BUREAU OF RECLAMATION

Appendix B

Tables

Final Environmental Assessment
Dry-Redwater Rural Water Project, Montana
Montana Area Office – Missouri Basin Region

Appendix B

Tables

Final Environmental Assessment
Dry-Redwater Rural Water Project, Montana
Montana Area Office – Missouri Basin Region

prepared by:

United States Department of the Interior
Bureau of Reclamation
Montana Area Office

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MTAO-EA-2024-003

List of Tables

Chapter 1. Introduction

Table 1-1. Groundwater Quality Samples Since 2000 in the DRWA Service Area that Exceed U.S. EPA Maximum Contaminant Levels (MCL)

Contaminant	MCL (mg/l)	Potential Health Effects	Avg. Sample Value	Min. Sample Value	Max. Sample Value	Number of Samples	Number of Samples Exceeding MCL	Percentage of Samples Exceeding MCL
Arsenic	0.01	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer.	0.005	0.000385	0.0496	84	7	8%
Fluoride	4	Bone disease (pain and tenderness of the bones); Children may get mottled teeth.	1.2	0.1	6.9	217	20	9%
Nitrate as N	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	2.8	0	22	51	5	10%
Selenium	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems.	0.013	0.0000022	0.13135	55	3	5%

Appendix B – Tables

Contaminant	MCL (mg/l)	Potential Health Effects	Avg. Sample Value	Min. Sample Value	Max. Sample Value	Number of Samples	Number of Samples Exceeding MCL	Percentage of Samples Exceeding MCL
Uranium	0.03	Increased risk of cancer, kidney toxicity.	0.0087	0.000409	0.08437	90	4	4%

Source: GWIC 2024

Table 1-2. Groundwater Quality Samples since 2000 in the DRWA Service Area that Exceed U.S. EPA Secondary Maximum Contaminant Levels (SMCL)

Contaminant	SMCL (mg/l)	Noticeable Effects	Avg. Sample Value	Min. Sample Value	Max. Sample Value	Number of Samples	Number of Samples Exceeding SMCL	Percentage of Samples Exceeding SMCL
Aluminum	0.05	Colored water	0.07	0.01876	0.25763	19	5	26%
Chloride	250	Salty taste	30.2	1.4	815.1	247	2	1%
Fluoride	2	Tooth discoloration	1.2	0.1	6.9	217	43	20%
Iron	0.3	Rusty color; sediment; metallic taste; reddish or orange staining	1.94	0	53.64	155	99	64%
Lab pH	6.5-8.5	Low pH: bitter metallic taste; corrosion high pH: slippery feel; soda taste; deposits	7.8	6.6	10.1	214	20	9%
Manganese	0.05	Black to brown color; black staining; bitter metallic taste	0.0016	0	0.22	158	114	72%
Sulfate	250	Salty taste	542.2	0	3,245	233	138	59%
Total Dissolved Solids	500	Hardness; deposits; colored water; staining; salty taste	1,275.6	0.0	5,100.7	251	232	92%

Source: GWIC 2024

Table 1-3. Agencies with Federal State or Local Action, Approval, or Consultation Responsibilities

Federal, State, or Local	Agency	Action/Approval/Consultation
Federal	U.S. Army Corps of Engineers, Omaha District	Clean Water Act, Section 404 Permit
Federal	U.S. Army Corps of Engineers, Omaha District	Rivers and Harbors Act, Section 408 Permission
Federal	U.S. Army Corps of Engineers, Omaha District	Rivers and Harbors Act, Section 10 Permit
Federal	U.S. Army Corps of Engineers, Omaha District	Real Estate Outgrant[1]
Federal	U.S. Bureau of Land Management, Miles City District	Federal Land Management Policy Act, Permit to Construct
Federal	U.S. Bureau of Land Management, Miles City District	Federal Land Management Policy Act, Special Use Permit to Occupy Federal Lands
Federal	Natural Resource Conservation Service, West Region	Watershed Program funding
Federal	U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation
Federal	Western Area Power Administration	Environmental review per Section 39.3 of the SPP Tariff. Participate in NEPA process as cooperating agency
Montana	Montana Department Natural Resources & Conservation	Montana Environmental Policy Act
Montana	Montana Department Natural Resources & Conservation	Authorization to occupy state lands
Montana	Montana Department of Environmental Quality	General Permit for Storm Water Discharge Associated with Construction Activities
Montana	Montana Department of Environmental Quality	318 Temporary Turbidity Authorization
Montana	Montana Department of Environmental Quality	Clean Water Act, Section 401 Water Quality Certificate
Montana	Montana Department of Transportation	Occupancy/Encroachment Permit
Montana	Montana Fish, Wildlife, and Parks	Fish and Wildlife Coordination Act
Montana	Montana State Historic Preservation Office	National Historic Preservation Act, Section 106 Consultation
Local	County Conservation Districts/Floodplain Administrators	Floodplain Permit,
Local	County Conservation Districts	Permit for excavation in perennial rivers and streams
Local	County Road & Public Works Department	Right-of-Way/Utility Permit

Note:

[1] A real estate outgrant is an instrument that authorizes a private or public entity, which is not USACE, to access federally controlled property for non-mission-related purposes pursuant to Army Regulation 405-80 Management of Title and Granting Use of Real Property.

Chapter 2. Alternatives

Table 2-1. Power Transmission and Distribution Lines

Type	Size	Length	Construction Segment
Transmission	69 kV	35 miles	Circle Substation to Flowing Wells (upgrade with underbuild of existing line)
Transmission	69 kV	34 miles	Flowing Wells to transition with underground construction (new construction with 25 kV underbuild) using conventional above ground construction
Total Transmission	**—**	**69 miles**	**—**
Distribution	25kV	1.15 miles	New WTP sub to proposed Fort Peck Reservoir Intake site (underground)
Distribution	14.4 kV	0.7 miles	Jordan Tap to Loomis & Clark
Distribution	25 kV	0.6 miles	Mosby Tap to N. Lodge Pole
Distribution	25 kV	0.06 miles	Jordan Tap to Brusett Road
Distribution	25 kV	0.5 miles	Jordan Tap to Hell Creek Road Pump
Distribution	14.4 kV	0.7 miles	Jordan Tap to Highway 59N Pump
Distribution	25 kV	0.05 miles	Brockway Tap to Brockway Pump
Distribution	25 kV	9.2 miles	WTP Sub to S. Highway 24
Distribution	14.4 kV	0.03 miles	New Circle Tap to Union Road Pump
Distribution	12.5 kV	7.94 miles	Duck Creek Tap to Existing Retah Feeder
Distribution	12.5 kV	8.0 miles	Multiphase Existing Retah Feeder
Distribution	12.5 kV	0.2 miles	Retah Tap to Highway 254 Pump

Appendix B – Tables

Type	Size	Length	Construction Segment
Distribution	25 kV	4.1 miles	WTP Sub to Proposed Intake Site
Distribution	12.5 kV	6.9 miles	Lindsay Feeder to Highway 200 S
Distribution	12.5kV	4.3 miles	Lindsay Feeder to Highway 200 S
Distribution	12.5kV	2.5 miles	Lindsay Feeder to Highway 200 S
Distribution	7.7 kV	0.02 miles	M1 & M4 Booster Pump CR 128 Booster-
Distribution	14.4 kV	0.08 miles	M4 System Booster Pump Station CR 338
Distribution	14.4 kV-	0.03 miles	M4 Pressure Zone 3 Pump Station Hwy 16
Distribution	7.7 kV	0.02 miles	M1 & M4 Booster Pump CR 132 Booster
Distribution	14.4 kV-	0.06 miles	M1 Intake Pump Station
Distribution	14.4 kV-	0.02 miles	M1 Pressure Zone 2 Pump Station
Distribution	7.7 kV-	0.02 miles	M1 & M4 Booster Pump Fox Creek Booster
Distribution	14.4 kV-	0.03 miles	M1 & M4 Booster Pump Station CR 340
Distribution	12.4kV	0.3 miles	M8 Booster Pump Station
Total Distribution	**—**	**47.51 miles**	**—**

Table 2-2. Number of Trenchless Crossings

Description	Totals
Known Utility Crossings	670
Stream/Canal Crossings	1,953
Highway Crossings	62
Railroad Crossings	3
County Road Crossings	445
Total Crossings	3,133

Table 2-3. Typical Construction Equipment

Type	Details
Earthmoving & Plowing Equipment	Dozer Dozer with Disc Loader Tractor with Blade Excavator Compactor Water Truck Dump Truck
Concrete Equipment	Concrete Mixer Trailer Mounted Concrete Pump Concrete Vibrator-Normal Concrete Truck
Utility Equipment	Diesel Compressor Diesel Welder
Hoisting Equipment	Truck Crane Crawler Crane Motorized Manlift
Horizontal Directional Drilling Equipment	Air Track Drill Vacuum Truck Horizontal Auger Backhoe
Paving Equipment	Asphalt Paver Double Steel Drum Roller Skip Loader Asphalt Grinder

Table 2-4. Phasing Plan

Location	Installation Year	Phase
Ft. Peck→Circle	1	A–B
Circle→Richey	2	B–C
Richey→HWY 200/RD 317	2	C–D
HWY 200/RD 317→Lambert	3	D–K
HWY 200/RD 317→HWY 201/RD 328	4	D–P
HWY 201/RD 328→HWY 16	5	P–E
HWY 16→Fairview	5	E–J
Circle→Jordan	6	B–G
Circle→Glendive	7	B–G
Circle→Missouri River	7	B–F
Richey→S. Richey	8	C–I
Hwy 16→Culbertson	8	E–L
Jordan→Lodge Pole Rd	9	H–N
Jordan→Cohgen	9	H–O
Richey→HWY 201/RD 328	10	C–P
Ft. Peck→HWY 528	10	A–M

Table 2-5. Alternatives Considered but Eliminated

Alternatives	Agency Concerns	Water Quality Concerns	Inadequate Water Supply	Cost Concerns
Groundwater: Town of Circle	No	Yes	Yes	Yes
Groundwater: Purchase from City of Wolf Point	Yes	No	No	Yes
Groundwater: Purchase from City of Sidney	Yes	No	No	No
Missouri River: Town of Circle	No	No	No	Yes
Missouri River: South of Wolf Point	Yes	No	No	Yes
Missouri River: Purchase from Fort Peck Tribal Rural Water System	Yes	No	No	Yes
Missouri River: South of Culbertson	Yes	No	No	No
Missouri River & Fort Peck Reservoir: Towns of Circle and Jordan	Yes	No	No	Yes
Fort Peck Reservoir: Town of Jordan	Yes	No	No	Yes
Fort Peck Reservoir: Hell Creek	Yes	No	No	Yes
Fort Peck Reservoir: Devils Creek	Yes	No	No	Yes
Fort Peck Reservoir: Dry Arm-Bear Creek	Yes	No	No	No
Fort Peck Reservoir: Dry Arm-Nelson Creek	Yes	No	No	No
Fort Peck Reservoir: Dry Arm-Sand Arroyo	Yes	No	No	No
Fort Peck Reservoir: Dry Arm-Rock Creek (A)	Yes	No	No	No
Fort Peck Reservoir: Dry Arm-Rock Creek (B)	Yes	No	No	No

Appendix B – Tables

Alternatives	Agency Concerns	Water Quality Concerns	Inadequate Water Supply	Cost Concerns
Fort Peck Reservoir: Dry Arm-Rock Creek (C)	Yes	No	No	No
Yellowstone River: North of Glendive	Yes	No	Yes	No

Table 2-6. Comparison of Alternatives

Resource	No Action	Proposed Action
Vegetation and riparian areas	No adverse effects	Minor adverse effects with mitigation
Fish and wildlife	No adverse effects	Minor adverse effects with mitigation
Hydrology & water quality	No adverse effects	Minor adverse effects
Geology, soils, & paleontology	No adverse effects	Minor adverse effects with mitigation
Cultural resources	No adverse effects	Minor adverse effects with mitigation
Socioeconomics	Minor adverse effects	Beneficial effects
Land use	No adverse effects	Minor temporary adverse effects of underground waterline on BLM and state lands with mitigation; minor permanent adverse effects of powerlines on BLM and state lands
Visual resources	No adverse effects	Minor adverse effects with mitigation
Recreation	No adverse effects	Minor adverse effects with mitigation
Traffic	No adverse effects	Minor adverse effects with mitigation

Chapter 3 Affected Environment and Environmental Consequences

Table 3.1-1. Resources Considered for Inclusion in Environmental Assessment

Resource	Not Present	Present/ Not Affected	Present/ Potentially Affected	Assessed in this EA?	Rationale/ Analysis Section
Air Quality			X	No	Resource not affected or effects would be negligible
Areas of Critical Environmental Concern	X			No	Not present in or near the Project study area
Bald and Golden Eagles			X	Yes	Refer to Section 3.3
Cultural Resources			X	Yes	Refer to Section 3.6
Floodplains			X	Yes	Refer to Section 3.4
General Fish and Wildlife			X	Yes	Refer to Section 3.3
Geology			X	Yes	Refer to Section 3.5
Grazing		X		No	Resource not affected or effects would be negligible
Hazardous Materials	X				Not present in or near the Project study area
Historic Trails			X	Yes	Refer to Section 3.6, 3.10
Indian Trust Assets		X		No	Resource not affected or effects would be negligible
Land Use			X	Yes	Refer to Section 3.8
Migratory Birds			X	Yes	Refer to Section 3.3

Appendix B – Tables

Resource	Not Present	Present/ Not Affected	Present/ Potentially Affected	Assessed in this EA?	Rationale/ Analysis Section
Minerals		X		No	Resource not affected or effects would be negligible
Noise			X	No	Resource not affected or effects would be negligible
Noxious Weeds/Invasive, Non-native Species			X	Yes	Refer to Section 3.2
Paleontological Resources			X	Yes	Refer to Section 3.5
Prime or Unique Farmlands and Farmland of Statewide Importance			X	Yes	Refer to Section 3.5
Public Services and Utilities			X	No	Resource not affected or effects would be negligible
Recreation			X	Yes	Refer to Section 3.10
Riparian/Wetlands			X	Yes	Refer to Section 3.2
Socioeconomics			X	Yes	Refer to Section 3.7
Soils			X	Yes	Refer to Section 3.5
Special-Status Species			X	Yes	Refer to Section 3.2, 3.3
Traffic			X	Yes	Refer to Section 3.11
Vegetation			X	Yes	Refer to Section 3.2
Visual Resources			X	Yes	Refer to Section 3.9
Water Quality and Quantity			X	Yes	Refer to Section 3.4
Wild and Scenic Rivers	X			No	Not present in or near the Project study area

Resource	Not Present	Present/ Not Affected	Present/ Potentially Affected	Assessed in this EA?	Rationale/ Analysis Section
Wilderness	X			No	Not present in or near the Project study area

Table 3.2-1. Vegetation Communities Within the Project Study Area

Vegetation Communities	Area (acres)
Agricultural Lands - Dry	6,247
Agricultural Lands - Irrigated	987
Altered Herbaceous	926
Badlands	102
Broadleaf Riparian	149
Conifer Riparian	14
Graminoid and Forb Riparian	486
Limber Pine	60
Low Density Xeric Forest	14
Low/Moderate Cover Grasslands	5,822
Mesic Shrub-Grassland Associations	260
Mixed Barren Sites	9
Mixed Broadleaf and Conifer Forest	2
Mixed Broadleaf and Conifer Riparian	16
Mixed Broadleaf Forest	176
Mixed Mesic Shrubs	318
Mixed Riparian	41
Mixed Xeric Shrubs	112
Moderate/High Cover Grasslands	915
Ponderosa Pine	26
Rock	12
Rocky Mountain Juniper	133
Sagebrush	620
Salt-Desert Shrub/Dry Salt Flats	27
Shrub Riparian	162
Silver Sage	152

Appendix B – Tables

Vegetation Communities	Area (acres)
Urban or Developed Lands	84
Very Low Cover Grasslands	192
Water	69
Xeric Shrub-Grassland Associations	57
Total Acres	18,189

Table 3.2-2. Wetlands and Water Bodies Within the Project Study Area

Category of Waters of the U.S.	Total Area or Distance
Fresh Emergent Wetland	100 acres
Freshwater Forested Wetland	<1 acre
Freshwater Ponds	19 acres
Lakes	25 acres
Riverine Environment	246 acres
Intermittent Creeks	24 miles

Table 3.2-3 Effects to Vegetation Communities

Vegetation Communities	Temporary Effects (acres)	Permanent Effects (acres)
Agricultural Lands - Dry	6,171.25	73.30
Agricultural Lands - Irrigated	948.50	38.56
Altered Herbaceous	908.04	17.73
Badlands	90.83	10.82
Broadleaf Riparian	117.60	31.15
Conifer Riparian	14.00	0.00
Graminoid and Forb Riparian	474.62	11.11
Limber Pine	59.99	0.00
Low Density Xeric Forest	13.90	0.00
Low/Moderate Cover Grasslands	5,594.96	199.71
Mesic Shrub-Grassland Associations	228.16	31.69
Mixed Barren Sites	8.68	0.00
Mixed Broadleaf and Conifer Forest	2.21	15.93
Mixed Broadleaf Forest	145.67	30.51
Mixed Mesic Shrubs	288.23	29.36
Mixed Riparian	31.06	10.03
Mixed Xeric Shrubs	111.96	0.00
Moderate/High Cover Grasslands	870.71	38.26
Ponderosa Pine	26.49	0.00
Rock	11.79	0.00
Rocky Mountain Juniper	97.74	35.62
Sagebrush	557.16	55.77
Salt-Desert Shrub/Dry Salt Flats	21.86	5.50
Shrub Riparian	132.03	29.65
Silver Sage	152.01	0.00

Appendix B – Tables

Vegetation Communities	Temporary Effects (acres)	Permanent Effects (acres)
Urban or Developed Lands	84.06	0.00
Very Low Cover Grasslands	141.81	49.61
Water	11.49	57.51
Xeric Shrub-Grassland Associations	46.67	10.01
Total	**17,363.48**	**781.82**

Table 3.2-4 Preliminary Effects to Wetlands and Riparian Areas

Wetland Category	Temporary Effects (Acres)	Permanent Effects (Acres)
Fresh Emergent Wetland	87.92	12.05
Freshwater Forested Wetland	0.34	0.00
Freshwater Ponds	19.16	0.00
Lakes	0.45	25.04
Riverine Environment	138.94	107.27
Intermittent Creeks	27.77	0.77
Totals	**274.58**	**145.14**

Table 3.3-1 Threatened and Endangered Species List in DRWA Service Area

Species Name	Endangered Species Act Status	Potential Occurrence in DRWA Service Area
northern long-eared bat *Myotis septentrionalis*	endangered	Missouri River corridor
whooping crane *Grus americana*	endangered	western areas
pallid sturgeon *Scaphirhynchus albus*	endangered	Missouri and Yellowstone rivers
rufa red knot *Calidris canutus rufa*	threatened	exceedingly rare throughout
piping plover *Charadrius melodus*	threatened	northern areas (breeding)
paddlefish *Polyodon spathula*	candidate	Missouri and Yellowstone rivers
monarch butterfly *Danaus plexippus*	candidate	Missouri and Yellowstone river corridors

Table 3.3-2 Special-Status Species Occurring Within the DRWA Service Area

Species Type	Species Common Name *Scientific Name*	USFWS Status	BLM Status	Montana Species of Concern Status	Where Most Likely or Potentially Occurs in DRWA Service Area
Mammals	Townsend's big-eared bat *Corynorhinus townsendii*		Sensitive	S3	Throughout
Mammals	black-tailed prairie dog *Cynomys ludovicianus*		Sensitive	S3	Throughout
Mammals	spotted Bat *Euderma maculatum*		Sensitive	S3	Southern
Mammals	eastern red bat *Lasiurus borealis*		Sensitive	S3B	Eastern
Mammals	hoary bat *Lasiurus cinereus*		Sensitive	S3B	Throughout
Mammals	little brown bat *Myotis lucifigus*			S3	Throughout
Mammals	northern long-eared bat *Myotis septentrionalis*	FE	Endangered	S2	Missouri River corridor
Mammals	long-legged myotis *Myotis volans*			S3	Western
Mammals	Merriam's shrew *Sorex mirriam*			S3	Southwestern
Mammals	Preble's shrew *Sorex preslei*			S3	Southern
Mammals	swift fox *Vulpes velox*		Sensitive	S3	Eastern
Birds	Sprague's Pipit *Anthus spragueii*	MBTA BCC11 BCC17	Sensitive	S3B	Throughout

Appendix B – Tables

Species Type	Species Common Name *Scientific Name*	USFWS Status	BLM Status	Montana Species of Concern Status	Where Most Likely or Potentially Occurs in DRWA Service Area
Birds	golden eagle *Aquila chrysaetos*	BGEPA MBTA	Sensitive	S3	Throughout
Birds	great blue heron *Ardea herodias*	MBTA		S3	Throughout
Birds	burrowing Owl *Athene cunicularia*	MBTA BCC17	Sensitive	S3B	Throughout
Birds	ferruginous Hawk *Buteo regalis*	MBTA BCC17	Sensitive	S3B	Throughout
Birds	chestnut-collared longspur *Calcarius ornatus*	MBTA BCC11 BCC17	Sensitive	S2B	Throughout
Birds	rufa red knot *Calidris canutus rufa*	FT MBTA	Threatened	SNA	Exceedingly rare throughout
Birds	veery *Catharus fuscescens*	MBTA	Sensitive	S3B	Northern
Birds	greater sage grouse *Centrocercus urophasianus*		Sensitive	S2	Throughout (esp. western)
Birds	Baird's sparrow *Centronyx bairdii*	MBTA BCC11 BCC17	Sensitive	S3B	Throughout
Birds	piping plover *Charadrius melodus*	FT CH MBTA	Threatened	S2B	Northern (breeding)
Birds	mountain plover *Charadrius montanus*	MBTA BCC10 BCC11 BCC17	Sensitive	S2B	Western
Birds	black-billed cuckoo *Coccyzus erythropthalmus*	MBTA BCC11 BCC17	Sensitive	S3B	Throughout
Birds	bobolink	MBTA BCC10		S3B	Throughout

Species Type	Species Common Name *Scientific Name*	USFWS Status	BLM Status	Montana Species of Concern Status	Where Most Likely or Potentially Occurs in DRWA Service Area
	Dolichonyx oryzivorus	BCC11 BCC17			
Birds	whooping crane *Grus americana*	FE MBTA	Endangered	S1M	Western
Birds	pinyon jay *Gymnorhinus cyanocephalus*	MBTA BCC10 BCC1		S3	Southern
Birds	bald eagle *Haliaeetus leucocephalus*	DM BGEPA	Sensitive		Missouri and Yellowstone river corridors
Birds	loggerhead shrike *Lanius ludovicianus*	MBTA	Sensitive	S3B	Throughout
Birds	red-headed woodpecker *Melanerpes erythrocephalus*	MBTA BCC11 BCC17	Sensitive	S3B	Missouri and Yellowstone river corridors
Birds	long-billed curlew *Numenius americanus*	MBTA BCC11	Sensitive	S3B	Throughout
Birds	sage thrasher *Oreoscoptes montanus*	MBTA	Sensitive	S3B	Western
Birds	thick-billed longspur *Rhynchophanes mccownii*	MBTA BCC10 BCC11 BCC17	Sensitive	S3B	Western
Birds	Brewer's sparrow *Spizella breweri*	MBTA	Sensitive	S3B	Western
Birds	least tern *Sternula antillarum*	DM MBTA	DM	S1B	Missouri and Yellowstone river corridors
Reptiles	common snapping turtle *Chelydra serpentina*		Sensitive	S3	Southern
Reptiles	western hog-nosed snake *Heterodon nasicus*		Sensitive	S2	Throughout

Appendix B – Tables

Species Type	Species Common Name *Scientific Name*	USFWS Status	BLM Status	Montana Species of Concern Status	Where Most Likely or Potentially Occurs in DRWA Service Area
Reptiles	central plains milksnake *Lampropeltis gentilis*		Sensitive	S2	Southern
Reptiles	greater short-horned lizard *Phrynosoma hernandesi*		Sensitive	S3	Throughout
Amphibians	great plains toad *Anaxyrus cognatus*		Sensitive	S2	Throughout
Fish	northern redbelly dace *Chrosomus eos*			S3	Throughout
Fish	blue sucker *Cycleptus elongatus*			S2S3	Missouri and Yellowstone rivers
Fish	Iowa darter *Etheostoma exile*		Sensitive	S3	Northern
Fish	shortnose gar *Lepisosteus platostomus*			S3	Missouri and Yellowstone rivers
Fish	sturgeon chub *Macrhybopsis gelida*		Sensitive	S2S3	Missouri and Yellowstone drainages
Fish	sicklefin chub *Macrhybopsis meeki*			S1	Missouri and Yellowstone rivers
Fish	northern pearl dace *Margariscus nachtriebi*		Sensitive	S2	Missouri River drainage
Fish	paddlefish *Polyodon spathula*	C	Sensitive	S2	Missouri and Yellowstone rivers
Fish	sauger *Sander canadensis*		Sensitive	S2	Missouri and Yellowstone drainages
Fish	pallid sturgeon	FE	Endangered	S1	Missouri and Yellowstone rivers

Species Type	Species Common Name *Scientific Name*	USFWS Status	BLM Status	Montana Species of Concern Status	Where Most Likely or Potentially Occurs in DRWA Service Area
	Scaphirhynchus albus				
Invertebrates	monarch butterfly *Danaus plexippus*	C		S2S3	Missouri and Yellowstone river corridors
Invertebrates	mayfly *Leucrocuta petersi*			SNR	Missouri and Yellowstone river corridors
Invertebrates	gray comma (butterfly) *Polygonia progne*			S2	Eastern
Plants	painted milkvetch *Astragalus ceramicus var. filifolius*			S3	Southern
Plants	American bittersweet *Celastrus scandens*			S1	Eastern
Plants	silky prairie clover *Dalea villosa*			S2	Eastern
Plants	pale-spiked lobelia *Lobelia spicata*			S2	Yes
Plants	bractless blazingstar *Mentzelia nuda*			S1S2	Eastern
Plants	prairie goldenrod *Solidago ptarmicoides*			S2S3	Eastern

Status Key

USFWS Status

FE Federally listed as endangered: Any species in danger of extinction throughout all or a significant portion of its range (16 U.S.C. 1532(6)). OBJ

FT Federally listed as threatened: Any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 U.S.C. 1532(20)).

C Candidate: Those taxa for which sufficient information on biological status and threats exists to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships; however, none of the substantive or procedural provisions of the Act apply to candidate species.

DM Recovered, delisted, and being monitored - Any previously listed species that is now recovered, has been delisted, and is being monitored.

BGEPA Protected under the Bald and Golden Eagle Protection Act of 1940 (BGEPA) - (16 U.S.C. 668-668c)

MBTA Protected under the Migratory Bird Treaty Act (MBTA) - (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989)

BCC The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act. BCC10, BCC11, and BCC17 designations represent inclusion on the Birds of Conservation Concern list for Bird Conservation Region 10, 11, and 17 in Montana, respectively.

BLM Status

Endangered Species listed as Endangered under the Endangered Species Act

Threatened Species listed as Threatened under the Endangered Species Act

Sensitive Species listed by BLM as Sensitive on BLM lands

State of Montana Species of Concern Rank Definitions

S1 At high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.

S2 At risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state**.**

S3 Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.

SNA A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities because of being: 1) not confidently present in the state; 2) non-native or introduced; 3) a long-distance migrant with accidental or irregular stopovers; or 4) a hybrid without conservation value**.**

SNR Not yet ranked.

State of Montana Qualifiers

B Breeding - Rank refers to the breeding population of the species in Montana. Appended to the state rank, e.g., S2B, S5N = At risk during breeding season, but common in the winter

M Migratory - Species occurs in Montana only during migration.

Table 3.4-1. USGS Gages in the DRWA Service Area

County	USGS Site Number	USGS Site Name	Average Annual Discharge (cfs)
Garfield	06130000	Flatwillow Creek near Mosby MT	83.0
Garfield	06130500	Musselshell River at Mosby MT	120.4
Garfield	06130610	Bair Coulee near Mosby MT	nd
Garfield	06130915	Russian Coulee near Jordan MT	nd
McCone	06131200	Nelson Creek near Van Norman MT	1.9
McCone	06131300	Mcguire Creek trib near Van Norman MT	nd
McCone	06175100	Missouri R at W Frazer Pump Plant nr Frazer MT	nd
McCone	06175510	Missouri R at E Frazer Pump Plant nr Frazer MT	nd
McCone	06177000	Missouri River near Wolf Point MT	9801.7
McCone	06177700	Cow Creek Tributary near Vida MT	0.3
McCone	06177500	Redwater River at Circle MT	10.8
McCone	06177100	Duck Creek near Brockway, MT	nd
Dawson	06326950	Yellowstone River Tributary no. 5 nr Marsh MT	nd
Dawson	06327500	Yellowstone River at Glendive, MT	12925.5
Dawson	06328100	Yellowstone River trib no 6 nr Glendive MT	nd
Dawson	06328495	Yellowstone River Fish Bypass Channel nr Intake MT	2550.7
Dawson	06327450	Cains Coulee at Glendive MT	16.0
Dawson	06327720	Griffith Creek trib near Glendive MT	nd
Richland	06329500	Yellowstone River near Sidney MT	12452.7
Richland	06329590	YELLOWSTONE R NO. 1 NR FAIRVIEW, MT	nd
Richland	06185500	Missouri River near Culbertson MT	10069.6
Richland	06185600	MISSOURI R NO. 4 NR NOHLY, MT	nd
Richland	06185650	MISSOURI R NO. 5 AT NOHLY, MT	nd

Source: USGS 2024a, 2024b, 2024c, 2024d, 2024e, 2024f, 2024g, 2024h, 2024i, 2024j

Table 3.4-2. Annual Statistics for the Fort Peck Reservoir, 1937-2006

Year	Maximum Elevation (feet msl)	Mean Discharge (cfs)	Minimum Discharge (cfs)	Maximum Discharge (cfs)
1937	2065.80	2,663	301	8,780
1938	2136.50	8,508	710	25,400
1939	2100.00	7,582	590	22,600
1940	2128.40	4,017	0	16,840
1941	2131.20	3,858	820	15,100
1942	2183.80	4,909	410	15,300
1943	2222.70	7,196	0	22,910
1944	2225.80	7,205	0	19,510
1945	2226.40	5,310	500	20,770
1946	2232.30	5,170	1,000	20,580
1947	2242.60	11,783	690	27,000
1948	2244.80	13,948	1,000	28,610
1949	2231.80	9,984	2,910	23,590
1950	2234.20	8,471	900	23,990
1951	2237.50	12,196	1,400	27,390
1952	2237.80	9,637	2,310	22,220
1953	2240.00	10,859	2,880	28,000
1954	2226.80	10,730	2,980	28,050
1955	2206.00	13,347	4,260	28,060
1956	2180.90	6,401	3,010	10,400
1957	2186.60	6,211	3,100	7,500
1958	2198.50	6,130	3,900	7,500
1959	2210.00	7,438	5,200	7,900
1960	2217.70	7,217	3,200	9,100
1961	2212.20	8,925	4,600	15,500
1962	2205.10	6,800	1,900	12,400
1963	2216.10	4,975	1,000	12,500
1964	2235.90	6,183	1,000	12,700

Appendix B – Tables

Year	Maximum Elevation (feet msl)	Mean Discharge (cfs)	Minimum Discharge (cfs)	Maximum Discharge (cfs)
1965	2245.90	5,100	5,100	15,700
1966	2242.10	9,900	5,000	15,800
1967	2245.70	11,400	900	14,800
1968	2244.70	10,700	3,000	14,200
1969	2246.80	11,500	4,800	14,700
1970	2247.30	12,600	2,800	15,300
1971	2244.20	11,600	7,400	15,300
1972	2244.00	10,900	7,400	14,900
1973	2241.70	8,000	3,000	15,000
1974	2245.50	9,500	3,100	13,300
1975	2251.60	15,700	4,300	35,400
1976	2249.00	14,500	9,000	25,500
1977	2240.50	8,600	4,600	15,400
1978	2249.60	11,700	0	15,300
1979	2247.30	12,600	1,000	28,900
1980	2242.10	10,500	5,800	14,600
1981	2242.20	12,107	7,300	15,000
1982	2239.70	10,900	5,200	15,600
1983	2241.70	8,991	4,400	14,400
1984	2217.63	6,466	2,800	8,800
1985	2243.20	10,384	4,800	13,800
1986	2238.50	10,193	5,600	14,600
1987	2238.30	8,025	1,100	14,500
1988	2238.50	7,108	3,100	11,400
1989	2234.20	7,858	4,300	12,200
1990	2223.60	9,708	5,000	13,400
1991	2216.20	8,118	3,300	13,100
1992	2220.12	7,208	3,000	8,200
1993	2232.22	5,650	2,700	8,700

Appendix B – Tables

Year	Maximum Elevation (feet msl)	Mean Discharge (cfs)	Minimum Discharge (cfs)	Maximum Discharge (cfs)
1994	2238.94	7,291	3,300	12,200
1995	2244.21	9,308	3,600	14,900
1996	2247.30	12,025	3,000	15,200
1997	2250.31	13,275	2,500	22,400
1998	2240.46	8,900	4,600	12,700
1999	2238.32	8,267	4,300	12,300
2000	2235.37	7,883	4,400	10,400
2001	2226.00	5,967	3,600	11,800
2002	2220.44	6,592	3,900	10,400
2003	2214.53	7,542	3,700	10,800
2004	2206.80	6,758	3,600	11,200
2005	2203.70	5,645	3,000	8,500
2006	2206.34	7,274	4,500	10,400

Source: USACE 2008

Table 3.4-3. Fort Peck Reservoir Surface Area, Volume, Mean Depth, and Retention Time at Different Pool Elevations

Pool Elevation (feet-msl)	Surface Area (acres)	Volume (acre-feet)	Mean Depth (feet)	Retention Time (years)
2250	245,405	18,462,840	75.2	2.78
2245	237,605	17,253,500	72.6	2.60
2240	225,065	16,094,980	71.5	2.43
2235	213,025	15,000,180	70.4	2.26
2230	201,130	13,964,500	69.4	2.10
2225	188,765	12,991,390	68.8	1.96
2220	180,590	12,069,610	66.8	1.82
2215	171,930	11,188,080	65.1	1.69
2210	163,400	10,349,820	63.3	1.56
2205	154,773	9,554,578	61.7	1.44
2200	146,595	8,801,156	60.0	1.33
2195	138,081	8,090,417	58.6	1.22
2190	132,175	7,415,889	56.1	1.12
2185	126,146	6,769,319	53.7	1.02
2180	118,608	6,156,918	51.9	0.93
2175	111,285	5,582,093	50.2	0.84
2170	103,394	5,045,002	48.8	0.76
2165	95,316	4,549,151	47.7	0.69
2160	89,461	4,087,903	45.7	0.62

Source: USACE 2019

Table 3.4-4. FEMA Floodplain Mapping and Designations within the DRWA Service Area

Flood Zone	Description	Area (acres)
A	1% Annual Chance Flood Hazard	22,783.28
AE	1% Annual Chance Flood Hazard	50,441.31
AREA NOT INCLUDED	Area Not Included	1,537,769.71
D	Undetermined Flood Hazard or Unstudied Area	807,479.26
X	0.2% annual Chance Flood Hazard	1,555.36
X	Area of Minimal Flood Hazard	459,142.10
Total Acreage		2,879,171.02

Table 3.4-5. Designated Flood Zones in Project Study Area

Flood Zone	Description	Area (acres)
A	1% Annual Chance Flood Hazard	116.72
AE	1% Annual Chance Flood Hazard	119.92
AREA NOT INCLUDED	Area Not Included	5,834.41
D	Undetermined Flood Hazard or Unstudied Area	4,105.57
X	Area of Minimal Flood Hazard	2,065.43
Total Acreage		12,242.04

Table 3.4-6. Well Data Throughout the DRWA Service Area

Groundwater Information Center #	County	Total Depth	Static Water Level	Production Rate (gallons per minute)	Location
296024	Garfield	120 ft	74 ft	10	South of Jordan
172433	Garfield	520 ft	420 ft	10	West of Jordan
2477	Garfield	197 ft	70 ft	10	North of Jordan
37777	McCone	210 ft	185 ft	4	North of HWY 24
294181	McCone	135 ft	61 ft	14	East of HWY 24
31261	Garfield	150 ft	130 ft	11	South of HWY 24
33879	McCone	282 ft	210 ft	12	West of HWY 24
32504	McCone	181 ft	130 ft	7	South of Circle
30246	Dawson	138 ft	110 ft	10	Southeast of Circle
211518	McCone	112 ft	56 ft	6	Southwest of Circle
36252	Richland	148 ft	130 ft	3	Northwest of Richey
288391	Dawson	183 ft	70 ft	12	South of Richey
219178	Richland	170 ft	100 ft	7	East of Richey
32571	Dawson	126 ft	60 ft	2	East of Circle
36276	Richland	105 ft	47 ft	5	Northeast of Richey

Source: DRWA 2023

Table 3.4-7. 303D List of Impaired Waters and Category Definitions

Category 1	Waters for which all applicable beneficial uses have been assessed and all uses are determined to be fully supported.
Category 3	Waters for which there is insufficient data to assess the use-support of any applicable beneficial use; no use-support determinations have been made.
Category 4A	All TMDLs needed to rectify all identified threats or impairments have been completed and approved.
Category 4c	Identified threats or impairments result from pollution categories such as dewatering or habitat modification and thus a TMDL is not required.
Category 5	Waters where one or more applicable beneficial uses are impaired or threatened, and a TMDL is required to address the factors causing the impairment or threat
Category 5N	Available data and/or information indicate that a water quality standard is exceeded due to an apparent natural source in the absence of any identified manmade sources.

Table 3.4-8. 303D List of Impaired Waters

HUC-08 Watershed	Name of Waterway	Category	Reason
Big Dry	BIG DRY CREEK, Steves Fork to mouth (Fort Peck Reservoir)	5	Not fully supporting contact recreation, not fully supporting aquatic life
Big Muddy	BIG MUDDY CREEK, north corner of Fort Peck Reservation boundary to mouth (Missouri River)	5	Not fully supporting aquatic life
Big Porcupine	BIG PORCUPINE CREEK, headwaters to mouth (Yellowstone River)	3	
Charlie-Little Muddy	CHARLIE CREEK, East and Middle Charlie Creek to mouth (Missouri River)	5	Not fully supporting aquatic life
Charlie-Little Muddy	HARDSCRABBLE CREEK, headwaters to mouth (Missouri River)	5	Not fully supporting aquatic life
Charlie-Little Muddy	MISSOURI RIVER, Poplar River to North Dakota border	5	Not fully supporting aquatic life
Flatwillow	FLATWILLOW CREEK, Highway 87 bridge to mouth (Musselshell River)	5	Not fully supporting aquatic life
Fort Peck Reservoir	NELSON CREEK, headwaters to mouth (Big Dry Creek arm of Fort Peck Res)	5	Not fully supporting aquatic life
Fort Peck Reservoir	TIMBER CREEK, headwaters to mouth (Big Dry Creek arm of Fort Peck Res)	4A	Not fully supporting aquatic life
Little Dry	LITTLE DRY CREEK, headwaters to mouth (Big Dry Creek)	1	
Lower Musselshell	BLOOD CREEK, Dovetail County Road to mouth (Musselshell River)	4C	Not fully supporting aquatic life
Lower Musselshell	CALF CREEK, headwaters to mouth (Musselshell River)	3	
Lower Musselshell	LODGEPOLE CREEK, North and Middle Fork Lodgepole Creeks to mouth (Musselshell River)	1	
Lower Musselshell	MUSSELSHELL RIVER, Flatwillow Creek to Fort Peck Reservoir	5	Not fully supporting contact recreation, not fully supporting aquatic life

HUC-08 Watershed	Name of Waterway	Category	Reason
Lower Yellowstone	BRACKETT CREEK, headwaters to mouth (Cherry Creek)	3	
Lower Yellowstone	BURNS CREEK, headwaters to mouth (Yellowstone River)	5	Not fully supporting contact recreation, not fully supporting aquatic life
Lower Yellowstone	CEDAR CREEK, 26 miles upstream to mouth (Yellowstone River)	5	Not fully supporting aquatic life
Lower Yellowstone	CHERRY CREEK, 20 miles upstream to mouth (Yellowstone River)	3	
Lower Yellowstone	CHERRY CREEK, headwaters to 20 miles upstream of mouth	3	
Lower Yellowstone	CRANE CREEK, headwaters to mouth (Yellowstone River, T21N R58E S23)	5	Not fully supporting aquatic life
Lower Yellowstone	DEER CREEK, Confluence of Middle Fork Deer Creek and South Fork Deer Creek to mouth (Yellowstone River)	3	
Lower Yellowstone	EAST FORK FOX CREEK, headwaters to mouth (Fox Creek)	3	
Lower Yellowstone	FIRST HAY CREEK, headwaters to mouth (Yellowstone River)	5	Not fully supporting aquatic life
Lower Yellowstone	FOURMILE CREEK, headwaters to North Dakota border	5	Not fully supporting contact recreation, not fully supporting aquatic life
Lower Yellowstone	FOX CREEK, headwaters to mouth (Yellowstone River), T22N R59E S19	5	Not fully supporting drinking water, not fully supporting contact recreation, not fully supporting agriculture, not fully supporting aquatic life
Lower Yellowstone	LONE TREE CREEK, confluence of North Fork to mouth (Yellowstone River)	5	Not fully supporting contact recreation, not fully supporting aquatic life

HUC-08 Watershed	Name of Waterway	Category	Reason
Lower Yellowstone	MIDDLE FORK DEER CREEK, headwaters to mouth (South Fork Deer Creek)	3	
Lower Yellowstone	MORGAN CREEK, headwaters to mouth (Yellowstone River)	4C	Not fully supporting aquatic life
Lower Yellowstone	NORTH FORK FOX CREEK, headwaters to mouth (Fox Creek), T22N R58E S21	5	Not fully supporting drinking water, not fully supporting contact recreation, not fully supporting agriculture, not fully supporting aquatic life
Lower Yellowstone	SEARS CREEK, headwaters to mouth (Yellowstone River)	5	Not fully supporting contact recreation, not fully supporting aquatic life
Lower Yellowstone	SOUTH FORK DEER CREEK, headwaters to mouth	3	
Lower Yellowstone	YELLOWSTONE RIVER, Lower Yellowstone Diversion Dam to North Dakota border	5	Not fully supporting aquatic life
Lower Yellowstone	YELLOWSTONE RIVER, Powder River to Lower Yellowstone Diversion Dam	4C	Not fully supporting aquatic life
Lower Yellowstone-Sunday	CUSTER CREEK, headwaters to mouth (Yellowstone River)	1	
Lower Yellowstone-Sunday	LITTLE PORCUPINE CREEK, headwaters to mouth (Yellowstone River)	5	Not fully supporting contact recreation, not fully supporting aquatic life
Middle Musselshell	MUSSELSHELL RIVER, HUC boundary near Roundup to Flatwillow Creek	5	Not fully supporting aquatic life
Prairie Elk-Wolf	MISSOURI RIVER, Milk River to Poplar River	5	Not fully supporting aquatic life
Prairie Elk-Wolf	PRAIRIE ELK CREEK, East and Middle Forks to mouth (Missouri River)	4A	Not fully supporting aquatic life
Prairie Elk-Wolf	SAND CREEK, confluence of East and West Forks to mouth (Missouri River)	5	Not fully supporting aquatic life

Appendix B – Tables

HUC-08 Watershed	Name of Waterway	Category	Reason
Redwater	EAST REDWATER CREEK, headwaters to mouth (Redwater River)	5	Not fully supporting contact recreation, not fully supporting aquatic life
Redwater	HORSE CREEK, headwaters to mouth at Redwater River near town of Circle	4A	Not fully supporting aquatic life
Redwater	PASTURE CREEK, headwaters to mouth at Redwater River	4A	Not fully supporting aquatic life
Redwater	REDWATER RIVER, Buffalo Springs Creek to Pasture Creek	1	
Redwater	REDWATER RIVER, headwaters to Hell Creek	1	
Redwater	REDWATER RIVER, Hell Creek to Buffalo Springs Creek	4A	Not fully supporting aquatic life
Redwater	REDWATER RIVER, Pasture Creek to mouth (Missouri River)	4C	Not fully supporting aquatic life

Source: NRCS 2019a, 2019b, 2019c, 2020; MDEQ 2020

Table 3.4-9. Summary of 2021 and 2022 Water Sample Analysis at Proposed Fort Peck Reservoir Intake

Parameter	Average	Minimum	Maximum
pH	8.5	8.4	8.7
Total dissolved solids, mg/L	437	431	443
Specific conductance, µS/cm	690	679	709
Turbidity, NTU	1.5	0.5	2.6
Alkalinity, mg/L	168	168	169
Hardness, mg/L	247	229	276
Calcium, mg/L	56	52	62
Iron, mg/L	0.04	ND	0.09
Magnesium, mg/L	26	24	29
Copper, µg/L	Not Detected	Not Detected	Not Detected
Zinc, µg/L	Not Detected	Not Detected	Not Detected
Mercury, mg/L	Not Detected	Not Detected	0.0001
Lead, mg/L	Not Detected	Not Detected	Not Detected
Total organic carbon, mg/L	2.9	2.4	4.0
Dissolved organic carbon, mg/L	3.0	2.8	3.3
Total coliform, MPN/100mL	326	1	649
Fecal coliform, MPN/100mL	<1	<1	<1
Giardia cysts/mL[1]	0	0	0
Cryptosporidium, oocysts/L	0	0	0
Volatile Organic Compounds, µg/L	Not Detected	Not Detected	Not Detected
Semi-Volatile Organic Compounds, µg/L	Not Detected	Not Detected	Not Detected
Polyfluoroalkyl substances, µg/L	Not Detected	Not Detected	Not Detected

Source: DRWA 2023

Note:

[1] Microorganisms (Cryptosporidium and Giardia) were not detected in samples taken however hold time and temperatures of samples were outside of specifications prior to analysis.

Table 3.4-10. USGS Gage Water Quality Monitoring Parameters

Gage	Data Time Period	Parameter	Average Over Time Period
USGS 06175510 Missouri River at E Frazer Pump Plant near Frazer, Montana	04/24/2024 – 06/04/2024	Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU) (Maximum)	148.1
USGS 06175510 Missouri River at E Frazer Pump Plant near Frazer, Montana	04/24/2024 – 06/04/2024	Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU) (Mean)	89.6
USGS 06175510 Missouri River at E Frazer Pump Plant near Frazer, Montana	04/24/2024 – 06/04/2024	Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU) (Minimum)	57.1
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius (Maximum)	648.5
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius (Mean)	640.8
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius (Minimum)	634.0
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	pH, water, unfiltered, field, standard units (Median)	8.3
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Dissolved oxygen, water, unfiltered, milligrams per liter (Maximum)	10.6
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Dissolved oxygen, water, unfiltered, milligrams per liter (Mean)	10.5

Gage	Data Time Period	Parameter	Average Over Time Period
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Dissolved oxygen, water, unfiltered, milligrams per liter (Minimum)	10.4
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Oxidation reduction potential, reference electrode not specified, millivolts (Maximum)	294.0
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Oxidation reduction potential, reference electrode not specified, millivolts (Mean)	289.1
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Oxidation reduction potential, reference electrode not specified, millivolts (Minimum)	276.1
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	pH, water, unfiltered, field, standard units (Maximum)	8.4
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	pH, water, unfiltered, field, standard units (Minimum)	8.3
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU) (Maximum)	197.5
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU) (Mean)	108.3
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU) (Minimum)	64.5
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Dissolved organic matter fluorescence (fDOM), water, in situ, concentration estimated from reference material,	36.3

Gage	Data Time Period	Parameter	Average Over Time Period
		micrograms per liter as quinine sulfate equivalents (QSE) (Maximum)	
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Dissolved organic matter fluorescence (fDOM), water, in situ, concentration estimated from reference material, micrograms per liter as quinine sulfate equivalents (QSE) (Mean)	22.1
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Dissolved organic matter fluorescence (fDOM), water, in situ, concentration estimated from reference material, micrograms per liter as quinine sulfate equivalents (QSE) (Minimum)	15.5
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Chlorophyll relative fluorescence (fChl), water, in situ, relative fluorescence units (RFU) (Maximum)	46.5
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Chlorophyll relative fluorescence (fChl), water, in situ, relative fluorescence units (RFU) (Mean)	20.8
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Chlorophyll relative fluorescence (fChl), water, in situ, relative fluorescence units (RFU) (Minimum)	5.2
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Phycocyanin relative fluorescence (fPC), water, in situ, relative fluorescence units (RFU) (Maximum)	15.7
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Phycocyanin relative fluorescence (fPC), water, in situ, relative fluorescence units (RFU) (Mean)	2.1
USGS 06177000 Missouri River near Wolf Point, Montana	04/24/2024 – 06/04/2024	Phycocyanin relative fluorescence (fPC), water, in situ, relative fluorescence units (RFU) (Minimum)	0.6

Appendix B – Tables

Gage	Data Time Period	Parameter	Average Over Time Period
USGS 06177000 Missouri River near Wolf Point, Montana	07/31/1979 – 06/04/2024	Temperature, water, degrees Celsius (Maximum)	9.9
USGS 06177000 Missouri River near Wolf Point, Montana	07/31/1979 – 06/04/2024	Temperature, water, degrees Celsius (Median)	8.3
USGS 06177000 Missouri River near Wolf Point, Montana	07/31/1979 – 06/04/2024	Temperature, water, degrees Celsius (Minimum)	8.9
USGS 06177000 Missouri River near Wolf Point, Montana	04/28/1948 - 06/29/1969	Suspended sediment discharge, short tons per day (Mean)	11,535

Source: USGS 2024k, 2024l, 2024m, 2024n

Table 3.4-11. Comparison of Physically- and Legally Available Volumes [acre-feet] on the Missouri River at Fort Peck Reservoir

Month	Physical Availability[1] (acre-feet)	Existing Legal Demands (acre-feet)	Amount Available (Physical – Existing Legal Demands) (acre-feet)	Amount Requested[2] (acre-feet)	Amount Remaining (acre-feet)	Percent Change in Amount Available
January	388,694	284,912	103,782	332.5	103,450	-0.32%
February	375,120	284,912	90,208	332.5	89,876	-0.37%
March	463,998	284,912	179,086	332.5	178,754	-0.19%
April	531,960	285,296	246,664	332.5	246,332	-0.13%
May	795,461	303,696	491,765	332.5	491,433	-0.07%
June	1,001,812	303,696	698,116	332.5	697,784	-0.05%
July	584,362	303,696	280,666	332.5	280,334	-0.12%
August	374,063	303,696	70,367	332.5	70,035	-0.47%
September	341,651	303,696	37,955	332.5	37,623	-0.88%
October	380,979	285,296	95,683	332.5	95,351	-0.35%
November	397,041	284,912	94,129	332.5	93,797	-0.35%
December	390,321	284,912	105,319	332.5	104,987	-0.32%

Source: DNRC 2014

Note:

[1] Reproduced from the DRNC 2014 permit. Physical availability data is from the 1934 – 2012 time period.

[2] Monthly withdrawal volume is calculated based on an even distribution of the requested 3,990 acre-feet (3,990 / 12 = 332.5 acre-feet per month).

Table 3.5-1. Stratigraphic Column for Northeastern Montana Portraying Geologic Units Including Fossiliferous Materials (i.e., Dinosaurs, Mammals, Plants, and Invertebrates)

Era	Period	Epoch	Formation	Member	Definition of Major Units
Cenozoic	Quaternary	Anthropocene Holocene	n/a	n/a	Colluvium, alluvium, and landslides Map symbol Qs, Qal, Qls
Cenozoic	Quaternary	Pleistocene (2.58 million to 11,700 years ago)	n/a	n/a	Gravel deposits Map symbol Qgr
Cenozoic	Quaternary	Pleistocene (2.58 million to 11,700 years ago)	n/a	n/a	Clinker from baked and melted rock from burned-out coal seams on or in the Fort Union Formation Map Symbol QTcl
Cenozoic	Tertiary	Pliocene Miocene Oligocene Eocene (56 million to 2.58 million years ago)	n/a	Flaxville Gravel	Terrance gravels left behind as streams carved valleys with sandstone (strath terraces) and gravel (depositional terraces) Map Symbol Tgr

Cenozoic	Tertiary	Paleocene (66 million to 56 million years ago)	Fort Union Formation	Tongue River Member Lebo Member Tullock Member	Thick sandstone beds with some shale and extensive coal beds in the Tongue River member deposited in a marine coastal shore and wetland. Map Symbol Tftr Shale in the Lebo member, deposited in a large regional lake. Map Symbol Tfle Tullock member sandstone and thin coal beds with disarticulated Cretaceous age fossils deposited in streams, marine shoreline sands and gravels and estuaries. Map Symbol Tft
Mesozoic	Cretaceous	(100.5 million to 66 million years ago)	Hell Creek Formation Fox Hills Formation Bearpaw Shale	n/a	At the top of the Hell Creek Formation is the iridium-rich layer deposited after by bolide caused extinction. Hell Creek Formation has interbedded sandstone, shale and coal beds deposited in a marine shoreline with estuaries and streams. Extensive articulated and disarticulated dinosaur fossils. Map Symbol Khf Sandstone and shale deposited in near shore and estuary environments in the Fox Hills Formation. Map Symbol Khf (Fox Hills and Hell Creek Formations) Marine and estuarine shale interbedded with bentonite clay seams and some sand and many iron-rich concretions Map Symbol Kb

Source: Modified after Hyndman and Thomas 2020

Table 3.5-2 Major Sensitive Soils Located Within the Project Study Area

Soil Types, Series, or Families	Texture	Origin	Conductivity Permeability Porosity	Acres in Project Study Area	Erosion
Lambert-Dimyaw complex, 15 to 65 percent slopes	Clay, silt, sand and gravel, cobbles and boulders	Formed recent alluvium on uplands, fans and terraces.	Moderately slowly permeable	266.0	Low shear strength Slope gradients ≥ 60% may be unstable
Zahill loam, 15 to 60 percent slopes	Clay and silt, mostly sand with cobbles	Till plains, hills, moraines, and escarpments.	Well drained	217.3	Low shear strength Slope gradients ≥ 60% may be unstable
Zahill-Lambert complex, 15 to 65 percent slopes	Clay, silt, sand and gravel, cobbles and boulders	Formed recent alluvium on uplands, fans and terraces. Till plains, hills, moraines, and escarpments	Moderate to high permeability	210.5	Low shear strength Slope gradients ≥ 60% may be unstable
Cambeth-Cabbart-Yawdim complex, 15 to 25 percent slopes	Clay and silt, mostly sand with cobbles	Sedimentary plains, hills, and alluvial fans. Alluvium or colluvium over residuum or weathered from calcareous siltstone or shale	Poorly to well drained	102.2	Low shear strength
Hillon-Kevin clay loams, 8 to 25 percent slopes	Clay and silt, mostly sand with cobbles	Till plains, hills, and escarpments	Poorly to well drained	104.9	Low shear strength
Tinsley soils, 15 to 65 percent slopes	Gravelly loam	Outwash plains, escarpments, stream terraces, eskers, and kames	Poorly to well drained	87.6	Low shear strength Slope gradients ≥ 60% may be unstable

Appendix B – Tables

Soil Types, Series, or Families	Texture	Origin	Conductivity Permeability Porosity	Acres in Project Study Area	Erosion
Work clay loam, 4 to 8 percent slopes	Clayey loam	Alluvial fans, stream terraces, relict stream terraces, plains, and hills.	Very deep, well drained	80.7	Low shear strength
Leavitt cobbly loam, 8 to 15 percent slopes	Cobbly loam	Alluvial fans, stream terraces, relict stream terraces, plains, and hills.	Well drained	36.6	Low shear strength
Windham cobbly loam, 15 to 45 percent slopes	Cobbly loam	Alluvial fans, fan remnants, stream terraces, structural benches, escarpments, ridges, divides, and hills.	Very deep, well drained	76.8	Low shear strength
Linnet clay, 2 to 4 percent slopes	Silty, clay loam	Clayey alluvium and glaciolacustrine	Very deep, well drained	65.0	Low shear strength
Judith-Windham complex, 8 to 15 percent slopes	Cobbly loam	Alluvial fans, fan remnants, stream terraces, structural benches, escarpments, ridges, divides, and hills.	Very deep, well drained	20.5	Low shear strength
Boralfs-Ochrepts complex, landslide deposits, steep	Clay, silt, sand, gravel and boulders	Landslide deposits	Well drained	59.4	Forested landslide deposits indicating unstable slopes upslope above the deposits.
Dufort ashy silt loam, 5 to 15 percent slopes	Silty loam	Glacial till	Well drained	62.3	Low shear strength
Truscreek silt loam, 0 to 2 percent slopes	Silty loam	Glaciofluvial and glaciolacustrine	Well drained	55.6	Low shear strength

Appendix B – Tables

Soil Types, Series, or Families	Texture	Origin	Conductivity Permeability Porosity	Acres in Project Study Area	Erosion
Yamac loam, 2 to 4 percent slopes	Loam	Alluvial fans, fan remnants, stream terraces, structural benches, escarpments, ridges, divides, and hills.	Well drained	50.2	Low shear strength

Table 3.5-3 Summary Table of BLM Potential Fossil Yield Classifications for the Project Study Area

Formation	Formation	BLM Federal Lands (acres)	Private Lands (acres)
Potential Fossil Yield Classification 4 High Potential	Fort Union Tullock	0.1	110.0
Class 5 Very High Potential	Hell Creek	65.8	781.8
Class 4 High Potential	Fox Hills	-	16.8
Class 3 Moderate Potential	Bearpaw	18.6	63.4
Acres of Class 4 and 5	**—**	**65.9**	**908.6**

Table 3.7-1. Population and Population Density by County

County	Population	Population Density (people/square mile)
Dawson	8,915	3.8
Garfield	976	0.2
McCone	1,746	0.7
Richland	11,366	5.5
Montana	**1,091,840**	**7.5**
United States	**331,449,281**	**93.8**

Source: U.S. Census Bureau 2022d, 2022e

Table 3.7-2. Average Median Income by Census Tract

Location	Average Median Income
Census Tract 1, Dawson County	$78,125
Census Tract 2, Dawson County	$70,109
Census Tract 3, Dawson County	$67,601
Census Tract 1, Garfield County	$61,786
Census Tract 9540, McCone County	$79,022
Census Tract 701, Richland County	$79,000
Census Tract 702, Richland County	$73,841
Census Tract 703.01, Richland County	$47,418
Census Tract 703.02, Richland County	$46,753
Census Tract 704, Richland County	$74,375
State of Montana	**$66,341**
United States	**$75,149**

Source: U.S. Census Bureau 2022a

Table 3.7-3. Employment Rate and Unemployment Rate by Census Tract

Location	Unemployment Rate (%)
Census Tract 1, Dawson County	1.4
Census Tract 2, Dawson County	1.7
Census Tract 3, Dawson County	2.2
Census Tract 1, Garfield County	0.0
Census Tract 9540, McCone County	1.6
Census Tract 701, Richland County	7.8
Census Tract 702, Richland County	0.7
Census Tract 703.01, Richland County	5.2
Census Tract 703.02, Richland County	0.0
Census Tract 704, Richland County	2.2
State of Montana	**2.4**
United States	**3.4**

Source: U.S. Census Bureau 2022b

Table 3.7-4. Median Value of Owner-Occupied Housing by Census Tract

Location	Median Value of Owner-Occupied Housing
Census Tract 1, Dawson County	$171,800
Census Tract 2, Dawson County	$195,100
Census Tract 3, Dawson County	$204,400
Census Tract 1, Garfield County	$164,900
Census Tract 9540, McCone County	$186,700
Census Tract 701, Richland County	$237,500
Census Tract 702, Richland County	$225,800
Census Tract 703.01, Richland County	$270,500
Census Tract 703.02, Richland County	$344,200
Census Tract 704, Richland County	$221,100
State of Montana	**$305,700**
United States	**$281,900**

Source: U.S. Census Bureau 2022c

Table 3.7-5. Municipal Water Systems in the DRWA Service Area

County	Municipal Water System	Primary Water Source
Dawson County	West Glendive[1]	Groundwater
	Town of Richey	Groundwater
Garfield County	Town of Jordan	Groundwater
McCone County	Town of Circle	Groundwater
Richland County	Town of Fairview	Groundwater
	City of Sidney	Groundwater

Notes:
[1] West Glendive is an unincorporated area with several local community water systems.

Table 3.8-1. Land Type by County Within the Project Study Area

Land Type/County	BLM (acres)	USACE (acres)	State (acres)	Private (acres)
Dawson	2.1	0.0	152.3	2,559.0
Garfield	193.1	227.7	91.7	2,438.3
McCone	385.5	20.0	348.0	5,717.8
Richland	60.4	0.0	371.7	5,269.2
TOTAL	641.1	247.7	963.7	15,984.3

Table 3.8-2. BLM RMP Applicable Land Use Objectives and Management Decisions

Resource	RMP Objectives and Management Decisions[1]
Riparian and Wetlands Areas	Goal RIP 1: Manage riparian and wetland systems to be healthy, diverse and functional. Objective RIP 1: Improve riparian and wetlands areas toward PFC or higher ecological status. MD RIP 1: Surface-disturbing activities are allowed in and within 300 feet of the boundary of the riparian and wetlands areas with approved design features to maintain or improve functionality and resiliency. MD RIP 5: New livestock development (e.g., troughs, tanks, etc.) will be located and designed to maintain or improve the integrity, functionality, and resiliency of the associated wetland or riparian area.
Air Quality	Goal AQ 1: Maintain or enhance air quality and air quality related values in the planning area and at sensitive areas in and near the planning area. MD AQ-2: Emission reduction measures and conservation actions will be considered during project-level planning
Cultural Resources	Goal CR-1: Identify, preserve and protect significant cultural resources on BLM-administered land. MD CR-1: Surface-disturbing activities are allowed in significant cultural sites as long as activities will not have an adverse effect.
Fish, Aquatic and Wildlife Habitat, Including Special Status Species	Goal WF 1: Provide habitats for well-distributed and diverse fish and wildlife. Goal WF-2: Maintain, enhance or restore habitats for special status fish and wildlife species to ensure BLM actions do not contribute to list these species. Objective WF-1: Maintain or enhance plant communities and habitat needed to maintain, or restore fish, aquatic or wildlife populations. Objective WF-2: Provide sufficient habitat for native wildlife species in order to support viable native wildlife populations. Objective WF-3: Implement habitat improvements to restore and/or improve unsatisfactory or declining fish, wildlife and wildlife habitat. Objective WF-5: Minimize fragmentation of large intact blocks of important wildlife habitat, particularly habitat areas for GRSG and grassland birds. Objective WF-6: Maintain, improve and increase sagebrush habitats to sustain sagebrush obligate and other sagebrush dependent species. Objective WF-7: Maintain or reestablish connectivity between and within sagebrush habitats with emphasis on communities occupied by BLM priority species for management. MD FD 1: BLM authorized activities associated with all resources and resource use programs are subject to mitigation or minimization guidelines as defined in Appendix L, Mitigation Measures and Conservation Actions.

Resource	RMP Objectives and Management Decisions[1]
	MD WF 3: For migratory bird conservation and restore, enhance, and maintain habitats for all birds, the BLM will follow Appendix J, Fish, Aquatic and Wildlife Habitat, including Special Status Species which outlines the recommended strategies for migratory birds. MD WF 5: Low voltage above ground power lines (Less than 69 kV are allowed with specialized design features.
Greater Sage-Grouse Habitat	Goal 1: Maintain or increase habitat needed for DRSG through the management of surface disturbing and disruptive activities, including the loss and distribution of sagebrush habitat.
Greater Sage-Grouse Habitat – General Habitat Management Areas	MD 1: Major ROWs (100kV and over high voltage transmission lines and 24 inch in width and over for large pipelines) and renewable energy ROWs will avoid GRSG GHMA.
Greater Sage-Grouse Habitat – Priority Habitat Management Areas	Objective 1: Maintain or increase GRSG habitat over the long-term, recognizing valid existing rights. Objective 1: Maintain or increase GRSG habitat over the long-term, recognizing valid existing rights. Objective 2: Restore degraded GRSG habitat. Objective 3: Manage permitted uses while providing GSRG habitat for the long-term. MD 1: Where deemed effective, water developments will be managed to reduce the spread of West Nile virus (See Appendix C, GRSG Required Design Features). MD 3: Major high voltage transmission lines and large pipelines) and minor ROWs will avoid GRSG priority areas. In undertaking BLM management actions, and consistent with valid and existing rights and law in authorizing third-party actions, the BLM will apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-grouse – A Review (open file Report 2014-1239), in accordance with Appendix B, GSRG Conservation Buffer. If the 3% anthropogenic disturbance cap is exceeded on lands (regardless of ownership) within GRSG PHMA in any given BSU, then no further discrete anthropogenic disturbances will be permitted by BLM within GRSG PHMA in any given BSA until the disturbance has been reduced to less than the cap. If the 3% anthropogenic disturbance cap is exceeded on lands (regardless of ownership) or if anthropogenic disturbance and habitat loss associated with conversion to agriculture tillage or fire exceed 5% within a analysis area in PHMA, then no further discrete anthropogenic disturbance will be permitted by BLM within PHMA in a analysis area until the disturbance has been reduced to less than the cap. If the BLM determines that the State of Montana has adopted a GRSG Habitat Conservation Program that contains comparable components to those found in the State of Wyoming Core Area Strategy including an all lands approach for calculating anthropogenic disturbances, a clear methodology for measuring the density of operations , and a fully

Resource	RMP Objectives and Management Decisions[1]
	operational Density Disturbance Calculation Tool, the 3% disturbance cap will be converted to a 5% cap for all sources of habitat alteration within an analysis area.
Big Game Crucial Winter Range	MD WF-7: Surface-disturbing and disruptive activities are allowed in Big Game Crucial Winter Range areas with design features which maintain the functionality of the crucial winter range habitat.
Sharp-tailed Grouse (lek sites and nesting habitat)	MF WF 8: Surface disturbing and disruptive activities are allowed on and within 2 miles of sharp-tailed grouse lek sites with design features to protect breeding, nesting and brood-rearing habitats at a level capable of supporting the long-term populations associated with the lek.
Colonial Nesting Water Birds	MD WF 10: Surface-disturbing and disruptive activities are allowed within 0.5 miles of water bird colonies, with design features to maintain functionality of the water bird nesting colonies habitat.
Bald Eagles	MD WF 16: Surface-disturbing and disruptive activities are allowed within 0.5 miles of bald eagle nest sites active within the preceding 5 years, with design features which will minimize disturbance to the nest site and maintain functionality of the bald eagle habitat.
Raptor Nest Sites: Burrowing Owl, Golden Eagle, Ferruginous Hawk, Swainson's Hawk, Prairie Falcon, Northern Goshawk	MD WF 18: Surface-disturbing and disruptive activities are allowed within 0.5 miles of raptor nest sites within the past 7 years with design features which maintain the functionality for the raptor nest and nesting habitat.
Piping Plover Habitat	MD WF 21: Surface-disturbing and disruptive activities are allowed within 0.25 miles of piping plover habitat with design features which maintain the functionality of the piping plover habitat
Interior Least Tern Habitat	MD WF 23: Surface-disturbing and disruptive activities are allowed within 0.25 miles of interior least tern habitat with design features which maintain the functionality of the least tern habitat.
Black-footed Ferret Habitat	MD WF 26: Surface occupancy and use is prohibited within 0.25 miles of black-footed ferret (Complex of prairie dog towns within 1.5 km of each other comprising a total of at least 1,500 acres).
Pallid Sturgeon Habitat	MD WF 29: Surface-disturbing and disruptive activities are allowed within 0.25 miles of the water's edge of the Yellowstone and Missouri rivers with design features which maintain the functionality of the pallid sturgeon habitat.
Invasive Species	Goal INV 1: Manage for healthy native plant communities and aquatic systems by reducing, preventing expansion of, or eliminating the occurrences of invasive species. Objective INV 1: Plant communities that reflect the potential natural community of the desired plant community appropriate for the ecological site.

Resource	RMP Objectives and Management Decisions[1]
	MD INV 1: Surface-disturbing activities are allowed on BLM-administered lands in areas of invasive species infestation only with approved mitigation measures in place. MD INV 4 Treat areas that contain cheatgrass and other invasive or noxious species to minimize competition and favor establishment of desired species.
Lands and Realty	Goal LR 1: Provide public lands, interest in land, and authorizations for public and private uses while maintaining and improving resource values. Goal LR 5: Effects of infrastructure projects, including siting, will be minimized using the best available science, updated as monitoring information on current infrastructure projects becomes available. MD LR 2: Major and Minor ROWS and other realty-related land use authorizations are excluded in 3% of the planning area.
National Trails	Goal NT 1: Conserve, protect, and restore National Trail resources, qualities, values, associated settings and primary use or uses of national trails. Objective NT 1: Sustain and enhance Lewis and Clark Trail to complement its status as a national historic trail emphasizing natural and historical interpretation as part of the National Trail Management Corridor. Effective inventory, planning, management and monitoring of the trail corridor will occur through management as the Lewis and Clark SRMA. Objective NT 2: Safeguard the Nature and Purposes; and conserve, protect, and restore the National Trail resources, qualities and values, and associated settings and the primary use or uses of the Lewis and Clark Trail. MD NT 1: See the Lewis and Clark SRMA section for additional management actions and delineation of the Lewis and Clark National Trail Management Corridor (Map 7)
Special Recreation Management Areas (SRMAs)	Objective SRMA 1: Manage SRMAs to enhance a targeted and/or specific set of activities, experiences, benefits and desired recreation setting characteristics in response to visitor demand to sustain recreation settings characteristics.
Lewis and Clark Trail SRMA	Objective LEWIS 1: Manage for public use and enjoyment, while preserving the historic and cultural resources related to the events that occurred during the Lewis and Clark Expedition. Objective LEWIS 2: Maintain and enhance recreation opportunities for residents and visitors along the trail to accommodate camping, scenery and wildlife viewing, hunting, picnicking, boating, fishing, hiking and other compatible and dispersed recreational uses in prescribed setting so visors are able to realize experiences and benefits. MD LEWIS 4: ROWS and other land use authorizations are avoided. MD LEWIS 7: The area is managed according to VRM Class II objectives.

Resource	RMP Objectives and Management Decisions[1]
Jordan Bison Kill ACEC	Goal ACE 1: Identify and manage ACECs to protect life and safety from natural hazards or to protect and prevent irreparable damage to important historic, cultural, paleontological, or scenic values, fish and wildlife resources and other natural systems and processes.
Paleontological Resources	Goal PALEO 1: Identify, preserve, and protect significant paleontological resources on BLM-administered lands. Goal PALEO 2: Ensure that paleontological resources are available to present and future generations for appropriate uses such as scientific studies and public education. Objective PALEO 1: Ensure that proposed land uses initiated or authorized by the BLM avoid inadvertent damage to significant paleontological resources. MD PALEO 1: Surface-disturbing activities are allowed as long as activities will not affect the quality of significant paleontological resources.
Recreation	Goal REC 1: Provide a diverse array of quality resource-based recreation opportunities while protecting and interpreting the resource values, providing educational opportunities, minimizing recreational use conflicts, and promoting public safety.
Soils	Goal SL 1: Maintain or improve the chemical, physical and biotic properties of soil. Objective SL 1: Prevent or limit accelerated soil loss, minimize degradation of soils, and control sedimentation. Objective SL 2: Maintain or improve adequate vegetation and ground cover (including biological soil crust and litter) to promote soil health, productivity and stability. MD SL 1: Reclamation measures for surface-disturbing activities will be implemented as described in Appendix N, Reclamation. MD SL 2: Surface-disturbing activities on sensitive soils are allowed with specialized design features to maintain or improve the stability of the site. MD SL 4: Surface-disturbing activities on badlands and rock outcrop is allowed with specialized design features to maintain or improve the stability of the site.
Socioeconomics	Goal SE 1: Provide for a diverse array of stable economic opportunities in an environmentally sound manner. Goal SE 2: Identify and correct or revise, to the extent possible, disproportionate negative effects on minority or low-income populations in accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). Goal SE 3: Protect humans and the environment from exposure to hazardous materials. MD SE 1: Analyze effects on socioeconomic, environmental justice and hazardous material resources from the implementation of projects through design, planning and NEPA processes.
Visual Resources	Goal VR 1: Maintain scenic qualities consistent with the management of resources and uses.

Resource	RMP Objectives and Management Decisions[1]
	Objective VR 1: Manage visual resources according to established guidelines for VRM class objectives. MD VR 1: The visual contrast rating system will be used during project-level planning to determine mitigation measures and conservation actions. MD VR 4: VRM will be managed according to VRM class.
Water Resources	Goal WR 1: Maintain or enhance the beneficial uses of surface water and groundwater. Objective WR 1: Support natural surface water flow regimes. Objective WR 2: Protect water resources from point source and nonpoint source pollution. MD WR 1: The BLM activities conducted will meet or exceed Montana water quality standards. MD WR 2: Surface-disturbing activities are allowed in 100-year floodplains with specialized design features to minimize effects on the functionality and resiliency of the floodplain in compliance with Executive Order 11988. MD WR 4: Surface-disturbing activities that do not benefit the functionality of the perennial or intermittent stream, lake, pond or reservoir are allowed with specialized design features to ensure that all state water quality standards are met and that all beneficial uses remain fully supported. MD WR6: Surface water impoundments are allowed with measures designed to maintain water quality, and riparian and watershed functionality and resiliency. MD WR 7: Surface-disturbing activities are allowed in State-designated Source Water Protection Areas with specialized design features to minimize effects on surface or groundwater quality.
Wildland Fire Management	Goal WILDLAND: Create and maintain landscape-level fuel breaks using fire management, grazing, range improvements, transportation corridors, terrain features and vegetation communities to provide suppression opportunities.

Notes:
[1] Greater sage-grouse (GRSG), Management Decision (MD), General Habitat Management Area (GHMA), Priority Habitat Management Area (PHMA), Right-of-Way (ROW), Biologically Significant Unit (BSU), Special Recreation Management Areas (SRMA), Area of Critical Environmental Concern (ACEC).

Table 3.8-3. BLM RMP Environmental Commitments and Mitigation

RMP Resource	Environmental Commitments and Mitigation Measures[1]
Riparian and Wetlands Areas	Environmental Commitments, Appendix G Mitigation Measure BIO-1 – Wetland and Riparian Effects
Air Quality	Environmental Commitments, Appendix G
Cultural Resources	Environmental Commitments, Appendix G Mitigation Measure Cul 1– Avoid Historical Resources or Prepare and Implement a Historic Properties Treatment Plan Mitigation Measure TCP-1: Avoid Tribal Cultural Properties or Develop Treatment for Tribal Cultural Properties in Consultation with Tribes
Fish, Aquatic and Wildlife Habitat, Including Special Status Species	Environmental Commitments, Appendix G Mitigation Measure SSS-2 Avoid and Minimize Effects on Greater Sage Grouse
Greater Sage-Grouse Habitat	Environmental Commitments, Appendix G Mitigation Measure SSS-2 Avoid and Minimize Effects on Greater Sage Grouse
Greater Sage-Grouse Habitat – General Habitat Management Areas	Environmental Commitments, Appendix G Mitigation Measure SSS-2 Avoid and Minimize Effects on Greater Sage Grouse
Greater Sage-Grouse Habitat – Priority Habitat Management Areas	Environmental Commitments, Appendix G Mitigation Measure SSS-2 Avoid and Minimize Effects on Greater Sage Grouse
Colonial Nesting Water Birds	Environmental Commitments, Appendix G
Bald Eagles	Environmental Commitments, Appendix G
Raptor Nest Sites: Burrowing Owl, Golden Eagle, Ferruginous Hawk, Swainson's Hawk, Prairie Falcon, Northern Goshawk	Environmental Commitments, Appendix G
Piping Plover Habitat	Environmental Commitments, Appendix G

Appendix B – Tables

RMP Resource	Environmental Commitments and Mitigation Measures[1]
Interior Least Tern Habitat	Environmental Commitments, Appendix G
Pallid Sturgeon Habitat	Environmental Commitments, Appendix G
Invasive Species	Environmental Commitments, Appendix G
Lands and Realty	Environmental Commitments, Appendix G
National Trails	Environmental Commitments, Appendix G
Lewis and Clark Trail SRMA	Environmental Commitments, Appendix G
Paleontological Resources	Environmental Commitments, Appendix G
Recreation	Environmental Commitments, Appendix G
Soils	Environmental Commitments, Appendix G
Visual Resources	Environmental Commitments, Appendix G
Water Resources	Environmental Commitments, Appendix G

Table 3.9-1 BLM Visual Resource Management Class Objectives

Visual Resource Management (VRM) Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of the viewer attention. However, every attempt should be made to minimize the effect of these activities through careful location, minimal disturbance, and repeating the basic elements.

Source: BLM 1986

Table 3.9-2. Project Study Area on BLM-Managed Land, Total Acres by Class

Visual Resource Management Sensitivity Level Rating	Acres
Class I	0.00
Class II	67.59
Class III	411.45
Class IV	166.94
Total	645.99

Table 3.9-3. Permanent Project Effects on BLM-Managed Land, Total Acres by Class

Visual Resource Management Sensitivity Level Rating by Project	Acres
69 kV Transmission Line	**—**
Class III	72.87
Class IV	24.01
69 kV Transmission Line & Distribution Line	**—**
Class III	47.90
Distribution Line	
Class IV	1.97
Missouri 1 WTP & Intake Facility, Raw Water Intake, Distribution Line	**—**
Class II	22.61
Missouri 8 Intake WTP	**—**
Class II	11.66
Class III	32.59
Total	213.61

Table 3.10-1. BLM's Recreation Goals and Objectives

Recreation	Goal REC 1: Provide a diverse array of quality resource-based recreation opportunities while protecting and interpreting the resource values, providing educational opportunities, minimizing recreational use conflicts, and promoting public safety.
National Trails	Goal NT 1: Conserve, protect, and restore National Trail resources, qualities, values, associated settings and primary use or uses of national trails. Objective NT 1: Sustain and enhance Lewis and Clark Trail to complement its status as a national historic trail emphasizing natural and historical interpretation as part of the National Trail Management Corridor. Effective inventory, planning, management, and monitoring of the trail corridor will occur through management as the Lewis and Clark SRMA. Objective NT 2: Safeguard the Nature and Purposes; and conserve, protect, and restore the National Trail resources, qualities and values, and associated settings and the primary use or uses of the Lewis and Clark Trail. MD NT 1: See the Lewis and Clark SRMA section for additional management actions and delineation of the Lewis and Clark National Trail Management Corridor (Map 7).
Lewis and Clark Trail SRMA	Objective LEWIS 1: Manage for public use and enjoyment, while preserving the historic and cultural resources related to the events that occurred during the Lewis and Clark Expedition. Objective LEWIS 2: Maintain and enhance recreation opportunities for residents and visitors along the trail to accommodate camping, scenery and wildlife viewing, hunting, picnicking, boating, fishing, hiking and other compatible and dispersed recreational uses in prescribed setting so visors are able to realize experiences and benefits. Management Directive (MD) LEWIS 4: ROWS and other land use authorizations are avoided. MD LEWIS 7: The area is managed according to VRM Class II objectives.

Table 3.10-2. List of Recreation Facilities and Opportunities Available in the DRWA Service Area

Name	Managing Entity	Fishing	Hunting[1]	Trapping	Camping	Boat Access	Water Sports	Swimming	Wildlife Viewing	Bird Watching	Photography	Motorized Vehicles	Horseback Riding	Hiking	Recreational Shooting
Fort Peck Lake Reservoir and Recreation Area	USACE	x	x		x	x				x				x	
BLM Land	BLM	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Homestead Reservoir	BLM				x										
Lewis and Clark Bridge Historic Site	BLM													x	
Lewis and Clark National Historic Trail	BLM SMRA / NPS													x	
Silvertip Reservoir	BLM				x										
South Fork Reservoir	BLM				x										
Hollecker Lake	Dawson County Public Works	x						x							

Appendix B – Tables

Name	Managing Entity	Fishing	Hunting[1]	Trapping	Camping	Boat Access	Water Sports	Swimming	Wildlife Viewing	Bird Watching	Photography	Motorized Vehicles	Horseback Riding	Hiking	Recreational Shooting
Black Bridge Fishing Access Site	FWP FAS	x				x									
Culbertson Bridge Fishing Access Site	FWP FAS	x	x			x									
Diamond Willow Fishing Access Site	FWP FAS	x	x												
Elk Island Fishing Access Site	FWP FAS	x	x			x									
Gartside Reservoir Fishing Access Site	FWP FAS	x	x			x									
Intake Dam Fishing Access Site	FWP FAS	x			x	x									
Johnson Reservoir Fishing Access Site	FWP FAS	x	x												
Lewis and Clark Fishing Access Site	FWP FAS	x				x									
Rock Creek Fishing Access Site	FWP FAS	x			x	x									

Appendix B – Tables

Name	Managing Entity	Fishing	Hunting[1]	Trapping	Camping	Boat Access	Water Sports	Swimming	Wildlife Viewing	Bird Watching	Photography	Motorized Vehicles	Horseback Riding	Hiking	Recreational Shooting
Seven Sisters Fishing Access Site	FWP FAS	x	x			x									
Sidney Bridge Fishing Access Site	FWP FAS	x				x									
Snowden Bridge Fishing Access Site	FWP FAS	x			x	x									
Stipek Fishing Access Site	FWP FAS	x				x									
Country Cross Ranch	FWP PALA		x												
Fortyfour Coulee	FWP PALA		x						x					x	
Kenny Mckerlick Ranch	FWP PALA	x	x												
Kirkland Dry Arm	FWP PALA		x						x					x	
Kirkland Stole Creek	FWP PALA		x						x					x	
Morris Coulee	FWP PALA		x						x					x	

Appendix B – Tables

Name	Managing Entity	Fishing	Hunting[1]	Trapping	Camping	Boat Access	Water Sports	Swimming	Wildlife Viewing	Bird Watching	Photography	Motorized Vehicles	Horseback Riding	Hiking	Recreational Shooting
Robert Reukauf Ranch	FWP PALA		x												
Ten Deer Creek	FWP PALA		x						x					x	
Three Buttes	FWP PALA		x						x	x				x	
Twitchell	FWP PALA		x						x					x	
Hell Creek	FWP State Park	x			x	x	x								
Elk Island	FWP WMA	x	x			x			x		x				
Fox Lake	FWP WMA	x	x	x					x						
Seven sisters	FWP WMA	x	x	x		x			x	x					
State School Trust Lands	MT DNRC	x	x	x	x							x	x		x

Appendix B – Tables

Name	Managing Entity	Fishing	Hunting[1]	Trapping	Camping	Boat Access	Water Sports	Swimming	Wildlife Viewing	Bird Watching	Photography	Motorized Vehicles	Horseback Riding	Hiking	Recreational Shooting
Devils Creek	USACE Campground	x			x	x			x						
McGuire Creek	USACE Campground	x			x	x			x						
Nelson Creek	USACE Campground	x			x	x			x						
Reclamation Land	Reclamation	x	x												
Charles M. Russell National Wildlife Refuge	USFWS	x	x		x									x	

Source: BLM 2022, 2024a, 2024b; FWP 2004, 2017, 2024a, 2024b, 2024c; DNRC 2024; NPS 2024; USFWS 2024; Visit Glendive 2024, Visit Montana 2024a, 2024b, 2024c, 2024d; Wild Montana 2024

Notes:

[1] Hunting includes big game hunting, upland birds, waterfowl and shed antlers.

Table 3.10-3. Recreation Sites Directly Affected by the Proposed Action

Name of Recreation Site	Type
Lewis and Clark Fishing Access Site	FWP Fishing Access Site
Lewis and Clark Bridge Historic Site	BLM Site
Access road to Rock Creek Fishing Access Site	FWP Fishing Access Site

Table 3.10-4. Recreation Sites Within Two Miles of the Proposed Action

Name of Recreation Site	Type
Lewis and Clark Bridge Historic Site	BLM Site
Hollecker Lake	Dawson County Public Works
Black Bridge Fishing Access Site	FWP FAS
Culberson Bridge Fishing Access Site	FWP FAS
Gartside Reservoir Fishing Access Site	FWP FAS
Johnson Reservoir Fishing Access Site	FWP FAS
Lewis and Clark Fishing Access Site	FWP FAS
Rock Creek Fishing Access Site	FWP FAS
Sidney Bridge Fishing Access Site	FWP FAS
Snowden Bridge Fishing Access Site	FWP FAS
Elk Island	FWP WMA
Fox Lake	FWP WMA
Seven Sisters	FWP WMA
Kenny Mckerlick Ranch	FWP PALA
Morris Coulee	FWP PALA
Three Buttes	FWP PALA
Twitchell	FWP PALA

Table 3.11-1. Miles of Highways and Local Roads in DRWA Service Area

Counties[1]	Dawson	Garfield	McCone	Richland	Grand Total
Highway	108.1	103.1	225.4	126.9	563.4
Paved	88.2	68.8	162.1	107.9	427.0
Unpaved	19.9	34.2	63.3	19.0	136.4
Local Road	108.6	123.3	243.5	323.6	799.1
Paved	3.0	0.0	1.7	20.6	25.3
Unpaved	105.5	123.3	241.8	303.1	773.8
Grand Total	216.7	226.4	468.9	450.5	1,362.5

Notes:
[1] Prairie County is excluded because it does not contain project components.

Table 3.11-2. Annual Daily Traffic Counts in DRWA Service Area

Type	High	Low	Mean
Highway	3,115	1,458	1,957
Primary	1,520	319	792
Secondary	331	32	125
Urban	1,896	81	1,141

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