## **APPENDIX C**

## **Approved Montana Load Determinations**

*Updated 4/30/2002* 

MPDES PERMIT ALLOWABLE LOAD DETERMINATIONS							
Waterbody Name	TMDL Parameter/ Pollutant	Section 303(d)(1) TMDL	Section 303(d)(3) TMDL	Point Source	NPDES Number	Approval Date	
Prickly Pear Creek*	Fecal coliform Ammonia TRC	X X X		City of Helena	MT0022641	01/14/97	
Flathead Lake*	Fecal Coliform	X		Big Fork	MT0020397	01/31/97	
Silver Bow Creek*	Fecal Coliform	X		Butte	MT0022012	01/31/97	
Flathead River*	Fecal Coliform TRC (not listed)	X X		Columbia Falls	MT0020036	01/31/97	
Dry Fork Marias River*	Fecal Coliform	X		Conrad	MT0020079	01/31/97	
Cut Bank Creek*	Fecal Coliform TRC	X X		Cut Bank	MT0020141	01/31/97	
Milk River*	Fecal Coliform TRC	X X		Glasgow	MT0021211	01/31/97	
Yellowstone River*	Fecal Coliform TRC Ammonia	X X X		Billings	MT0022586	01/31/97	
East Gallatin River*	Fecal Coliform TRC Ammonia	X X X		Bozeman	MT0022608	01/31/97	
Whitefish River*	Fecal Coliform TRC	X X		Whitefish	MT0020184	01/31/97	
Yellowstone River*	Fecal Coliform TRC (not in list)	X X		Miles City	MT0020001	01/31/97	
Yellowstone River*	Fecal Coliform TRC (not on list)	X X		Livingston	MT0020435	01/31/97	
Kootenai River*	Fecal Coliform	X		Libby	MT0020494	01/31/97	
Big Spring Creek*	Fecal Coliform	X		Lewiston	MT0020044	01/31/97	
Yellowstone River*	Fecal Coliform TRC (not on list)	X X		Laurel	MT0020311	01/31/97	
Ashley Creek*	Fecal Coliform TRC	X X		Kalispell	MT0021938	01/31/97	
Milk River*	Fecal Coliform TRC	X X		Havre	MT0022535	01/31/97	
Bitterroot River*	Fecal Coliform TRC (not on list)	X X		Hamilton	MT0020028	01/31/97	
Missouri River*	Fecal Coliform	X		Great Falls	MT0021920	01/31/97	

Waterbody Name	TMDL Parameter/ Pollutant	Section 303(d)(1) TMDL	Section 303(d)(3) TMDL	Point Source	NPDES Number	Approval Date
German Gulch*	Copper Zinc Lead Mercury Cadmium Selenium Arsenic	X X X X X X		Beal Mountain Mining Inc.	MT0030121	01/31/97
Clark Fork of Columbia*	Color Temperature	X X		Stone Container Corp	MT0000035	01/31/97
Ten Mile Creek*	Copper Turbidity	X X		City of Helena WWTP	MT0028720	01/31/97
Prickly Pear Creek*	Cadmium Iron Lead Manganese Mercury Selenium Thallium	X X X X X X		Asarco Inc.	MT0030147	01/31/97
Yellowstone River*	Temperature	X		Montana-Dakota Utilities	MT0000302	01/31/97
Prickly Pear Creek*	Temperature	X		Air Liquide America	MT0000426	01/31/97
Unnamed Drainage to Clark Fork*	Fecal Coliform BOD <sub>5</sub> TSS Nitrogen Phosphorus	X X X	X X	Montana Department of Corrections; Galen State Hospital	MT0021431	04/28/97
Prickly Pear Creek*	Fecal Coliform Ammonia TRC BOD <sub>5</sub> TSS Nitrogen Phosphorus	X X X X X	х	City of Helena	MT0022641	04/28/97
Missouri River	BOD <sub>5</sub> TSS Nitrogen Phosphorus		X X X X	City of Fort Benton	MT0021601	04/28/97
Kootenai River	Fecal Coliform Ammonia TRC BOD <sub>5</sub> TSS Nitrogen Phosphorus		X X X X X X	City of Troy	MT0030333	04/28/97
Unnamed natural wetland	TRC TSS		X X	Ridgewood Homeowners Association	MT0030325	04/28/97

	MPDES PER	MIT ALLOV	WABLE LO	AD DETERMINA	TIONS	
Waterbody Name	TMDL Parameter/ Pollutant	Section 303(d)(1) TMDL	Section 303(d)(3) TMDL	Point Source	NPDES Number	Approval Date
Unnamed tributary to West Gallatin Canal	Fecal Coliform Ammonia TRC BOD <sub>5</sub> TSS Nitrogen Phosphorus		X X X X X X	Richard Atkins	MT0030317	04/28/97
South Fork of McDonald Creek	Fecal Coliform BOD <sub>5</sub> TSS Nitrogen Phosphorus		X X X X	Town of Grass Range	MT0030309	04/28/97
Fleshman Creek*	TRC Turbidity	X	X	City of Livingston	MT0028118	04/28/97
East Gallatin River*	Fecal Coliform Ammonia TRC BOD <sub>5</sub> TSS Nitrogen Phosphorus	X X X	X X	City of Bozeman	MT0022608	04/28/97
East Fork of Armells Creek*	BOD <sub>5</sub> TSS Nitrogen Phosphorus	X X X	Х	Rosebud County Comm. (Colstrip WWTP)	MT0022373	04/28/97
Highwood Creek*	Fecal Coliform TRC BOD <sub>5</sub> TSS Nitrogen Phosphorus	X X X X X		Highwood Sewer District	MT0022080	04/28/97
Tributaries to Spring Creek*	no TMDL needed			Spring Creek Coal Company	MT0024619	04/28/97
Prickly Pear Creek*	TRC Fecal Coliform BOD₅ TSS Nitrogen Phosphorous	X X X X X		City of East Helena	MT0022560	05/23/97
Bear Creek*	Cadmium Copper Iron Managanese Lead Zinc Mercury Arsenic Ammonia Total nitrogen Cyanide Nitrate+nitrite	X X X X X X X X X X X X		TVX Mineral Hill Mine	MT0030252	05/23/97

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Waterbody Name	TMDL Parameter/ Pollutant	Section 303(d)(1) TMDL	Section 303(d)(3) TMDL	Point Source	NPDES Number	Approval Date
Yellowstone River*	TRC Fecal Coliform Ammonia	X X	X	Billings WWTP	MT0022586	08/28/97
Libby Creek*	TIN Chromium Copper Iron Manganese Zinc Cadmium Mercury Lead	X X X X X X X		Noranda Minerals Corp. (Outfall 003)	MT0030279	08/28/97
Tongue River Reservoir	TSS Iron Oil/grease			Decker Coal Co. (West)	MT0000892	08/28/97
Grant Creek	Heat	X		4 B's Inn North	MT0029840	08/28/97
Teton River	Heat		X	Triangle Packing Inc.	MT0029807	08/28/97
Blackfoot River	zinc mercury lead copper cadmium iron	X X X X X		ASARCO Inc.	MT0030031	08/28/97
Madison River	Fecal coliform ammonia phosphorous nitrogen TSS		X X	Town of Three Forks	MT0020401	08/28/97
Jefferson River	phosphorus nitrogen TSS			Willow Creek Sewer District #306	MT0025038	08/28/97
Yellowstone River	Turbidity		X	Exxon Co. USA	MT0028321	08/28/97
Ashley Creek	Ammonia Fecal Coliform nitrogen phosphorus oil/grease BOD TSS	X X		City of Kalispell	MT0021938	08/28/97
Kootenai River*	TRC Fecal Coliform Ammonia		X X X	Stimson Lumber Company	MT0000221	08/28/97
Missouri River*	BOD <sub>5</sub> phosphorus nitrogen TSS			City of Poplar	MT0221695	No TMDL
Middle Fork of Stone Creek*	nitrate oil/grease turbidity	X X X		Luzena America Inc.	MT0027821	08/28/97

	MPDES PER	MIT ALLO	WABLE LO	AD DETERMINA	TIONS	
Waterbody Name	TMDL Parameter/ Pollutant	Section 303(d)(1) TMDL	Section 303(d)(3) TMDL	Point Source	NPDES Number	Approval Date
Clark Fork River*	TRC Fecal coliform Ammonia CBOD <sub>5</sub> TSS	X X	X	City of Missoula	MT0022594	09/24/97
Rock Creek*	Ammonia Fecal Coliform TRC nitrogen phosphorus CBOD <sub>5</sub> TSS		X X X	City of Joliet	MT0020249	11/18/97
Libby Creek*	TIN Chromium Copper Iron Manganese Zinc Cadmium Mercury Lead	X X X X X X X X		Noranda Minerals Corp. (Montanore Mine-Libby Creek Adit)	MT0030279	11/18/97
Pen Yan Creek	No TMDLs Developed			Montana Tunnels Mine	MT0028428	11/18/97
Silver Bow* and Sheep Gulch	TDS Floride Antimony Arsenic Cadmium Copper Iron Lead Nickel Selenium Silver (Sheep Gulch Only) Zinc	X X X X X X X X X	X	Advanced Silicon Materials, Inc.	MT0030350	02/18/98
Baxter Creek* (anti-deg TMDL)	Ammonia nitrite+nitrate	X X		J.C. Billion, Inc.	MT0029696	02/18/98
Dry Creek	No TMDLs Developed			Montana Suphur and Chemical Co.	MT0000230	02/18/98
Bitterroot River* (anti-deg. TMDL)	Lead Copper Zinc	X X X		Rocky Mtn. Laboratories (US DHHS)	MT0028487	02/18/98
Stillwater River*	Cadmium Copper Iron Lead Mercury Nickel Nitrogen Phosphorus Zinc	X X X X X X		Stillwater Mine	MT0024716	09/09/98

Waterhody Name	TMDL Parameter/	Section	Section	AD DETERMINA' Point Source	NPDES	Annuaral
Waterbody Name	Pollutant	303(d)(1) TMDL	303(d)(3) TMDL	Point Source	Number	Approval Date
Ashley Creek*	Temperature		X	Stampede Packing	MT0028410	09/09/98
Clark Fork River*	TIN WET Aluminum Ammonia Arsenic Cadmium Copper Lead Manganese Mercury Zinc Nitrate+Nitrite Total Nitrogen Total Phosp. Orthophosp. Barium Iron Silver	X X X X X X	X X X X X X X X X X X X	ASARCO Rock Creek Mine	MT0030287	09/09/98
Gallatin River*	Nitrogen Phosphorus	X X		Big Sky Water and Sewer District	MT0030384	01/29/99
Little Boulder River*	Fecal Coliform Chlorine	X X		Boulder Hot Springs	MT0023639	01/29/99
Yellowstone River*	Chlorine		X	City of Glendive	MT0000876	01/29/99
Milk River*	Chlorine		X	City of Harlem	MT0000931	01/29/99
Yellowstone River*	BOD Ammonia		X X	Holly Sugar Corp.	MT0000248	01/29/99
Yellowstone River*	Fecal Coliform Chlorine Ammonia	X	X X	City of Livingston	MT0020435	01/29/99
Gallatin River*	Fecal Coliform	X		Town of Manhattan	MT0021857	01/29/99
Clark Fork River*	Fecal Coliform Ammonia		X X	Town of Superior	MT0020664	01/29/99
East Boulder River*	Temperature Nitrogen Phosphorus Cadmium Chromium Copper Iron Lead Manganese Nickel Zinc	X X X X X X X X X X		Stillwater Mining Co.	MT0026808	01/29/99
Yellowstone River	Dissolved Oxyge	X	X	Western Sugar	MT0000281	01/29/99
Musselshell River*	Fecal Coliform	Х		City pf Halowton Sewage Treatment	MT0020354	01/30/01
Milk River*	Fecal Coliform	X		Town of Malta	MT-0020389	01/30/01

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Waterbody Name	TMDL Parameter/ Pollutant	Section 303(d)(1) TMDL	Section 303(d)(3) TMDL	Point Source	NPDES Number	Approval Date
Milk River*	Fecal Coliform TRC Ammonia Toxicity Unit	X X X X		City of Havre	MT0022535	01/30/01
Milk River*	Fecal Coliform TRC	X X		City of Harlem	MT-0021270	01/30/01
Russell Creek	Fecal Coliform	X		Town pf Ekalaka	MT-0020371	01/30/01
Big Spring Creek*	Fecal Coliform Toxicity Unit	X X		City of Lewiston	MT-0020044	01/30/01
Clark Fork River*	Fecal Coliform	X		Town of Bridger	MT-0020303	01/30/01
Boulder River*	Fecal Coliform TRC	X X		Town of Boulder	MT-0023078	01/30/01
Wolf Creek*	Fecal Coliform	X		Town of Denvton	MT-0022463	01/30/01
Cottonwood Creek*	Fecal Coliform	X		Town of Stockett	MT-0030091	01/30/01
Flathead Lake*	Fecal Coliform	X		Big Fork W&SD	MT-0020397	01/30/01
Dodson Creek	Fecal Coliform	X		Town of Dodson	MT-0030589	01/30/01
Highwood Creek	Fecal Coliform	X		Highwood Sewer District	MT-0022080	01/30/01
Bitterroot Creek*	Fecal Coliform Toxicity Unit	X X		City of Hamilton	MT-0020029	01/30/01

	APPROVED TMDL PLANS							
Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	Reference Document(s)	Approval Date			
Deep Creek*	Sediment Flow Temperature	Sediment: 30% substrate fines(<6.35mm) 0.26 slope of TSS v. Q plot Temperature: >73°F in only 10 days annually Biotic: 3,000 female trout captured/year	∃TSS load same as ref reach ∃50% reduction in erosive bands ∃2275' increase in channel length ∃3-9 cfs min. flow	"Development of a TMDL to Redce NonPoint Source Sediment Pollution in Deep Creek, Montana" (Montana DEQ; March 1996)	10/16/96			

		APPROVED T	MDL PLANS		
Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	Reference Document(s)	Approval Date
Clark Fork River*	Total nitrogen Total phosphorus	Algae: 100 mg/m² (summer mean) chlorophyll a 150 mg/m² (peak) chlorophyll a Phosphorus: 30 ug/l total P upstream of the Reserve St. Nitrogen: 300 ug/l total N Nutrient ratio: 15:1 N:P	(kg/day) Clark Fork below <u>Deer</u> <u>Lodge</u> Total N: 52 Total P: 0.84 Clark Fork above <u>Missoula</u> Total N: 689 Total P: 59 Clark Fork Below <u>Stone</u> Container Total N: 801 Total P: 77	"Clark Fork River, Voluntary Nutrient Reduction Program"(Tri- State Implementation Council; August 1998)	10/21/98
Elk Creek*	Sediment	Restoration of native trout	50% reduction in annual sediment load at the mouth of Elk Creek	Green Mtn. Watershed PIP (February 1997)  Elk Creek Watershed Council letter and maps to R. Lincoln(MDEQ) from M.Miller (ECWC) (July 3, 1998)  "lk Creek Near Jeron: WC level 2.5 Stream Survey; Reach Health Assessment Management and Rehabilitation Recommendations" (June 12, 1997)	12/08/98
Teton River*	Salinity	Specific conductance of 1000 micromhos/cm (at 25° C)  total dissolved solids (TDS) of 700 mg/l  (TMDL endpoints measured at Teton River at State Highway 221 Bridge)	TMDL = Q <sub>down</sub> C <sub>down</sub> = C <sub>up</sub> + Q <sub>PB</sub> C <sub>PB</sub> where:  Q <sub>down</sub> = flow in Teton River below Priest Butte outlet  C <sub>down</sub> = TMDL endpoint (ie 1000 umhos/cm or 400 mg/l TDS)  Q <sub>up</sub> = upstream flow in Teton River C <sub>up</sub> = upstream concentration of either specific conductivity or TDS  Q <sub>PB</sub> = flow in Priest Butte outlet  C <sub>PB</sub> = concentration of either specific conductivity of TDS in Priest Butte outlet	See list of supporting documentation in State TMDL submittal.	03/23/99

		APPROVED T	MDL PLANS		
Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	Reference Document(s)	Approval Date
Careless Creek*	Sediment	# Narrative Standard: "No increases are allowed above naturally occurring concentrations of sediment, settleable solids, oils or floating solids, which will or are likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife" (ARM 17.30.629(f))  # Beneficial Use Standard: "suitable for bathing, swimming and recreation, growth and propagation of nonsalmonid fishes and associated aquatic life, waterfowl and furbearers." (ARM17.30.6529(l))  [The success of meeting these standards will be gauged by monitoring physical and biological parameters such as: flow, total suspended solids, temperature, conductivity, pH, amount of bank erosion, stream cross sections, pebble counts, photoplots, macroinvertebrates, and fish.  A goal of approximately 155 mg/l sediment concentration (suspended and bedload combined) during a stable flow of 150 cfs has been suggested as a reasonable target for ambient sediment levels.]	# 25% reduction in long term sediment yield  TMDL partially implemented by:  # restoration of 54% of eroding banks  # increase in stream length by 4 percent (i.e., increase in channel sinuosity)  # maximum flow target of 100 cfs at Careless Canal diversion and 80 cfs at mouth of Careless Creek	# Careless Creek Water Quality Restoration Plan (MT DEQ; February 22, 2001)  # Protocol for Developing Sediment TMDLs (First Edition); EPA 841-B-99- 004; October 1999.  # Musselshell River Basin and Careless Creek Watershed Coordinated Watershed Plan; May 1998)  # Study of the Deadman's Bsin Reservoir Careless Creek Release System (Aquoneering; February 1991)  # Musselshell River Basin Water Management Study (U.S. Bureau of Reclamation, et al.; October 1997)  # Developments on Careless Creek to Reduce NonPoint Source Sediment (V. Sellers; 1999)  # Development of TMDL to Reduce NonPoint Source Sediment (V. Sellers, 1999)  # Technical Report: The Careless Creek Inventory; Use of the Global Positioning System (BPS) as a Tool to Inventory Streambank Condition (USDA/NRCS; 1995)	09/21/01
Lone Tree Creek	Nitrogen	# 1 mg/l total Kjeldahl nitrogen  # periphyton pollution index of 2.00 or greater	# 80 percent reduction in long term nitrogen load  TMDL partially implemented by:  # restoration of riparian areas along 37% of the stream miles to a proper function condition (PFC)  # re-activation of 0.25 mile of abandoned channel	# Lone Tree Creek TMDL Addressing Riparian Habitat Degradation, Flow Alteration, and Nutrient Enrichment (MT DEQ; February 16, 2001)  # Protocol for Developing Sediment TMDLs (First Edition); EPA 841-B-99- 004; October 1999.  # Protocol for Developing Nutrient TMDLs (First Edition); EPA 841-B-99- 007; November 1999.  # Missouri-Lone Tree Watershed Plan (USDI/BLM; Jly 1997)  # Grazing Best Managment Practices (USDA/NRCS; 1996)	09/21/01

		APPROVED T	MDL PLANS		
Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	Reference Document(s)	Approval Date
Flathead Lake*	Nitrogen Phosphorus	# 80 g Carbon/m²/yr  # no declining trend in hypolimnionic dissolved oxygen  # no measurable blooms of Anabaena or other pollution algae  # 1.0 ug/l chlorophyll a  # maintain or decrease nearshore algal growth on rocks  # 5.0 ug/l total phosphorus  # < 0.5 ug/l soluble reactive phosphorus  # 95 ug/l total nitrogen  # 30 ug/l nitrite + nitrate  # < 1.0 ug/l ammonia	# 25% reduction in long term nitrogen and phosphorus loads	# Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana (Montana DEQ; December 28, 2001)  # "Water quality data and analyses to aid in the development of revised water quality targets for Flathead Lake, Montana; Phase 1 of a cooperative study to determine total maximum daily loads of nitrogen and phosphorus."  Open File Report 142-97. Flathead Lake Biological Station, University of Montana, Polson, MT.	03/31/02
Sage Creek*	Salinity	# Narrative Standard: "State surface waters must be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life" (ARM 17.30.637(1)(d).)  # Beneficial Use Standard: "suitable for culinary and food process purposes, after conventialn treatment, and for bathing, swimming and recreation, growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply." (ARM 17.30.625).  A goal of approximately 1250 mg/l total dissolved solids (TDS) or 1600:mhos/cm specific conductance (SC). (These metrics reflect about the same amount of salinity in Sage Creek.)	# The Sage Creek TMDL is expressed in pounds per day of TDS using the following formula based on flow:  TMDL = 1250 mg/l x flow x 5.39  where, flow = stream flow in cfs  5.39 = conversion factor  TMDL partially implemented by reducing groundwater levels in saline seep recharge areas.	# Salinity TMDL for Sage Creek, Montana (January 16, 2001(sic)); MT DEQ.  # Protocol for Developing Sediment TMDLs (First Edition); EPA 841-B-99- 004; October 1999.  # Water Quality Restoration Plan for Sage Creek Watershed (November 2001; Sage Creek Watershed Alliance, Liberty County Conservation District, Hill County Conservation District, Montana Bureau of Mines and Geology	04/23/02

	APPROVED TMDL PLANS								
Waterbody Name	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	Reference Document(s)	Approval Date				
Big Sandy Creek*	Salinity	# Narrative Standard: "State surface waters must be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life" (ARM 17.30.637(1)(d).)  A goal of approximately 1000 mg/l total dissolved solids (TDS) or 1600 :mhos/cm specific conductance (SC) at 25 °C. (These metrics reflect about the same amount of salinity in Big Sandy Creek.)	# The Big Sandy Creek TMDL is expressed in pounds per day of TDS using the following formula based on flow:  TMDL = 1000 mg/l x flow x 5.39  where, flow = stream flow in cfs  5.39 = conversion factor  TMDL partially implemented by applying agricultural best management practices (BMPs) in saline seep recharge areas.	# Big Sandy Creek Salinity TMDL & Water Quality Restoration Plan; (January 16, 2001(sic)); MT DEQ.  # Protocol for Developing Sediment TMDLs (First Edition); EPA 841-B-99- 004; October 1999.  # Big Sandy Creek Watershed: Aerial Assessment; (May 24-25, 2000); Big Sandy Creek Project Coordination by Big Sandy Conservation District, Big Sandy, Montana.	04/23/02				

<sup>\*</sup> An asterisk indicates the waterbody has been included on the State's Section 303(d) list of waterbodies in need of TMDLs.