-7.		 	ە-		MT-11D002_140	Stap Creek from headwaters to MT41D002_140 mouth (Big Hole R)
	Hillslope Erosion Bank Erosion			Citton												

Footnote ! -	F = Full Support, P = Partial Support, N = Not Supported, T = Threatened, X = Not Assessed (Lacking Sufficient Credible Data)	Wise River from headwaters to mouth (Big Hole R)	Wise River from headwaters to mouth (Big Hole R)	Wise River from headwaters to mouth (Big Hote R)	Wise River from headwaters to mouth (Big Hole R)	Wise River from headwaters to mouth (Big Hole R)
	Partial Supp Ticient Cree	waters to	waters to	waters to	waters to	waters to
Sediment TMDLs and allocations are reported as tons/yr in table abore Temperature TMDLs/allocations reported in table above as Kcal/day and instataneous TMDLs and allocations presented in Appendix F as Nutrient TMDLs reported as lbs/yr in table above based on average y Metals TMDLs and allocations are reported as lbs/day in table above	ort, N = Not Sup lible Data)	MT41D003_200	MT41D003_200	MT41D003_200	MT41D003 200	MT41D003_200 P
MDLs an re TMDL eous TMI ADLs rep JLs and a	ported, T	9	7	٦	3	, ž
d alloca s/alloca DLs and orted as	Threaten	ت م	י וד	7 7	· 't	. P
tions a tions n talloca l alloca l bs/yr	X X	ਰ	P	ъ		7
re repo eported tions pi in table	lot	777	Ŧ	71	1	<b></b>
rted as in table resente e above d as lb:	1		70		V	v ====================================
tons/yr le above d in Ap based s/day in		> N	N A	N >	>2008	>2008
Sediment TMDLs and allocations are reported as tons/yr in table above and are Temperature TMDLs/allocations reported in table above as Kcal/day and Kcal and instataneous TMDLs and allocations presented in Appendix F as equations Nutrient TMDLs reported as lbs/yr in table above based on average yearly allowerals TMDLs and allocations are reported as lbs/day in table above.		Physical substrate habitat afterations	Alteration in stream- side or littoral vegetative covers	Low flow alterations	).ead	Copper
re calculated al/sec for an is.		N	NA	N N	Lead	Copper
from % reduces ample discontract TMDL		Addressed by sediment TMDL	Addressed by sediment TMDL	Addressed by Restoration Strategy	TMDL	. TAM.
Sediment TMDLs and allocations are reported as tons/yr in table above and are calculated from % reduction allocations in the document. Daily sediment TMDLs (tons/day) reported in Appendix F Temperature TMDLs/allocations reported in table above as Kcal/day and Kcal/sec for an example discharge and weather condition. Temperature TMDLs in main document provided as changes no and instalaneous TMDLs and allocations presented in Appendix F as equations.  Nutrient TMDLs reported as lbs/yr in table above based on average yearly allocations. Nutrient TMDLs in document are provided as a daily time step based upon average daily discharge dependant Metals. TMDLs and allocations are reported as lbs/day in table above.		N A	NA	NA ,	Chronic aquatic life (ng/L) at hardness = 25 mg/L CaCOc	Chronic aquatic life (ug/L) at hardness = 25 mg/L CnCO <sub>1</sub>
nt. Daily sec Temperature a daily time		NN	ν	N	0.54	2.85
fiment TMD TMDLs in m step based u		N	z >	ΛΛ	N ,	NA
Ls (tons/day ain docume pon average		N N	Z X	N <sub>A</sub>	N <sub>A</sub>	N N
Sediment TMDLs and allocations are reported as tons/yr in table above and are calculated from % reduction allocations in the document. Daily sediment TMDLs (tons/day) reported in Appendix F. Temperature TMDLs/allocations reported in table above as Kcal/day and Kcal/sec for an example discharge and weather condition. Temperature TMDLs in main document provided as changes needed from all influencing factors. Daily and instataneous TMDLs and allocations presented in Appendix F as equations.  Nutrient TMDLs reported as lbs/yr in table above based on average yearly allocations. Nutrient TMDLs in document are provided as a daily time step based upon average daily discharge dependant equation.  Metals TMDLs and allocations are reported as lbs/day in table above.		. NA	NA	NA	Wise River naturally occurring and historic mitning sources Elkhorn Crock TMDL	Wise River naturally occurring and historic mining sources Elkhorn Creek TMDL
rom all influer		N N	· X	Z	1.510 at 600 cfs 0.240 at 600 cfs	7,969 at 600 ofs 1,265 at 600 ofs
ncing factors.		Ν	۸۸	N <sub>A</sub>	1.75 at 600 cfs	9.234 at 600 cfs
Daily		Ν̈́Α	N	NA	Implicit	Implicit

#### **ENCLOSURE 2**

#### EPA REGION VIII TMDL REVIEW

# TMDL Document Info:

Document Name:	Middle and Lower Big Hole River Planning Area TMDLs and Framework
Submitted by:	Montana Department of Environmental Quality
Date Received:	July 31, 2009
Review Date:	August 24, 2009
Reviewer:	Ron Steg
Rough Draft / Public Notice / Final Draft?	Final
Notes:	

Reviewers Final Recommendation(s) to EPA Administrator (	(used for final draft review only):
Partial Approval	
Disapprove	
Insufficient Information	

**Approval Notes to Administrator:** Based on the review presented below, I recommend approval of the TMDLs submitted in this document.

This document provides a standard format for EPA Region 8 to provide comments to state TMDL programs on TMDL documents submitted to EPA for either formal or informal review. All TMDL documents are evaluated against the minimum submission requirements and TMDL elements identified in the following 8 sections:

- 1. Problem Description
  - 1.1. TMDL Document Submittal Letter
  - 1.2. Identification of the Waterbody, Impairments, and Study Boundaries
  - 1.3. Water Quality Standards
- 2. Water Quality Target
- 3. Pollutant Source Analysis
- 4. TMDL Technical Analysis
  - 4.1. Data Set Description
  - 4.2. Waste Load Allocations (WLA)
  - 4.3. Load Allocations (LA)
  - 4.4. Margin of Safety (MOS)
  - 4.5. Seasonality and variations in assimilative capacity
- 5. Public Participation
- 6. Monitoring Strategy
- 7. Restoration Strategy
- 8. Daily Loading Expression

Under Section 303(d) of the Clean Water Act, waterbodies that are not attaining one or more water quality standard (WQS) are considered "impaired." When the cause of the impairment is determined to be a pollutant, a TMDL analysis is required to assess the appropriate maximum allowable pollutant loading rate. A TMDL document consists of a technical analysis conducted to: (1) assess the maximum pollutant loading rate that a waterbody is able to assimilate while maintaining water quality standards; and (2) allocate that assimilative capacity among the known sources of that pollutant. A well written TMDL document will describe a path forward that may be used by those who implement the TMDL recommendations to attain and maintain WQS.

Each of the following eight sections describe the rationale that EPA Region 8 staff uses when reviewing TMDL documents. Also included in each section is a list of EPA's minimum submission requirements relative to that section, a brief summary of the EPA reviewer's findings, and the reviewer's comments and/or suggestions. Use of the verb "must" in the minimum submission requirements denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable.

This review template is intended to ensure compliance with the Clean Water Act and that the reviewed documents are technically sound and the conclusions are technically defensible.

# 1.0 Problem Description

A TMDL document needs to provide a clear explanation of the problem it is intended to address. Included in that description should be a definitive portrayal of the physical boundaries to which the TMDL applies, as well as a clear description of the impairments that the TMDL intends to address and the associated pollutant(s) causing those impairments. While the existence of one or more impairment and stressor may be known, it is important that a comprehensive evaluation of the water quality be conducted prior to development of the TMDL to ensure that all water quality problems and associated stressors are identified. Typically, this step is conducted prior to the 303(d) listing of a waterbody through the monitoring and assessment program. The designated uses and water quality criteria for the waterbody should be examined against available data to provide an evaluation of the water quality relative to all applicable water quality standards. If, as part of this exercise, additional WQS problems are discovered and additional stressor pollutants are identified, consideration should be given to concurrently evaluating TMDLs for those additional pollutants. If it is determined that insufficient data is available to make such an evaluation, this should be noted in the TMDL document.

# 1.1 TMDL Document Submittal Letter

When a TMDL document is submitted to EPA requesting formal comments or a final review and approval, the submittal package should include a letter identifying the document being submitted and the purpose of the submission.

- A TMDL submittal letter should be included with each TMDL document submitted to EPA requesting a formal review.
- The submittal letter should specify whether the TMDL document is being submitted for initial review and comments, public review and comments, or final review and approval.
- Each TMDL document submitted to EPA for final review and approval should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water

Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter should contain such identifying information as the name and location of the waterbody and the pollutant(s) of concern, which matches similar identifying information in the TMDL document for which a review is being requested.

	commendation: Approve ☐ Partial Approval ☐ Disapprove ☐ Insufficient Information
	mmary and Comments: This document was submitted to EPA for review on July 31, 2009. An equate cover letter has been included.
	1.2 Identification of the Waterbody, Impairments, and Study Boundaries
is in clear	e TMDL document should provide an unambiguous description of the waterbody to which the TMDL intended to apply and the impairments the TMDL is intended to address. The document should also arrly delineate the physical boundaries of the waterbody and the geographical extent of the watershed a studied. Any additional information needed to tie the TMDL document back to a current 303(d) ing should also be included.
Mir	nimum Submission Requirements:
$\boxtimes$	The TMDL document should clearly identify the pollutant and waterbody segment(s) for which the TMDL is being established. If the TMDL document is submitted to fulfill a TMDL development requirement for a waterbody on the state's current EPA approved 303(d) list, the TMDL document submittal should clearly identify the waterbody and associated impairment(s) as they appear on the State's/Tribe's current EPA approved 303(d) list, including a full waterbody description, assessment unit/waterbody ID, and the priority ranking of the waterbody. This information is necessary to ensure that the administrative record and the national TMDL tracking database properly link the TMDL document to the 303(d) listed waterbody and impairment(s).
	One or more maps should be included in the TMDL document showing the general location of the waterbody and, to the maximum extent practical, any other features necessary and/or relevant to the understanding of the TMDL analysis, including but not limited to: watershed boundaries, locations of major pollutant sources, major tributaries included in the analysis, location of sampling points, location of discharge gauges, land use patterns, and the location of nearby waterbodies used to provide surrogate information or reference conditions. Clear and concise descriptions of all key features and their relationship to the waterbody and water quality data should be provided for all key and/or relevant features not represented on the map
	If information is available, the waterbody segment to which the TMDL applies should be identified/geo-referenced using the National Hydrography Dataset (NHD). If the boundaries of the TMDL do not correspond to the Waterbody ID(s) (WBID), Entity_ID information or reach code (RCH_Code) information should be provided. If NHD data is not available for the waterbody, an alternative geographical referencing system that unambiguously identifies the physical boundaries to which the TMDL applies may be substituted.
	commendation: Approve  Partial Approval  Disapprove  Insufficient Information
En	mmary and Comments: DEQ completed TMDLs for 71 waterbody-pollutant combinations (see closure 1 for a summary). As shown in Tables 1 through 4 (appended to the end of this document) IDLs were completed for sediment (30), nitrogen (5), phosphorus (5), metals (28), and temperature (3).

# 1.3 Water Quality Standards

TMDL documents should provide a complete description of the water quality standards for the waterbodies addressed, including a listing of the designated uses and an indication of whether the uses are being met, not being met, or not assessed. If a designated use was not assessed as part of the TMDL analysis (or not otherwise recently assessed), the documents should provide a reason for the lack of assessment (e.g., sufficient data was not available at this time to assess whether or not this designated use was being met).

Water quality criteria (WQC) are established as a component of water quality standard at levels considered necessary to protect the designated uses assigned to that waterbody. WQC identify quantifiable targets and/or qualitative water quality goals which, if attained and maintained, are intended to ensure that the designated uses for the waterbody are protected. TMDLs result in maintaining and attaining water quality standards by determining the appropriate maximum pollutant loading rate to meet water quality criteria, either directly, or through a surrogate measurable target. The TMDL document should include a description of all applicable water quality criteria for the impaired designated uses and address whether or not the criteria are being attained, not attained, or not evaluated as part of the analysis. If the criteria were not evaluated as part of the analysis, a reason should be cited (e.g. insufficient data were available to determine if this water quality criterion is being attained).

- The TMDL must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the anti-degradation policy. (40 C.F.R. §130.7(c)(1)).
- The purpose of a TMDL analysis is to determine the assimilative capacity of the waterbody that corresponds to the existing water quality standards for that waterbody, and to allocate that assimilative capacity between the significant sources. Therefore, all TMDL documents must be written to meet the existing water quality standards for that waterbody (CWA §303(d)(1)(C)).
  - Note: In some circumstances, the load reductions determined to be necessary by the TMDL analysis may prove to be infeasible and may possibly indicate that the existing water quality standards and/or assessment methodologies may be erroneous. However, the TMDL must still be determined based on existing water quality standards. Adjustments to water quality standards and/or assessment methodologies may be evaluated separately, after the completion of the TMDL.
- The TMDL document should describe the relationship between the pollutant of concern and the water quality standard the pollutant load is intended to meet. This information is necessary for EPA to evaluate whether or not attainment of the prescribed pollutant loadings will result in attainment of the water quality standard in question.
- If a standard includes multiple criteria for the pollutant of concern, the document should demonstrate that the TMDL value will result in attainment of all related criteria for the pollutant. For example, both acute and chronic values (if present in the WQS) should be addressed in the document, including consideration of magnitude, frequency and duration requirements.

Recommendation:			
Approve   Partia	al Approval 🗌 Disapprove	: 🗌 Insufficient Infor	mation

#### **Summary and Comments:**

The applicable water quality standards for all pollutants of concern in the Middle and Lower Big Hole TPA are summarized in Appendix B. The way in which these standards have been applied in the context of the TMDLs is discussed in the "Water Quality Targets" section of this review form.

# 1.4 Water Quality Targets

TMDL analyses establish numeric targets that are used to determine whether water quality standards are being achieved. Quantified water quality targets or endpoints should be provided to evaluate each listed pollutant/water body combination addressed by the TMDL, and should represent achievement of applicable water quality standards and support of associated beneficial uses. For pollutants with numeric water quality standards, the numeric criteria are generally used as the water quality target. For pollutants with narrative standards, the narrative standard should be translated into a measurable value. At a minimum, one target is required for each pollutant/water body combination. It is generally desirable, however, to include several targets that represent achievement of the standard and support of beneficial uses (e.g., for a sediment impairment issue it may be appropriate to include a variety of targets representing water column sediment such as TSS, embeddeness, stream morphology, up-slope conditions and a measure of biota).

#### **Minimum Submission Requirements:**

The TMDL should identify a numeric water quality target(s) for each waterbody pollutant combination. The TMDL target is a quantitative value used to measure whether or not the applicable water quality standard is attained.

Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. Occasionally, the pollutant of concern is different from the parameter that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as a numerical dissolved oxygen criterion). In such cases, the TMDL should explain the linkage between the pollutant(s) of concern, and express the quantitative relationship between the TMDL target and pollutant of concern. In all cases, TMDL targets must represent the attainment of current water quality standards.

When a numeric TMDL target is established to ensure the attainment of a narrative water quality criterion, the methodology used to determine the numeric target, and the link between the pollutant of concern and the narrative water quality criterion should all be described in the TMDL document. Any additional information supporting the numeric target and linkage should also be included in the document.

Re	Recommendation:							
	Approve	☐ Partial Approval	☐ Disapprove	☐ Insuffici	ent Information			
Su	mmary ar	nd Comments:						

## **Temperature Targets**

Temperature targets are described in Section 8.3. The temperature standard was directly applied as a target, and evaluated using the Heatsource v7.0 model. However, because of uncertainties in the modeling, additional targets were set including riparian shade, width-to-depth ratios, irrigation efficiency, and stream flow.

#### Sediment

Sediment targets are described in Section 5.4. Water quality targets and supplemental indicators for sediment impairments include measures of the width/depth ratio, entrenchment ratio, percent of fine sediment on the stream bed and in pool-tail outs, eroding banks, pool frequency, riparian condition, and biological metrics. A weight of evidence approach is applied to the primary indicators in combination with the supplemental indicators.

#### Nutrients

Nutrient targets are based on DEQ's interim nutrient targets for wadable streams (Section 6.4). These include target values for total phosphorus, total nitrogen, and benthic chlorophyll-a. Several supplemental targets are also proposed including biological indicators, riparian vegetation, and percent shrub cover along line transects. An adaptive management strategy to facilitate revision of these targets is presented in Section 6.8.

#### Metals

Surface water quality standards for metals were directly applied as water quality targets (Section 7.4). Targets for metals concentrations in sediment are also proposed. These were derived from literature values. Biological metrics are proposed as supplemental indicators for metals.

# 1.5 Pollutant Source Analysis

A TMDL analysis is conducted when a pollutant load is known or suspected to be exceeding the loading capacity of the waterbody. Logically then, a TMDL analysis should consider all sources of the pollutant of concern in some manner. The detail provided in the source assessment step drives the rigor of the pollutant load allocation. In other words, it is only possible to specifically allocate quantifiable loads or load reductions to each significant source (or source category) when the relative load contribution from each source has been estimated. Therefore, the pollutant load from each significant source (or source category) should be identified and quantified to the maximum practical extent. This may be accomplished using site-specific monitoring data, modeling, or application of other assessment techniques. If insufficient time or resources are available to accomplish this step, a phased/adaptive management approach can be employed so long as the approach is clearly defined in the document.

- The TMDL should include an identification of all potentially significant point and nonpoint sources of the pollutant of concern, including the geographical location of the source(s) and the quantity of the loading, e.g., lbs/per day. This information is necessary for EPA to evaluate the WLA, LA and MOS components of the TMDL.
- The level of detail provided in the source assessment should be commensurate with the nature of the watershed and the nature of the pollutant being studied. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of both the natural background loads and the nonpoint source loads.
- Natural background loads should not be assumed to be the difference between the sum of known and quantified anthropogenic sources and the existing *in situ* loads (e.g. measured in stream) unless it can be demonstrated that all significant anthropogenic sources of the pollutant of concern have been identified, characterized, and properly quantified.
- The sampling data relied upon to discover, characterize, and quantify the pollutant sources should be included in the document (e.g. a data appendix) along with a description of how the data were analyzed to characterize

and quantify the pollutant sources. A discussion of the known deficiencies and/or gaps in the data set and their potential implications should also be included.

Re	Recommendation:					
$\boxtimes$	Approve	☐ Partial Approval	☐ Disapprove ☐	Insufficient Information		
Su	mmary an	d Comments:				

## **Temperature**

DEQ used an aerial photo analysis combined with field investigations to identify riparian vegetation, channel geometry, and flow modifications. The Heatsource model was then used to link these "thermally influencing factors" and in-stream temperatures.

#### **Sediment**

Significant sediment sources identified within the Middle and Lower Big Hole TPA that were assessed for the purposes of TMDL development include: upland erosion, unpaved roads, streambank erosion. Upland erosion loads were estimated using the USLE and a delivery ratio. Unpaved road sediment loading was quantified using the Forest Road Sedimentation Assessment Methodology (FroSAM). Sediment loading from eroding streambanks was assessed by performing Bank Erosion Hazard Index (BEHI) measurements and evaluating the Near Bank Stress (NBS).

## **Nutrients**

Nutrient sources were identified through aerial photo analysis and interviews with local land managers. Sources were quantified using the GWLF model.

#### Metals

Potential sources of metals loading in the Middle and Lower Big Hole TPA include: natural background loading from mineralized geology; abandoned mines, including adit discharge/drainage from abandoned mines and runoff/drainage from abandoned mine tailings; atmospheric deposition from Anaconda Smelter and Glendale Smelter; instream and floodplain metals deposits from historical mining operations. Sources were identified based on review of available GIS data layers, air photos, and the literature. Source loads were quantified using available data.

# 1.6 TMDL Technical Analysis

TMDL determinations should be supported by a robust data set and an appropriate level of technical analysis. This applies to <u>all</u> of the components of a TMDL document. It is vitally important that the technical basis for <u>all</u> conclusions be articulated in a manner that is easily understandable and readily apparent to the reader.

A TMDL analysis determines the maximum pollutant loading rate that may be allowed to a waterbody without violating water quality standards. The TMDL analysis should demonstrate an understanding of the relationship between the rate of pollutant loading into the waterbody and the resultant water quality impacts. This stressor  $\rightarrow$  response relationship between the pollutant and impairment and between the selected targets, sources, TMDLs, and load allocations needs to be clearly articulated and supported by an appropriate level of technical analysis. Every effort should be made to be as detailed as possible, and to base all conclusions on the best available scientific principles.

The pollutant loading allocation is at the heart of the TMDL analysis. TMDLs apportion responsibility for taking actions by allocating the available assimilative capacity among the various point, nonpoint, and natural pollutant sources. Allocations may be expressed in a variety of ways, such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or division of responsibility.

The pollutant loading allocation that will result in achievement of the water quality target is expressed in the form of the standard TMDL equation:

$$TMDL = \sum LAs + \sum WLAs + MOS$$

Where:

TMDL = Total Pollutant Loading Capacity of the waterbody

LAs = Pollutant Load Allocations

WLAs = Pollutant Wasteload Allocations

MOS = The portion of the Load Capacity allocated to the Margin of safety.

- A TMDL must identify the loading capacity of a waterbody for the applicable pollutant, taking into consideration temporal variations in that capacity. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).
- The total loading capacity of the waterbody should be clearly demonstrated to equate back to the pollutant load allocations through a balanced TMDL equation. In instances where numerous LA, WLA and seasonal TMDL capacities make expression in the form of an equation cumbersome, a table may be substituted as long as it is clear that the total TMDL capacity equates to the sum of the allocations.
- The TMDL document should describe the methodology and technical analysis used to establish and quantify the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.
- It is necessary for EPA staff to be aware of any assumptions used in the technical analysis to understand and evaluate the methodology used to derive the TMDL value and associated loading allocations. Therefore, the TMDL document should contain a description of any important assumptions (including the basis for those assumptions) made in developing the TMDL, including but not limited to:

- (1) the spatial extent of the watershed in which the impaired waterbody is located and the spatial extent of the TMDL technical analysis:
- (2) the distribution of land use in the watershed (e.g., urban, forested, agriculture);
- (3) a presentation of relevant information affecting the characterization of the pollutant of concern and its allocation to sources such as population characteristics, wildlife resources, industrial activities etc...;
- (4) present and future growth trends, if taken into consideration in determining the TMDL and preparing the TMDL document (e.g., the TMDL could include the design capacity of an existing or planned wastewater treatment facility);
- (5) an explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.
- The TMDL document should contain documentation supporting the TMDL analysis, including an inventory of the data set used, a description of the methodology used to analyze the data, a discussion of strengths and weaknesses in the analytical process, and the results from any water quality modeling used. This information is necessary for EPA to review the loading capacity determination, and the associated load, wasteload, and margin of safety allocations.
- ▼ TMDLs must take critical conditions (e.g., steam flow, loading, and water quality parameters, seasonality, etc...) into account as part of the analysis of loading capacity (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable critical conditions and describe the approach used to determine both point and nonpoint source loadings under such critical conditions. In particular, the document should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.
- Where both nonpoint sources and NPDES permitted point sources are included in the TMDL loading allocation, and attainment of the TMDL target depends on reductions in the nonpoint source loads, the TMDL document must include a demonstration that nonpoint source loading reductions needed to implement the load allocations are actually practicable [40 CFR 130.2(i) and 122.44(d)].

П	٠.					.1	- 4 *		
н	٠e	ca	m	m	en	а	ati	on	:

$\boxtimes$	Approve		Partial Approval		Disapprove		Insufficient	Information
-------------	---------	--	------------------	--	------------	--	--------------	-------------

## **Summary and Comments:**

#### Sediment

A thorough technical analysis has been completed. Summary information is presented in the main body of the document and supporting analyses/data are presented in appendices.

#### **Nutrients**

An adequate technical analysis has been performed focusing on setting-up, calibrating/validating, and using the GWLF model.

## Temperature

An adequate technical analysis has been completed. Summary information is presented in the main body of the document and supporting analyses/data are presented in appendices. The HEATSOURCE model was used to evaluate a variety of scenarios in consideration of the sources that exist, the naturally occurring condition, and the applicable water quality standards. Further, uncertainties are acknowledged and an adaptive management strategy, including a monitoring component, is provided in Sections 8.7 and 8.8 to address them.

## Metals

An adequate technical analysis for metals has been performed. However, data were limited. Uncertainties are acknowledged, and an adaptive management strategy is proposed to address uncertainties.

## 1.6.1 Data Set Description

TMDL documents should include a thorough description and summary of all available water quality data that are relevant to the water quality assessment and TMDL analysis. An inventory of the data used for the TMDL analysis should be provided to document, for the record, the data used in decision making. This also provides the reader with the opportunity to independently review the data. The TMDL analysis should make use of all readily available data for the waterbody under analysis unless the TMDL writer determines that the data are not relevant or appropriate. For relevant data that were known but rejected, an explanation of why the data were not utilized should be provided (e.g., samples exceeded holding times, data collected prior to a specific date were not considered timely, etc...).

Mi	nimum Submission Requirements:
$\boxtimes$	TMDL documents should include a thorough description and summary of all available water quality data that are relevant to the water quality assessment and TMDL analysis such that the water quality impairments are clearly defined and linked to the impaired beneficial uses and appropriate water quality criteria.
	The TMDL document submitted should be accompanied by the data set utilized during the TMDL analysis. I possible, it is preferred that the data set be provided in an electronic format and referenced in the document. I electronic submission of the data is not possible, the data set may be included as an appendix to the document
	commendation: Approve    Partial Approval   Disapprove   Insufficient Information
	mmary and Comments: An adequate summary and description of the water quality data relevant to water quality impairment has been provided.
	1.6.2 Waste Load Allocations (WLA):

Waste Load Allocations represent point source pollutant loads to the waterbody. Point source loads are typically better understood and more easily monitored and quantified than nonpoint source loads. Whenever practical, each point source should be given a separate waste load allocation. All NPDES permitted dischargers that discharge the pollutant under analysis directly to the waterbody should be identified and given separate waste load allocations. The finalized WLAs are required to be incorporated into future NPDES permit renewals.

#### Minimum Submission Requirements:

allocations.

$\boxtimes$	EPA regulations require that a TMDL include WLAs for all significant and/or NPDES permitted point sources
	of the pollutant. TMDLs must identify the portion of the loading capacity allocated to individual existing and/or
	future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than
	one discharger, e.g., if the source is contained within a general permit. If no allocations are to be made to point
	sources, then the TMDL should include a value of zero for the WLA.
П	All NPDES permitted dischargers given WLA as part of the TMDL should be identified in the TMDL.

including the specific NPDES permit numbers, their geographical locations, and their associated waste load

Recommendation:  ☑ Approve ☐ Partial Approval ☐ Disapprove ☐ Insufficient Information ☐ No-action
<b>Summary and Comments:</b> There are no permitted point source discharges in the watershed. However, appropriate WLA's have been provided for abandoned mine sources (metals) in Elkhorn Creek (MT41D003_220), Wickiup Creek (MT41D002_120), and Rochester Creek (MT41D002_160).
1.6.3 Load Allocations (LA):
Load allocations include the nonpoint source, natural, and background loads. These types of loads are typically more difficult to quantify than point source loads, and may include a significant degree of uncertainty. Often it is necessary to group these loads into larger categories and estimate the loading rates based on limited monitoring data and/or modeling results. The background load represents a composite of all upstream pollutant loads into the waterbody. In addition to the upstream nonpoint and upstream natural load, the background load often includes upstream point source loads that are not given specific waste load allocations in this particular TMDL analysis. In instances where nonpoint source loading rates are particularly difficult to quantify, a performance-based allocation approach, in which a detailed monitoring plan and adaptive management strategy are employed for the application of BMPs, may be appropriate.
Minimum Submission Requirements:
EPA regulations require that TMDL expressions include LAs which identify the portion of the loading capacity attributed to nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Load allocations may be included for both existing and future nonpoint source loads. Where possible, load allocations should be described separately for natural background and nonpoint sources.
Load allocations assigned to natural background loads should not be assumed to be the difference between the sum of known and quantified anthropogenic sources and the existing <i>in situ</i> loads (e.g., measured in stream) unless it can be demonstrated that all significant anthropogenic sources of the pollutant of concern have been identified and given proper load or waste load allocations.
Recommendation:  ☑ Approve ☐ Partial Approval ☐ Disapprove ☐ Insufficient Information
Summary and Comments:
Sediment
Load allocations are provided for each of the significant anthropogenic sources and natural background. They are presented as % reductions and as daily loads in tons per day (daily loads are presented in Appendix F).
Nutrients
Load allocations are provided for each of the significant sources based on GWLF results. Although the approach is adequate, it appears to be unnecessarily over complicated given the level of certainty associated with the model results and the allocation tables are confusing as written.

**Temperature** 

The temperature TMDLs have been allocated to the significant sources of thermal loading and/or surrogates that affect thermal loading.

#### Metals

Nonpoint sources of metals loading are allocated based on contributing source area or by tributary area. Given the lack of available data and the adaptive management strategy (Section 7.8) to address the uncertainty, this approach appears to be adequate.

## 1.6.4 Margin of Safety (MOS):

Natural systems are inherently complex. Any mathematical relationship used to quantify the stressor  $\rightarrow$  response relationship between pollutant loading rates and the resultant water quality impacts, no matter how rigorous, will include some level of uncertainty and error. To compensate for this uncertainty and ensure water quality standards will be attained, a margin of safety is required as a component of each TMDL. The MOS may take the form of a explicit load allocation (e.g., 10 lbs/day), or may be implicitly built into the TMDL analysis through the use of conservative assumptions and values for the various factors that determine the TMDL pollutant load  $\rightarrow$  water quality effect relationship. Whether explicit or implicit, the MOS should be supported by an appropriate level of discussion that addresses the level of uncertainty in the various components of the TMDL technical analysis, the assumptions used in that analysis, and the relative effect of those assumptions on the final TMDL. The discussion should demonstrate that the MOS used is sufficient to ensure that the water quality standards would be attained if the TMDL pollutant loading rates are met. In cases where there is substantial uncertainty regarding the linkage between the proposed allocations and achievement of water quality standards, it may be necessary to employ a phased or adaptive management approach (e.g., establish a monitoring plan to determine if the proposed allocations are, in fact, leading to the desired water quality improvements).

	rela §13 TM	IDLs must include a margin of safety (MOS) to account for any lack of knowledge concerning the attionship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. 0.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit (i.e., incorporated into the IDL through conservative assumptions in the analysis) or explicit (i.e., expressed in the TMDL as loadings aside for the MOS).
		If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS should be identified and described. The document should discuss why the assumptions are considered conservative and the effect of the assumption on the final TMDL value determined.
		If the MOS is explicit, the loading set aside for the MOS should be identified. The document should discuss how the explicit MOS chosen is related to the uncertainty and/or potential error in the linkage analysis between the WQS, the TMDL target, and the TMDL loading rate.
		<u>If</u> , rather than an explicit or implicit MOS, the <u>TMDL relies upon a phased approach</u> to deal with large and/or unquantifiable uncertainties in the linkage analysis, the document should include a description of the planned phases for the TMDL as well as a monitoring plan and adaptive management strategy.
		mendation:  prove Partial Approval Disapprove Insufficient Information
Su	mm	ary and Comments:

#### Sediment

An implicit MOS is provided for sediment. Uncertainties and assumptions are acknowledged throughout the document and a monitoring strategy and adaptive management strategy is provided that will provide an adequate margin of safety. The adaptive management strategy addresses uncertainties associated with the targets, TMDLs, and allocations.

## Nutrients

The MOS provided for nutrients is implicit. Uncertainties and assumptions are acknowledged throughout the document and a monitoring strategy and adaptive management strategy (Sections 6.8 and 10.0) is provided that will provide an adequate margin of safety. The adaptive management strategy addresses uncertainties associated with the targets, TMDLs, and allocations.

## Temperature

Primarily, the MOS was provided by focusing the analysis on, and establishing allocations based on the warmest period of the year. Additionally, an adaptive management strategy is provided to address uncertainties.

#### Metals

All metals TMDLs incorporate an implicit MOS and metals TMDLs with a WLA to non-permitted point sources also have an explicit MOS of 10 percent because of the uncertainty associated with loading from abandoned mines and the effectiveness of restoration activities.

## 1.6.4 Seasonality and variations in assimilative capacity:

The TMDL relationship is a factor of both the loading rate of the pollutant to the waterbody and the amount of pollutant the waterbody can assimilate and still attain water quality standards. Water quality standards often vary based on seasonal considerations. Therefore, it is appropriate that the TMDL analysis consider seasonal variations, such as critical flow periods (high flow, low flow), when establishing TMDLs, targets, and allocations.

#### **Minimum Submission Requirements:**

$\boxtimes$	The statute and regulations require that a TMDL be established with consideration of seasonal variations. The
	TMDL must describe the method chosen for including seasonal variability as a factor. (CWA §303(d)(1)(C), 40
	C.F.R. §130.7(c)(1)).
Re	commendation:
$\boxtimes$	Approve Partial Approval Disapprove Insufficient Information

# **Summary and Comments:**

#### Sediment

Sediment loads are entirely nonpoint source and are primarily introduced during spring runoff and episodic extreme storm events. The potential nonpoint source BMPs that would be employed to reduce sediment loading would function anytime surface runoff is produced. As a result, seasonality is not an important consideration for the TMDL or allocations. The impairments to the aquatic life and coldwater fishery beneficial uses, however, are a result of the deposition of fine sediment and are potentially

realized for the entire year. The suite of targets adequately addresses the seasonality associated with impairments to the beneficial uses.

#### **Nutrients**

The nutrient TMDLs are flow-based. In other words, they vary based on flow. Also, to be conservative given the limited data, lower summer (i.e., growing season) nutrient targets are applied for the entire year.

# **Temperature**

Seasonality was addressed conservatively by focusing the analysis on, and establishing allocations based on the warmest period of the year

#### Metals

Seasonality for metals is addressed as follows:

- Metals concentrations and loading conditions are evaluated for both high flow and low flow conditions.
- Metals TMDLs incorporate stream flow as part of the TMDL equation.
- Metals targets apply year round, with monitoring criteria for target attainment developed to address seasonal water quality extremes associated with loading and hardness variations.

# 1.7 Monitoring Strategy

TMDLs may have significant uncertainty associated with the selection of appropriate numeric targets and estimates of source loadings and assimilative capacity. In these cases, a phased TMDL approach may be necessary. For Phased TMDLs, it is EPA's expectation that a monitoring plan will be included as a component of the TMDL document to articulate the means by which the TMDL will be evaluated in the field, and to provide for future supplemental data that will address any uncertainties that may exist when the document is prepared.

	•
$\boxtimes$	When a TMDL involves both NPDES permitted point source(s) and nonpoint source(s) allocations, and attainment of the TMDL target depends on reductions in the nonpoint source loads, the TMDL document should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring.
	Under certain circumstances, a phased TMDL approach may be utilized when limited existing data are relied upon to develop a TMDL, and the State believes that the use of additional data or data based on better analytical techniques would likely increase the accuracy of the TMDL load calculation and merit development of a second phase TMDL. EPA recommends that a phased TMDL document or its implementation plan include a monitoring plan and a scheduled timeframe for revision of the TMDL. These elements would not be an intrinsic part of the TMDL and would not be approved by EPA, but may be necessary to support a rationale for approving the TMDL. http://www.epa.gov/owow/tmdl/tmdl_clarification_letter.pdf
Re	commendation:
	Approve  Partial Approval  Disapprove  Insufficient Information
Su	mmary and Comments: A monitoring strategy is provided in Section 10.0.

# 1.8 Restoration Strategy

The overall purpose of the TMDL analysis is to determine what actions are necessary to ensure that the pollutant load in a waterbody does not result in water quality impairment. Adding additional detail regarding the proposed approach for the restoration of water quality is not currently a regulatory requirement, but is considered a value added component of a TMDL document. During the TMDL analytical process, information is often gained that may serve to point restoration efforts in the right direction and help ensure that resources are spent in the most efficient manner possible. For example, watershed models used to analyze the linkage between the pollutant loading rates and resultant water quality impacts might also be used to conduct "what if" scenarios to help direct BMP installations to locations that provide the greatest pollutant reductions. Once a TMDL has been written and approved, it is often the responsibility of other water quality programs to see that it is implemented. The level of quality and detail provided in the restoration strategy will greatly influence the future success in achieving the needed pollutant load reductions.

## Minimum Submission Requirements:

EPA is not required to and does not approve TMDL implementation plans. However, in cases where a WLA is
dependent upon the achievement of a LA, "reasonable assurance" is required to demonstrate the necessary LA
called for in the document is practicable). A discussion of the BMPs (or other load reduction measures) that are
to be relied upon to achieve the LA(s), and programs and funding sources that will be relied upon to implement
the load reductions called for in the document, may be included in the implementation/restoration section of the
TMDL document to support a demonstration of "reasonable assurance".

#### Recommendation:

	e 🗆	Partial Approval		Disapprove		Insufficient	Information	$\boxtimes$	No-action
--	-----	------------------	--	------------	--	--------------	-------------	-------------	-----------

**Summary and Comments:** Although not required, a conceptual restoration strategy is provided in Section 9.0.

# 1.9 Daily Loading Expression

The goal of a TMDL analysis is to determine what actions are necessary to attain and maintain WQS. The appropriate averaging period that corresponds to this goal will vary depending on the pollutant and the nature of the waterbody under analysis. When selecting an appropriate averaging period for a TMDL analysis, primary concern should be given to the nature of the pollutant in question and the achievement of the underlying WQS. However, recent federal appeals court decisions have pointed out that the title TMDL implies a "daily" loading rate. While the most appropriate averaging period to be used for developing a TMDL analysis may vary according to the pollutant, a daily loading rate can provide a more practical indication of whether or not the overall needed load reductions are being achieved. When limited monitoring resources are available, a daily loading target that takes into account the natural variability of the system can serve as a useful indicator for whether or not the overall load reductions are likely to be met. Therefore, a daily expression of the required pollutant loading rate is a required element in all TMDLs, in addition to any other load averaging periods that may have been used to conduct the TMDL analysis. The level of effort spent to develop the daily load indicator should be based on the overall utility it can provide as an indicator for the total load reductions needed.

Minimur	n Submission Requirements:
also expre	document should include an expression of the TMDL in terms of a daily load. However, the TMDL may be expressed in temporal terms other than daily (e.g., an annual or monthly load). If the document esses the TMDL in additional "non-daily" terms the document should explain why it is appropriate or ntageous to express the TMDL in the additional unit of measurement chosen.
	nendation:
Appı	rove Partial Approval Disapprove Insufficient Information
Summa	ry and Comments:
<u>Sedimer</u>	<u>at</u>
The sedi	ment TMDLs are presented as tons/day in Appendix F.
Nutrien	<u>ts</u>
The nutr	ient TMDLs are flow-based, which address the daily loading expression.
<u>Temper</u>	ature
Daily ter	mperature loadings are presented in Appendix F.
Metals	
The TM	DLs are presented in pounds per day.
4.0	Public Participation
and that process the probissues to informat TMDL sas a TM to EPA:	gulations require that the establishment of TMDLs be conducted in a process open to the public, the public be afforded an opportunity to participate. To meaningfully participate in the TMDL it is necessary that stakeholders, including members of the general public, be able to understand lem and the proposed solution. TMDL documents should include language that explains the othe general public in understandable terms, as well as provides additional detailed technical tion for the scientific community. Notifications or solicitations for comments regarding the should be made available to the general public, widely circulated, and clearly identify the product DL and the fact that it will be submitted to EPA for review. When the final TMDL is submitted for approval, a copy of the comments received by the state and the state responses to those atts should be included with the document.
the TMD	m Submission Requirements: The TMDL must include a description of the public participation process used during the development of pL (40 C.F.R. §130.7(c)(1)(ii)). DLs submitted to EPA for review and approval should include a summary of significant comments and the
	e's/Tribe's responses to those comments.
	nendation: rove ☐ Partial Approval ☐ Disapprove ☐ Insufficient Information
	ry and Comments: The public participation process is summarized in Section 11.0 and ats and responses associated with the Draft TMDL document are included in Appendix K.

Table 1 - Sediment TMDLs

Stream Segment	Water Body #	# of TMDLs
<b>Big Hole River</b> between Divide Cr and Pintlar Cr (Middle segment)	MT41D001_020	1
Birch Creek headwaters to the National Forest Boundary	MT41D002_090	1
Birch Creek from National Forest Boundary to mouth (Big Hole R)	MT41D002_100	1
California Creek from headwaters to mouth (French Cr-Deep Cr)	MT41D003_070	2
Camp Creek from headwaters to mouth (Big Hole R)	MT41D002_020	2
Charcoal Creek tributary of the Big Hole R	MT41D003_010	1 .
Corral Creek from headwaters to mouth (Deep Cr)	MT41D003_130	1
Deep Creek from headwaters to mouth (Big Hole R)	MT41D003_040	1
<b>Delano Creek</b> from headwaters to mouth (Jerry Cr)	MT41D003_030	1
Divide Creek from headwaters to mouth (Big Hole R)	MT41D002_040	. 1
Elkhorn Creek headwaters to mouth (Jacobson Cr-Wise R)	MT41D003_220	. 1
Fishtrap Creek confluence of West & Middle Fks to mouth (Big Hole)	MT41D003_160	1
French Creek from headwaters to mouth	MT41D003_050	. 1
Gold Creek from headwaters to mouth (Wise R)	MT41D003_230	1
Grose Creek from headwaters to mouth (Big Hole R)	MT41D002_060	· 1 .
Jerry Creek from headwaters to mouth (Big Hole R)	MT41D003_020	1
Lost Creek in the Lower Big Hole Watershed	MT41D002_180	1
Moose Creek from headwaters to mouth (Big Hole R at Maiden Rock)	MT41D002_050	1
Oregon Creek headwaters to mouth (California Cr - French Cr - Deep)	MT41D003_080	1
Pattengail Creek from headwaters to mouth (Wise R)	MT41D003_210	1
Rochester Creek from headwaters to mouth (Big Hole R)	MT41D002_160	1
Sawlog Creek tributary to Big Hole R	MT41D004_230	1
Sevenmile Creek from headwaters to mouth (Deep Cr)	MT41D003_110	1
Sixmile Creek from headwaters to mouth (California Cr)	MT41D003_090	1
Soap Creek from headwaters to mouth (Big Hole R)	MT41D002_140	1
Trapper Creek from headwaters to mouth (Big Hole R)	MT41D002_010	1
Twelvemile Creek from headwaters to mouth (Deep Cr)	MT41D003_120	1
<b>Wise River</b> from headwaters to mouth (Big Hole R)	MT41D003_200	1
Total		30

Table 2 - Nutrient TMDLs

Stream Segment	Water Body #	TMDLs prepared
Camp Creek from headwaters to mouth (Big Hole R)	MT41D002_020	Total Nitrogen Total Phosphorus
<b>Divide Creek</b> from headwaters to mouth (Big Hole R)	MT41D002_040	Total Nitrogen Total Phosphorus
Grose Creek from headwaters to mouth (Big Hole R)	MT41D002_060	Total Nitrogen Total Phosphorus
Lost Creek in the Lower Big Hole Watershed	MT41D002_180	Total Nitrogen Total Phosphorus
Soap Creek from headwaters to mouth (Big Hole R)	MT41D002_140	Total Nitrogen Total Phosphorus
Total		10

Table 3 - Metals TMDLs

Water body & Stream Description	Impairment Cause Addressed	# of TMDLs
Big Hole River between Divide Cr and Pintlar Cr (Middle segment) MT41D001_020	Copper Lead	2
California Creek from headwaters to mouth (French Cr-Deep Cr) MT41D003_070	Arsenic Iron copper	3
Elkhorn Creek headwaters to mouth (Jacobson Cr- Wise R) MT41D003_220	Arsenic Lead Cadmium Copper Zinc	5
French Creek from headwaters to mouth (Deep Cr) MT41D003_050	Arsenic Copper	2
Jerry Creek from headwaters to mouth (Big Hole R) MT41D003 020	Copper	1
Lost Creek (MT41D002_180)	Arsenic	. 1
Oregon Creek headwaters to mouth (California Cr - French Cr - Deep) MT41D003_080	Arsenic Copper	2
Rochester Creek from headwaters to mouth (Big Hole R) MT41D002_160	Arsenic Copper Lead Mercury	4
Trapper Creek from headwaters to mouth (Big Hole R) MT41D002_010	Arsenic Cadmium Copper Lead Zinc	5
Wise River from headwaters to mouth (MT41D003_200)	Cadmium Copper Lead	3
Total		28

# Table 4 - Metals TMDLs

Tubio 4 Mictalo Hilbes	
Divide Creek from headwaters to mouth (Big Hole R)	MT41D002_040
<b>Big Hole River</b> between Divide Cr and Pintlar Cr (Middle Segment)	MT41D001_020)
Big Hole River from Divide Cr to mouth (Lower Segment)	MT41D001_010