BUREAU OF RECLAMATION

Appendix H

Biological Resources

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

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prepared by:

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

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Contents

Appendix H – Biological Resources

Vegetation Communities

Vegetation Communities Occurring in the DRWA Service Area

Agricultural Lands - Dry

Non-irrigated agricultural lands across the state include dominant species such as crops and hay species.

Agricultural Lands - Irrigated

Irrigated agricultural lands across the state are primarily used for crops or hay production. Dominant species include crops and hay species.

Altered Herbaceous

This vegetation community includes grasslands with 30% or more cover from the dominant species list. Total herbaceous cover ranges from 20-80%. It is typically associated with disturbed lands and can have bare soil coverages from 10-50%. Dominant species include bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), cheat grass (*Bromus tectorum*), common dandelion (*Taraxacum officinaie*), crested wheatgrass (*Agropyron cristatum)*, Japanese brome (*Bromus japonicus)*, leafy spurge (*Euphorbia esula*), smooth brome (*Bromus inermis*), spotted knapweed (*Centaurea maculosa*), St. John's-wort (*Hypericum performatum*), western ragweed (*Ambrosia* spp.), and yellow sweet-clover (*Melilotus officinatis*). It occurs across the state in low and high elevation areas.

Badlands

Badlands occur where bare soil or rock is the dominant cover with some grass and shrub species present. Vegetation may have patches of grass or shrubs within them, but the total is less than 10%. Badlands may have some trees present with a total cover of less than 10%. Dominant species include blue grama (*Bouteloua gracilis*), clubmoss (*Selaginella densa*), hairy grama (*Bouteloua hirsuta*), Hood's Phlox (*Phylox hoodii*), Prairie June Grass (*Koeleria pyramidata*), greasewood (*Sarcobatus* spp.), rabbitbrush (*Chrysothamnus* spp.), shadscale (*Atriplex canescens*), and Wyoming big sagebrush (*Artemisia tridentata*). Badlands communities primarily occur in central and eastern Montana.

Broadleaf Riparian

Broadleaf Riparian is a riparian forest type with total tree cover from 20-100%. Dominant tree species are aspen (*Populus tremuloides*), basswood (*Tilia americana*), birch (*Betula* spp.), black cottonwood (*Populus trichocarpa*), bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), and plains cottonwood (*Populus deltoides*). Associated shrub species include alder (*Alnus* spp.), bunchberry (*Cornus canadensis*), serviceberry (*Amelanchier alnifolia*), thimbleberry (*Rubus parviflorum*), and willow

(*Salix* spp.). Associated grass and forb species include queens cup beadlily (*Clintonia uniflora*), and sedges (*Carex* spp.).

Conifer Riparian

Conifer Riparian is dominated by conifer forest, with total tree cover from 20-100%. Dominant tree species include Douglas-fir (*Pseudotsuga menziesii*), Engelmann spruce (*Picea engelmannii*), grand fir (*Abies grandis*), subalpine fir (*Abies lasiocarpa)*, western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*) Associated shrub species include alder (*Alnus* spp.), bunchberry (*Cornus canadensis*), serviceberry (*Amelanchier alnifolia)*, thimbleberry (*Rubus parviflorum*), and twin flower (*Linnaea borealis*). Associated grass and forb species include queens cup beadlily (*Clintonia uniflora*). Conifer riparian communities mostly occur in western and south-central Montana.

Graminoid and Forb Riparian

Graminoid and Forb Riparian is dominated by herbaceous species with total herbaceous cover 30-100%. Tree and shrub coverage constitutes less than 15%. Standing water may be present in riparian areas (e.g., cattail marshes). Dominant species can include Baltic rush (*Juncus balticus*), bluejoint reedgrass (*Calamagrostis canadensis*), bog sedge (*Carex rostrata*), cinquefoil (*Potentilla* spp.), cattails (*Typha* spp.), lake sedge *(Carex lacustris*), maritime sedge (*Carex incurviformis*), northern reedgrass (*Calamagrostis inexpensa*), rushes (*Juncus* spp.), saxifrage (*Saxifraga* spp.), sedges (*Carex* spp.), and tufted hairgrass (*Deschampsia cespitosa*).

Limber Pine

This community is conifer forest dominated by limber pine (*Pinus flexilis*) with 20-50% cover. Associated shrub species include big sagebrush (*Artemisia tridentata*), juniper (*Juniperus* spp.), and rabbitbrush (*Chrysothamnus* spp.). Associated grass and forb species include bluebunch wheatgrass (*Agropyron spictatum*), blue grama, (*Bouteloua gracilis*), and Idaho fescue (*Festuca idahoensis*). It occurs in lower elevations of central Montana. It occurs at higher elevations on limestone soils in central and eastern Montana. It is limited to dry forest sites.

Low Density Xeric Forest

Low density xeric forests occur on the edge of grasslands. Tree cover ranges from 5-20% and typically has a grass understory. The habitat can have alternating tree and grass patches, with trees being the dominant feature. Dominant trees may include Douglas-fir (*Pseudotsuga menziesii)*, limber pine (*Pinus flexilis*), ponderosa pine (*Pinus ponderosa*), Rocky Mountain juniper (*Juniperus scopulorum*), and Utah juniper (*Juniperus osteosperma*). Grasses include bluebunch wheatgrass (*Agropyron spictatum*), blue grama (*Bouteloua gracilis*), bluestem (*Andropogon* spp.), green needlegrass (*Stipa viridula*), Idaho fescue (*Festuca Idahoensis*), and needle-and-thread (*Stipa comata*). It occurs primarily in eastern Montana in low hills near grasslands.

Low/Moderate Cover Grasslands

Low to moderate cover grasslands have total grass cover from 20-70%. It includes rangelands and non-irrigated pastures. It is dominated by short to medium height grasses and forbs, including

arrowleaf balsamroot (*Balsamorhiza sagittata*), bluebunch wheatgrass (*Agropyron spictatum*), blue grama (*Bouteloua gracilis*), bluestem (*Andropogon* spp.), sedges (*Carex* spp.), green needlegrass (*Stipa viridula*), Idaho fescue (*Festuca idahoensis*), lupine (*Lupinus* spp.), needle-and-thread (*Stipa comata*), rough fescue (*Festuca scabrella*), Timothy (*Poa pratensis*), and western wheatgrass (*Agropyron smithii*). It occurs across the state in valleys and foothills, and on middle to high elevation mountain slopes on south-facing aspects.

Mesic Shrub-Grassland Associations

Mesic shrub-grassland associations have codominance between the shrub and grass species. Shrub and grass cover ranges from 10-50%. It is found on moist sites usually between pure grass or shrub dominated regions. Dominant shrubs include buffalo berry (*Shepherdia argentea*), snowberry (*Symphoricarpos* spp.), and sumac (*Rhus* spp.). Grasses and forbs include bluebunch wheatgrass (*Agropyron spictatum*), bluestem (*Andropogon* spp.), fescue (*Festuca* spp.), needle-and-thread (*Stipa comata*), threadleaf sedge (*Carex filifolia*), and western wheatgrass (*Agropyron smithii*). It occurs primarily in central and eastern Montana valleys and some low mountain slopes.

Mixed Barren Sites

Barren sites are areas where live vegetation provides less than 10% canopy cover. There are no dominant species. Barren sites occur across Montana.

Mixed Broadleaf and Conifer Forest

Mixed broadleaf and conifer forests have equal dominance of broadleaf and conifer species. Total tree cover ranges from 30-100%. Dominant tree species include aspen (*Populus tremuloides*), birch (*Betula* spp.), grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), Engelmann spruce (*Picea engelmannii)*, subalpine fir (*Abies lasiocarpa*), western larch (*Larix occidentalis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*) Associated shrub species include alder (*Alnus* spp.), huckleberry (*Vaccinium* spp.), mountain-lover (*Pachistima myrsinites*), serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos* spp.), thimbleberry (*Rubus parviflorum*). It occurs across Montana, primarily in moist forest areas in near riparian areas or woody draws.

Mixed Broadleaf and Conifer Riparian

This community is a riparian habitat dominated by mixed broadleaf and conifer forest, with total tree cover from 20-100%. Dominant tree species include aspen (*Populus tremuloides*), birch (*Betula* spp.), black cottonwood (*Populus trichocarpa*), grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), Engelmann spruce (*Picea engelmannii)*, subalpine fir (*Abies lasiocarpa*), western larch (*Larix occidentalis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*). Associated shrub species include alder (*Alnus* spp.), bunchberry (*Cornus canadensis)*, serviceberry, (*Amelanchier alnifolia*), thimbleberry (*Rubus parviflorum*), willow (*Salix* spp.). Associated grass and forb species include queens cup beadlily (*Clintonia uniflora*), and sedges (*Carex* spp.). It occurs primarily in western and south-central Montana.

Mixed Broadleaf Forest

This community has multiple species with total tree cover of 20-80%. Broadleaf tree species dominate the tree cover (greater than 75% of total tree cover). Aspen stands are included within this cover type. Dominant trees include aspen (*Populus tremuloides*), basswood (*Tilia amer*icana), birch (*Betula* spp.), bur oak (Quercus macrocarpa), green ash (*Fraxinus pennsylvanica)*, and plains cottonwood (*Populus deltoides*). Associated shrub species include alder (*Alnus* spp.), huckleberry (*Vaccinium* spp.), service berry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos* spp.). It occurs across Montana, primarily in moist forest areas or in riparian areas or woody draws.

Mixed Mesic Shrubs

This community includes shrublands where mixed xeric shrubs are dominant, with shrub cover from 20-50%. Grass cover ranges from 5-40%. It is associated with dry rocky sites. Dominant shrub species include bitterbrush (*Purshia tridentata*), creeping juniper (*Juniperus horizontalis*), greasewood (*Sarcobatus* spp.), mountain mahogany (*Cercocarpus* spp.), rabbitbrush (*Chrysothamnus* spp.), and shadscale (*Atriplex canescens*). Associated grass and forb species include wheatgrass (*Agropyron spictatum*), blue gamma (A*ndropogon gracilis*), Idaho fescue (*Festuca idahoensis*), and western wheatgrass (*Agropyron smithii*). It occurs across the state primarily in valleys and low elevation mountain slopes.

Mixed Riparian

This community includes riparian areas dominated by a mix of shrub and herbaceous species, with codominance of shrub and grass species present. Tree cover is less than 15%. Dominant shrubs include alder (*Alnus* spp.), black hawthorn (*Crataegus douglasii*), bog birch (*Betula glandulosa*), currant (*Ribes* spp.), red-osier dogwood (*Corus stolonifera*), rose (*Rosa* spp.), shrubby cinquefoil (*Potentilla fruticosa*), snowberry (*Symphorcarpos* spp.), thimbleberry (*Rubus parviflorum*), twin-berry (*Lonicera involucrata*), Utah honeysuckle (*Lonicera* spp.), water birch (*Betula occidentalis*), and willows (*Salix* spp.) Dominant grass and forb species are the same as those listed above under Graminoid and Forb Riparian. This riparian habitat type occurs across Montana.

Mixed Xeric Shrubs

This community includes shrublands where mesic shrubs are dominant, with shrub cover from 20-100%. Dominant shrubs include alder (*Alnus* spp.), buffalo berry (*Shepherdia argentea*), ceanothus (*Ceanothus* spp.), huckleberry (*Vaccinium* spp.), Labrador tea (*Ledum glandulosum*), ninebark (*Physocarpus malvaceus*), pachistima (*Pachistima myrsinites*), mountain heath *(Phyllodoce empetriformis*), shiny-leaf spiraea (S*piraea betulifolia*), sumac (*Rhus* spp.), snowberry (*Symphoricarpos* spp.), western serviceberry (*Amelanchier alnifolia*), and whortleberry (*Vaccinium scoparium*). Associated grass and forbs species include arnica (*Arnica* spp.), beargrass (*Xerophyllum tenax*), elk sedge (*Carex geyeri*), and pinegrass (*Calamagrostis rubescens*). It occurs in mountain areas in western Montana and in draws or north slopes in eastern Montana.

Moderate/High Cover Grasslands

Moderate to high cover grasslands have total grass cover from 50-100%. It is dominated by medium-to-tall grasses in prairie areas. Dominant species include bluebunch wheatgrass (*Agropyron*

spictatum), big bluestem (*Andropogon gerardii*), sedges (*Carex* spp.), green needlegrass (*Stipa viridula*), Indian grass (*Sorghum nutans*), little bluestem (*Andropogon scoparium*), needle-and-thread (*Stipa comata*), prairie sandreed (*Calamovilfa longifolia*), switchgrass (*Panicum virgotum*), Timothy (*Poa pratensis*), and western wheatgrass (*Agropyron smithii*). It is associated with wet sites and occurs primarily in central and eastern Montana valleys.

Ponderosa Pine

This community is conifer forest dominated by ponderosa pine (*Pinus ponderosa*), with 20-80% cover. Associated shrub species include big sagebrush (*Artemisia tridentata*), ninebark (*Physocarpus malvaceus*), and snowberry (*Symphoricarpos* spp.). Associated grass and forb species include bluebunch wheatgrass (*Agropyron spictatum*), blue grama (*Bouteloua gracilis*), and Idaho fescue (*Festuca idahoensis*). It occurs across the state except in northeastern Montana. It is limited to lower elevation, dry forest sites.

Rock

This community includes exposed rock, cliffs, talus slopes, or scree fields, and has no dominant plant species. It occurs across the state.

Rocky Mountain Juniper

This community is conifer forest dominated by Rocky Mountain juniper (*Junicus scopularium*), with 20-50% cover. shrub species include big sagebrush (*Artemisia tridentata*), and snowberry (*Symphoricarpos* spp.). Associated grass and forb species include bluebunch, wheatgrass (*Agropyron spictatum*), blue grama, (B*outeloua gracilis*), and Idaho fescue (*Festuca idahoensis*). This habitat occurs primarily in central and eastern Montana in dry forest sites.

Sagebrush

Sagebrush habitat comprises shrublands dominated by sagebrush (*Artemisia* spp.) with 20-80% cover. Dominant sage species include basin big sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova*), mountain big sage (*Artemisia vaseyana*), and Wyoming big sage (*Artemisia wyomingensis*). Associated grass and forb species include bluebunch wheatgrass (*Agropyron spictatum*), blue gamma (*Andropogon gracilis*), Idaho fescue (*Festuca idahoensis*), and western wheatgrass (*Agropyron smithii*). It occurs across the state, primarily in valleys. Occasionally it occurs on low-mid elevation mountain slopes.

Salt-Desert Shrub/Dry Salt Flats

These are shrublands dominated by saltsage (*Atriplex nuttallii*) with 10-40% cover. Usually associated with alkaline sites or blowouts. It is found in dry, sandy, or saline-seep areas. Associated grass and forb species include blue grama (*Bouteloua gracilis*), hairy grama (*Bouteloua hirsuta*), Sandberg's bluegrass (*Poa sandbergii*), and threadleaf sedge (*Carex filifolia*). It occurs primarily in eastern and southeastern Montana.

Shrub Riparian

Shrub Riparian is dominated by shrubs, with total shrub cover from 20-100%. Tree cover is less than 15% and shrubs dominate over the herbaceous species. Standing water may be present in the riparian area (willow marshes). Dominant species include alder (*Alnus* spp.), black hawthorn (*Crataegus douglasii*), bog birch (*Betula glandulosa*), currant (*Ribes* spp.), red-osier dogwood (*Corus stolonifera*), rose (*Rosa* spp.), shrubby cinquefoil (*Potentilla fruticosa*), snowberry (*Symphorcarpos* spp.), thimbleberry (*Rubus parviflorum*), twin-berry (*Lonicera involucrata*), Utah honeysuckle (*Lonicera* spp.), water birch (*Betula occidentalis*), and willows (*Salix* spp.).

Silver Sage

Silver Sage is a shrubland dominated by silver sage (*Artemisia cana*) with a cover of 20-50%. It is found on moist sites near riparian areas. Associated grass and forb species include bluebunch wheatgrass (*Agropyron spictatum*), blue gamma (*Andropogon gracilis*), Idaho fescue (*Festuca idahoensis*), and western wheatgrass (*Agropyron smithii*). This vegetation type occurs primarily in northeastern Montana

Urban or Developed Lands

Urban and developed lands are dominated by humans and human development, including hardscapes such as buildings and parking lots and planting of ornamental and other non-native vegetation. It occurs as cities, towns, and other developed areas across Montana.

Very Low Cover Grasslands

These are semi-desert grasslands with total grass cover from 10-30% cover and are dominated by short grasses and forbs. It typically has a high amount of bare soil (20-60% cover). It is usually associated with alkaline soil or disturbed sites. Dominant species include blue grama (*Bouteloua gracilis*), clubmoss (*Selaginella densa*), hairy grama (*Bouteloua hirsuta*), Hood's phlox (*Phylox hoodii*), Missouri goldenrod (*Solidago missouriense*), prairie June grass (*Koeleria pyramidata*), Sandberg's bluegrass (*Poa sandbergii*), sun sedge (*Carex heliophila*), and threadleaf sedge (*Carex filifolia*). It occurs primarily in Montana's central and eastern valleys.

Water

These include rivers, lakes, ponds, and reservoirs. No dominant plant species is present. It occurs across Montana.

Xeric Shrub-Grassland Associations

Xeric shrub-grassland associations have codominance between the shrub and grass species. Shrub and grass cover ranges from 10-50%. It is found on dry sites in valleys and is usually between grass dominated and shrub dominated regions. Dominant shrubs include rabbitbrush (*Chrysothamnus* spp.), and sagebrush (*Artemisia* spp.). Dominant grasses and forbs include blue grama (Bouteloua gracilis), bluebunch wheatgrass (*Agropyron spictatum*), bluestem (*Andropogon* spp.), fescue (Festuca spp.), needle-and-thread (*Stipa comata*), and western wheatgrass (*Agropyron* smithii). It occurs primarily in central and eastern Montana valleys and some low mountain slopes.

Invasive and Noxious Weeds Potentially Occurring in the Project Area

Priority 1: Weeds Not Present or Having Limited Presence in Montana

Yellow Starthistle (Centaurea solstitialis)

Status 1A, not present in Montana. It is associated with roadsides, rangeland, abandoned cropland, disturbed areas, trails, often occurring on south-facing slopes. Its spines are painful to humans, wildlife, and livestock, reducing recreation opportunities, degrading plant communities, and diminishing productive habitat. It is toxic to horses, causing a fatal nervous order called chewing disease with no known treatment. Yellow starthistle has thus far been identified and eradicated before it became established in Montana. Habitat suitability is rated high in much of the DRWA service area.

Dyer's Woad (*Isatis tinctoria*)

Status: 1A, very limited presence in Montana. It establishes on disturbed sites, such as roadsides, railroads, and gravel pits. The weed is non-toxic but is unpalatable to livestock and reduces forage. Dyer's woad is known from two locations in the eastern portion of the Project study area, and habitat suitability is low throughout the DRWA service area.

Purple Loosestrife (*Lythrum salicaria*)

Statis 1B, limited presence in Montana. It is associated with canals, ditches, ponds, wetlands, marshes, roadsides, islands, moist soil, shallow water, frequently flooded areas below high-water mark, and shorelines of any waterbody. The weed creates monocultures that can impede waterflow and recreation and diminish wetland plant diversity and wildlife habitat. In the DRWA service area, it has been seen only on the Missouri River. Minimally suitable habitat in the Project study area is on river corridors.

Rush Skeletonweed (*Chondrilla juncea*)

Status 1B, limited presence in Montana. This weed occurs in disturbed areas with well-drained soils. It has not been observed in the DRWA service area and is found in western Montana. The plant is not toxic but can reduce forage production and can be problematic in grain crops. Minimally suitable habitat occurs in the southern portion of the DRWA service area.

Waterhemp (*Amaranthus tuberculatus*)

Status 1B, limited presence in Montana. As with other pigweeds, it is associated with croplands and field edges, roadsides, fence lines, ditches, and disturbed areas. It is not toxic. Waterhemp has not been observed in the DRWA service area but has been confirmed in neighboring Roosevelt and Prairie counties.

Common Bugloss (*Anchusa officinalis*)

Status 1B, limited presence in Montana. It is associated with hayfields, pastures, rangeland, riparian areas, and disturbed areas. The weed's toxicity is unknown, but it is in the borage family, which includes

many species with pyrrolizidine alkaloids toxic to livestock and humans. Within the DRWA service area low- to moderately suitable habitat occurs mostly in the eastern counties.

Medusahead (*Taeniatherum caput-medusae*)

Status 1A, very limited presence in Montana. It is associated with disturbed areas, degraded land, and rangeland. It thrives on high-clay-content soils and areas with cool wet winters and hot dry summers. The grass weed is a serious threat to rangeland, particularly in high clay content soils; stiff glumes and awns pose a risk to fleece and flesh; litter impedes growth and germination of other species, ties up nutrients, and increases fire danger. Medusahead has not been observed in the DRWA service area, with low-suitability habitat occurring mostly in the southern portions of the DRWA service area.

Common Reed (*Phragmites australis ssp. australis*)

Status 1A, very limited presence in Montana. It is associated with wet areas and riparian corridors, including marshes, sloughs, ditches, riversides, and roadsides. Observations in Montana are limited to the Missouri River corridor upstream of Fort Peck Reservoir and beyond the DRWA service area. Within the DRWA service area suitable habitat comprises mostly river and stream riparian habitats and is rated low suitability.

Priority2: Weeds Common in Isolated Areas of Montana or Are Not Abundant in Many Counties

Tansy Ragwort (*Senecio jacobaea*)

Status 2A, Common in isolated areas of Montana. It is found in disturbed soil of open forest or meadows, often associated with timber harvest or fire. It prefers cool, moist climates and 20 inches or more annual precipitation. It is toxic and can be lethal to cattle, horses, and deer because of pyrrolizidine alkaloids in the plant. It has only been observed in the western portion of Montana, with marginally suitable habitat in the DRWA service area occurring only in riparian habitat along the Missouri River.

Yellowflag Iris (*Iris pseudacorus*)

Status 2A, common in isolated areas of Montana. It is associated with shorelines, ditches, streambanks, floodplains, areas with shallow water, low lying wetlands, and wet meadows. It is an escaped ornamental plant often introduced by homeowners. It reproduces from rhizomes and seeds; seeds can be spread long distances by flowing water. It changes hydrology by capturing sediment, chokes out beneficial vegetation, clogs irrigations systems and streams and can narrow waterways. All parts of the plant are toxic to animals and can also cause severe skin irritation and allergic reactions in humans. Moderately suitable habitat occurs primarily in the western portion of the DRWA service area.

Flowering Rush (*Butomus umbellatus*)

Status 2A, common in isolated areas of Montana. It is associated with lakes, canals, slow moving waters, irrigation ditches, and wetlands. Flowering rush in Montana is a sterile type that rarely blooms and

only reproduces by rhizome, not by seed. Rhizomes break off with just minor disturbances, and rhizome fragments are buoyant, allowing substantial dispersal over long distances. It creates a closed-water vegetative habitat replacing open water, favoring non-native fish instead of native trout, blocking flows in irrigation ditches, and reducing water recreation, including boating, fishing, and swimming. Marginally suitable habitat occurs only on the Missouri River corridor in the DRWA service area.

Saltcedar (*Tamarix* spp.)

Status 2B, abundant in Montana and widespread in many counties, requires eradication or containment where less abundant. It is also known by the common name "tamarisk." It forms dense thickets in Montana, growing primarily in saline soils. The plant is found near water bodies, in cottonwood and willow habitat. Saltcedar does best in full sun. The secreted salt in their leaf litter can prevent the establishment of other plants. One plant can produce half a million seeds. In the DRWA service area, saltcedar is abundant alongside the Yellowstone and Missouri rivers, and their tributaries provide moderately to highly suitable habitat.

Special-Status Species

Special-Status Species Potentially Occurring in the DRWA Service Area

Mammal Species

Black-tailed Prairie Dog (*Cynomys ludovicianus*)

Found across much of eastern Montana in areas with suitable soil and topography—flat, open grasslands and shrub/grasslands with low, relatively sparse vegetation. Sylvatic plague has caused the species to decline and has affected colony size and population dynamics. Ongoing threats from disease and persecution due to perceived competition with grazing make the long-term status of this species uncertain.

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

Townsend's big-eared bat is a moderately sized bat found throughout the state where suitable habitat exists, primarily near caves, mines, rock outcrops, and badlands. As the common name suggests, the species has large ears compared to its overall size. Although never common in any part of the service area, its distribution is widespread and is among the most observed bat species during cave surveys.

Spotted Bat (*Euderma maculatum*)

Little is known about this species in Montana. Although widely distributed, the species is rare in almost all its range. Little is known about the trends in abundance or occupancy, or the life history of this species.

Eastern Red Bat (*Lasiurus borealis*)

The Eastern red bat is widely distributed in eastern North America. It generally occurs east of the Continental Divide, but in the spring and summer it can be found in the Great Lakes and Great Plains regions. Although highly vulnerable to barotrauma from wind turbines, it is widespread and not considered a high-priority bat species for conservation due to its healthy population, widespread distribution, and general adaptability.

Hoary Bat (*Lasiurus cinereus*)

Hoary bat is migratory and only a summer resident in Montana, with records from early June through September. Normal arrival and departure dates are uncertain. During the summer, hoary bats occupy forested areas. Breeding roosts are exceedingly rare in Montana. No management measures have been enacted specifically to protect Hoary bat in Montana. This species is vulnerable to collision with wind turbines at wind farms.

Little Brown Bat (*Myotis lucifigus*)

The most common bat in Montana. Common and widespread, but under significant threat of catastrophic declines due to white-nose syndrome, a fungal disease responsible for the collapse of populations of this species in the eastern U.S. This species is resident year-round in Montana but may be partially migratory because known winter aggregations are much smaller. Summer day roosts include attics, barns, bridges, snags, loose bark, and bat houses. Known maternity roosts in Montana are primarily buildings. Hibernacula include caves and mines.

Northern Long-eared Bat (*Myotis septentrionalis*)

In Montana, this species is known to occupy specific habitat within a limited range along the Missouri and Yellowstone river drainages near the North Dakota border. Populations of this species in the eastern US have undergone catastrophic declines due to white-nose syndrome and is expected to become a substantial threat to the persistence of this species in Montana.

In Montana, Northern long-eared bats have been found hibernating in an abandoned mine on a riverbank. These bats prefer cooler hibernacula and select narrow crevices in which to hibernate. Summer day roosts are often in cavities or crevices behind peeling bark in trees, usually in tall, wide-diameter and partially dead hardwoods. All active season captures within the state have been in or near riparian forest dominated by cottonwood (*Populus* spp.) and green ash (*Fraxinus pennsylvanica*) typical of the Great Plains Floodplain Ecological System.

Long-legged Myotis (*Myotis volans*)

This bat occurs mostly in forested mountain regions and river bottoms, also at high elevations. Summer day roosts include trees, rock crevices, fissures in stream banks, abandoned buildings. Hibernacula include caves and mines.

Merriam's Shrew (*Sorex merriami*)

Merriam's shrew in Montana occur mostly in arid sagebrush-grassland habitats, but also among non-native grasses and forbs. It also occurs in poorly developed riparian habitat adjacent to shrub-steppe

and grassland habitats. Alteration or removal of grassland and sagebrush through fire, herbicides, or mechanical methods, may affect local populations. Limiting these habitat effects will contribute to the conservation of Merriam's shrew. No management measures have been enacted for Merriam's shrew in Montana.

Preble's Shrew (*Sorex preblei*)

Throughout its range, Preble's shrew occupies a variety of habitats including arid and semiarid shrub-grass associations, openings in montane coniferous forests dominated by sagebrush, willow-fringed creeks and marshes, bunchgrass associations, sagebrush-aspen associations, sagebrush-grassland, oak chaparral, open ponderosa pine-Gambel oak stands, and alkaline shrubland. No management measures have been enacted for Preble's shrew in Montana. Alteration or removal of sagebrush through fire, herbicides, or mechanical methods, may affect local populations. Measures taken to protect sagebrush habitat will contribute to the conservation of Preble's shrew.

Swift Fox (*Vulpes velox*)

Swift foxes inhabit open prairie and arid plains, including areas intermixed with winter wheat fields in north-central Montana. They use burrows when they are inactive; either dug by themselves or made by other mammals (marmot, prairie dog, badger). The burrows are usually in sandy soil on high ground, such as hilltops in open prairies, along fence rows, or occasionally in a plowed field. Swift foxes were considered extirpated in Montana by 1969. Sporadic observations throughout eastern Montana have been recorded since then. Reintroductions of swift fox on the Blackfoot Indian Reservation in northwestern Montana in 1998 and in southern Saskatchewan and Alberta from 1983 to 1991 are thought to be the source of many of these sightings. These populations continue to expand to the south and east of Montana.

Bird Species

Sprague's Pipit (*Anthus spragueii*)

Although population trends in Montana appear to be relatively stable in recent years, populations have been in decline over the long run and the species faces threats from habitat conversion, overgrazing, exotic plant invasions, altered fire regimes, and mowing prior to fledging of young. In 2016, USFWS determined that listing the Sprague's pipit as an endangered or threatened species was not warranted throughout all or a significant portion of its range and removed the species from candidate status.

Golden Eagle (*Aquila chrysaetos*)

Golden eagles are resident throughout the DRWA service area. They nest on cliffs, in large trees, and occasionally on power poles, and hunt over prairie and open woodlands. Management of golden eagle populations requires sustaining native grasslands and shrub-steppe landscapes which are the prime habitats for jack rabbits. Shrub communities should be protected within 3 km (about 1.8 miles) of nests, which can be maintained through fire suppression and shrub restoration. Power poles can be designed and built to reduce the likelihood of electrocution and to deter nesting. Shooting, trapping, and ingestion of poisoned bait have been significant threats in the past; shooting

and poisoning from the ingestion of lead fragments in carrion remain as threats. Collisions with wind turbines and electrocutions from high voltage powerlines also continue to be significant threats.

Great Blue Heron (*Ardea herodias*)

No management activities specific to the great blue heron are currently being implemented in Montana. Larger breeding colonies tend to be farther from roads, and some colonies close to rivers are abandoned when disturbed by recreational activity early in the nesting season. Larger colonies sometimes splinter into smaller colonies that are occupied for only 5-10 years; colony relocations may result from deterioration of habitat quality and increased disturbance from humans. Studies recommend a minimum 300 m (about 985 ft) buffer zone from the periphery of colonies in which no human activity should occur during courtship and the nesting seasons, except scientific studies.

Burrowing Owl (*Athene cunicularia*)

Burrowing owls are found in open grasslands where abandoned burrows dug by mammals such as ground squirrels, prairie dogs, and badgers are available as nests and refugia. Black-tailed prairie dog and Richardson's ground squirrel colonies provide the primary and secondary habitat for burrowing owls in the state. Burrowing owls spend much time on the ground or on low perches such as fence posts or dirt mounds. No specific management activities directed at the conservation of burrowing owls in Montana are in effect. Systematic suppression of prairie dogs by state agricultural agencies and decimation of prairie dog populations by bubonic plague outbreaks reduces burrowing owl habitat.

Ferruginous Hawk (*Buteo regalis*)

Ferruginous hawks breeding in Montana are entirely migratory. Fall migration begins in August and continues into early September. Nest locations in Montana are primarily in sagebrush and grasslands within 100 meters (about 328.08 ft) of nests. In cultivated areas, nests closer to cultivated fields and roads are more successful, presumably because of higher prey densities associated with edge habitats. In 1991 the ferruginous hawk was petitioned for listing under the ESA. This petition was rejected by USFWS due to insufficient data to warrant listing. Ferruginous hawks are not currently federally listed as a candidate or proposed species. The BLM in Montana identifies them as a sensitive species. Although no active management is in place for ferruginous hawks in Montana, other management plans do consider this species. For example, black-tailed prairie dog towns in the Judith-Valley-Phillips Resource Management Area are currently managed to help provide habitat for ferruginous hawks, primarily as a prey base. Ferruginous hawks readily use artificial nest structures when placed in areas where populations have declined or where habitats lack suitable nest sites. This practice would likely benefit ferruginous hawks in eastern Montana where nesting is primarily on the ground and nest structures would reduce predation.

Chestnut-collared Longspur (*Calcarius ornatus*)

Chestnut-collared longspur has a negative short-term population trend in Montana and faces threats from loss of native prairie grassland habitats and altered frequency, intensity, and spatial distribution of grazing and fire regimes it is dependent on. The species prefers short-to-medium-length

grasslands that have been recently grazed or mowed, with a preference for native pastureland. Conversion of native prairie to agriculture and urban development has extirpated the Chestnut-collared longspur from much of its historical breeding range. Disturbed native grasslands—recently grazed, mowed, or burned—provide the open, sparse vegetation preferred by this species.

Rufa Red Knot (*Calidris canutus rufa*)

USFWS listed the rufa red knot as Threatened in 2015 due to loss of breeding and nonbreeding habitat, disruption of natural predator cycles on breeding grounds, reduced prey availability throughout the nonbreeding range, and increasing frequency and severity of mismatches in the timing of the birds' annual migratory cycle relative to favorable food and weather conditions. Migratory stopovers in Montana have been rare at wetlands scattered across the state, but 60 percent of documented stopovers have been at Freezeout Lake, Benton Lake National Wildlife Refuge, and Lake Bowdoin National Wildlife Refuge. Protection of these and other wetlands, especially larger ones rich with invertebrate prey, is valuable to this rarely documented visitor and other migratory and nonmigratory species.

Veery (*Catharus fuscescens*)

Veery is a summer breeding resident in Montana. The bird is associated with willow thickets and cottonwood along streams and lakes in valleys and lower mountain canyons. It also occupies riparian cottonwood stands along the lower Missouri River. Nests are typically on or near the ground, often near the base of a bush or small tree in streamside thickets or wetlands. No management activities specific to veery are currently in effect in Montana. Numbers are reduced in grazed areas and human-disturbed areas compared to relatively undisturbed sites. Veery may favor disturbed forests where the understory shrub layer is denser than in undisturbed sites. Heavy grazing is more harmful than light grazing.

Greater Sage Grouse (*Centrocercus urophasianu*s)

Greater sage grouse is loosely associated with sagebrush habitat types and especially prevalent in the western portions of the DRWA service area. Adapted to a broad mosaic throughout range, including tall sagebrush, low sagebrush, forb-rich mosaics with low and tall sagebrush, riparian meadows, steppe, scrub willow, and sagebrush savanna (with juniper, ponderosa pine, aspen). Leks in Montana are often in clearings surrounded by sagebrush, including natural clearings, old burns, and clearings around abandoned homesteads. In Montana, males gather at leks March to May, with up to 80 or more males attending a lek. Females visit one or more leks, beginning a week or more after males arrive, with as many as 115 visiting a lek at one time.

Mating occurs primarily from early April to late May, with most copulations occurring only slightly before sunrise to an hour or two after sunrise. Nests are generally located between 2.5 km to 6 km of leks (about 1.5 to 3.75 mi). Hens brood eggs for approximately one month, and chicks fledge within about two weeks. In Montana, new activities proposed in greater sage-grouse habitats designated as core, general, or connectivity habitats must undergo review by the DNRC's Montana Sage Grouse Project Submittal Site to estimate potential effects. "Seasonal use timeframe" (SUT) is the sage grouse breeding, nesting, and early brood-rearing period from March 15 to July 15.

There are four types of buffer zones prescribed by the State of Montana for the preservation of greater sage grouse leks.

- Lek No Surface Occupancy Area (0.6 mi around lek boundaries in Core Habitat)
- Lek No Surface Occupancy Area (0.25 mi around lek boundaries in General Habitat)
- 4-Mile Buffer Zone around lek boundaries in Core Habitat
- 2-Mile Buffer Zone around lek boundaries in General Habitat

The No Surface Occupancy (NSO) areas are the most sensitive areas. Buried infrastructure may be installed within the NSO areas for leks if construction/installation occurs:

- outside of the SUT (before March 15 and after July 15), and
- no above-ground infrastructure remains.

Baird's Sparrow (*Centronyx bairdii*)

Baird's sparrows prefer to nest in native prairie, but structure may ultimately be more important than plant species composition. Evidence of breeding in the DRWA service area is scant. This sparrow has also been found to use drier areas during unusually wet years, and wet areas during unusually dry years. Because a relatively complex structure is so important for nesting, areas with little to no grazing activity are required. Management recommendations specific to the Baird's sparrow in Montana include preservation of remaining native grassland habitat; prescription burning of areas to prevent encroachment by woody vegetation; delayed mowing until mid-July or August (later, rather than sooner, if spring weather has been adverse); light grazing; and maintaining vegetative diversity. Management priorities should include securing scattered patches of forbs and grasses of various heights in areas of grassland large enough to support many nesting territories.

Piping Plover (*Charadrius melodus*)

The primary nesting locations for piping plovers in Montana are Medicine Lake National Wildlife Refuge, Northeast Montana Wetland Management District (Sheridan County), Nelson Reservoir, Fort Peck Reservoir, and the Missouri River. Nest initiation generally occurs in late-May to early-June. Nest sites are simple depressions or scrapes in the sand. The young hatch about one month after egg-laying; the young leave the nest about two hours after hatching and can run and swim immediately. Four specific geographic areas have been designated as "Critical Habitat Units" in Montana. The designation of critical habitat may require federal agencies to develop special management actions affecting these sites. The four units include prairie alkali wetlands and surrounding shoreline; river channels and associated sandbars and islands; and reservoirs and inland lakes with associated shorelines, peninsulas, and islands. Piping plovers rely on these places for courtship, nesting, foraging, and brood rearing. Within the DRWA service area, Unit 2 is identified as riverine habitat and includes the Missouri River just south of Wolf Point to the state line, including sparsely vegetated sandbars and sandy or gravelly beaches along this stretch of the river.

Unit 3 includes Fort Peck Reservoir from south of the dam to about 26 miles (north to south distance) of the length of the Dry Arm. There is no critical habitat for this species within the Project study area.

Mountain Plover (*Charadrius montanus*)

Mountain plovers arrive in Montana in April and may remain in the state until September. The species is a rare migrant west of the Continental Divide but is a breeding resident of the prairie lands to the east. In the Project area, breeding has been confirmed but is sporadic in Garfield County. Habitat use in Montana appears like other areas within the breeding range; use of prairie dog colonies and other shortgrass prairie sites are confirmed as preferred breeding habitat. Nesting in Montana may extend from late May to late July. No management activities in Montana specific to Mountain Plover are in effect. However, the habitat features desirable to Mountain Plovers are extremely short vegetation, a high percentage of bare soil, and an extensive area (0.5 to 1 km diameter, or 0.3 to 0.6 mi) of nearly level terrain.

Black-billed Cuckoo (*Coccyzus erythropthalmus*)

Black-billed cuckoos typically arrive in Montana from early to mid-Jun and begin nesting soon thereafter. There has been no direct evidence of breeding in the DRWA service area. Few nests have been followed in the state, none in recent years. Incubation period is 10-11 days. Chicks leave the nest at 6-7 days after hatching but remain unable to fly for about two more weeks. The nest is a well-concealed shallow platform of twigs built in a tree or shrub, often close to the ground. The few nests found in Montana were less than 2 m aboveground in buffaloberry, rose, and chokecherry. No management activities specific to black-billed cuckoo are currently in effect in Montana. In many parts of their range, population fluctuations of black-billed cuckoos are related to outbreaks of tent caterpillars and cicadas, which are favored foods. Cuckoos are probably vulnerable to pesticides used to control insect infestations and to overgrazing and fragmentation of riparian habitats.

Bobolink (*Dolichonyx oryzivorus*)

Bobolinks have undergone recent large population declines in Montana. Nests are built in tall grass and mixed-grass prairies. The bird prefers old hay fields with high grass-to-legume ratios. Migrating bobolinks arrive in the state in May and June. The typical duration of nesting is about 1 month, with incubation beginning on the day the last egg is laid, with 12 days of incubation and 10-14 days from hatching to fledging. Bobolinks have declined in abundance by nearly 60% since 1970. This is due largely to changes in land use, particularly the loss of meadows and hay fields. Over the next two decades, it is predicted that the population of bobolinks will decline by 30%. This species depends on grasslands throughout its annual range.

Whooping Crane (*Grus americana*)

The whooping crane passes through Montana during both spring and fall migrations. Spring migration peaks in April and fall migration in October. In general, migration dates are similar to those of the sandhill crane, a species that commonly arrives in the state in mid-April and leaves by mid-October. The whooping crane has been observed in marsh habitat at Medicine Lake National Wildlife Refuge and Red Rock Lakes National Wildlife Refuge. Observations of individual birds in

other areas of the state include grain and stubble fields as well as wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities. No management activities for whooping crane are currently in effect specific to Montana.

Pinyon Jay (*Gymnorhinus cyanocephalus*)

Pinyon jays are associated with pinyon-juniper habitat in the southwestern U.S., but in Montana they occur in low-elevation ponderosa pine and limber pine-juniper woodlands. They build bulky cup nests of twigs and grasses and place them on horizontal limbs of pines. The few nests reported from Montana have been in ponderosa pines or limber pines. Degradation of pinyon-juniper woodlands is a major factor in the widespread decline of pinyon jays south of Montana. In Montana, fire suppression has resulted in accumulation of fuels and led to increasingly severe fires in ponderosa pine stands. Loss of ponderosa pine woodlands is likely the greatest threat to pinyon jays in Montana; management activities promoting the health of ponderosa pine will benefit pinyon jays. No management activities specific to pinyon jays are currently in effect in Montana.

Bald Eagle (*Haliaeetus leucocephalus*)

The number of bald eagles has steadily increased since the 1980s and breeding pairs now occupy a high percentage of suitable habitat across Montana. However, the species remains protected under the Bald and Golden Eagle Protection Act of 1940. In Montana, as elsewhere, the bald eagle is primarily a species of riparian and lacustrine habitats (forested areas along rivers and lakes), especially during the breeding season. Important year-round habitat includes wetlands, major water bodies, spring spawning streams, ungulate winter ranges and open water areas. Wintering habitat may include upland sites. Nesting sites are generally located within larger forested areas near large lakes and rivers where nests are usually built in the tallest, oldest, large diameter trees. Nesting site choice is dependent upon maximum local food availability and minimum disturbance from human activity. In the DRWA service area, bald eagles nest primarily in the Yellowstone and Missouri river riparian corridors. No nests of either eagle species have been observed in the Project study area, but surveys have not been conducted within the Project study area.

Loggerhead Shrike (*Lanius ludovicianus*)

Loggerhead shrikes occur in open landscapes with short vegetation, including pastures with fence rows, mowed roadsides, agricultural fields, riparian areas, and open woodlands throughout the DRWA service area. Nests are found in sagebrush, bitterbush, and greasewood, and are equally successful in all three habitats. Loggerhead shrikes nest from mid-June to mid-July. The species is declining across the continent, likely due to changes in land use, spraying of biocides, and competition with species that better tolerate human-caused changes. No management policies or activities for loggerhead shrike are currently specific to Montana.

Red-headed Woodpecker (*Melanerpes erythrocephalus*)

Little information exists about the migration of red-headed woodpeckers to Montana. They generally arrive in mid-May and leave in mid-September. In fall, red-headed woodpeckers likely follow watercourses during their migration, taking them east into North and South Dakota. With no

systematic surveys completed within the state, little is known about red-headed woodpecker habitat in Montana. When they have been observed, they are usually found along major rivers in adjacent riparian forest. They may also be found in open savannah if adequate ground cover, snags and canopy cover are available. Large burns are also used by the species. During spring migration, they probably follow these same watercourses into the state from areas further east and south. They occur in greatest numbers in the Project area along the Missouri and Yellowstone rivers in riparian habitat. No management policies or activities for red-headed woodpeckers are specific to Montana.

Long-billed Curlew (*Numenius americanus*)

The Long -billed curlew breeds in mixed-grass prairie habitats and moist meadows throughout Montana. It prefers to nest in open, short-statured grasslands and avoids areas with trees, dense shrubs, or tall, dense grasses. Degradation or loss of grassland breeding habitat to agricultural and residential development is the greatest threat to the long-billed curlew. Additionally, other human disturbances such as off-road vehicle travel and agricultural practices such as chaining or dragging to remove sagebrush can destroy nests if done in the spring. The long-billed curlew needs short-statured grasslands during the breeding season. Conversion of prairie to cropland, off-road vehicle use, and other disturbances all negatively affect long-billed curlew populations. Livestock grazing, particularly early season grazing, typically has a positive benefit on nesting long-billed curlews, although year-round grazing can be detrimental. No management policies or activities specific to Montana for long-billed curlew are currently in effect.

Sage Thrasher (*Oreoscoptes montanus*)

The sage thrasher is a short-distance migrant. In Montana, adults arrive on the breeding grounds from late April 25 to mid-May, with fall migration from late July to mid-August. The sage thrasher breeds in Montana in habitats dominated by big sagebrush. Sage thrasher abundance is positively correlated with sagebrush cover and negatively correlated with grass cover. The bird uses sagebrush habitats, grasslands, and other semi-arid habitats during spring and fall migration and tends to avoid areas of human habitation. Nesting occurs soon after arrival on the breeding grounds. Nests are commonly placed deep in or under big sagebrush or three-tip sagebrush. Loss or fragmentation of intact sagebrush landscapes due to fire, residential development, or conversion to agriculture will reduce or eliminate habitat for sage thrashers. The sage thrasher needs large, continuous stands of big sagebrush. Protection and conservation of large, intact sagebrush stands with high structural complexity is critical to maintaining habitats for the sage thrasher. The *Greater Sage-Grouse Habitat Conservation Strat*egy developed for Montana will likely assist in the conservation and management of other sagebrush obligates, including the sage thrasher.

Thick-billed Longspur (*Rhynchophanes mccownii*)

Thick-billed longspur occurs in semi-arid shortgrass steppe, characteristically open with sparse vegetation (including overgrazed pasture), providing nesting habitat. This species migrates in large flocks between breeding grounds in the Canadian Prairie Provinces and northwestern Great Plains (including Montana) and wintering grounds in the southwestern United States, Texas, and northern Mexico. It nests in Montana from early May through mid-July. Decreasing range-wide abundance can be attributed largely to conversion of short-grass prairie to agriculture and urban development.

Although grazing may benefit thick-billed longspur, it has been subject to other habitat disruptions like plowing, pesticide use, and suppression of grassland fires that maintain shortgrass prairie. No management policies or activities specific to Montana for thick-billed longspur are currently in effect.

Brewer's Sparrow (*Spizella breweri*)

The Brewer's sparrow typically breeds in shrub-steppe habitats dominated by sagebrush. Densities of Brewer's sparrow correlate with total shrub cover. In sagebrush areas in Montana, Brewer's sparrows nest in sagebrush averaging 16 inches high. The species migrates to Montana in mid- to late-April. Fall migration from Montana occurs from August to early October. The primary threat to Brewer's sparrow breeding populations in the state is fragmentation and loss of sagebrush shrublands and shrub-steppe habitats. Re-seeding areas with non-native bunchgrasses such as crested wheatgrass degrades habitat quality for this species. Additionally, areas affected by cheatgrass can experience increased frequency and severity of fires, which can reduce or eliminate sagebrush. The *Greater Sage-Grouse Habitat Conservation Strategy* developed for Montana may lend to the conservation and management of other sagebrush-dependent species, including the Brewer's sparrow.

Least Tern (*Sternula antillarum*)

Most of the least tern observations in the state have been recorded for breeding pairs, with few reported sightings of migrating individuals. Spring arrival of the species occurs in mid-May, with departure in the fall generally occurring by mid-August. Least terns nest on unvegetated sand-pebble beaches and islands of large reservoirs and rivers, specifically the Yellowstone and Missouri river systems. These wide, open river channels, and lake and pothole shorelines provide the preferred characteristics for nesting least terns. Sites with gravel substrate provide the most suitable sites for nesting. USFWS delisted the interior population of least terns based on a Five-Year Review of the species status and a current estimated population of 18,000 terns and 480 nesting sites across this population. Appropriate water management, which includes natural seasonal flows, is identified as the major consideration for least tern conservation in Montana. In some years, one of the greatest threats to breeding pairs is the loss of existing nesting sites from inundation by high water at unusual times of the breeding season. A primary management strategy is to manage reservoirs and dammed rivers in a manner that mimics more natural seasonal fluctuations.

Reptile Species

Common Snapping Turtle (*Chelydra serpentina*)

Habitats used by snapping turtles in Montana are probably similar to other areas in their range, but local studies are lacking and there is little qualitative information available. Freshwater habitats with a soft mud bottom and cover such as abundant aquatic vegetation or submerged brush and logs are preferred by the species. They have been captured or observed in backwaters along major rivers, at smaller reservoirs, and in smaller streams and creeks with permanent flowing water and sandy or muddy bottoms. They have also been observed in temporary pools along small intermittent streams. Nesting habitat and nest sites have not been described in Montana, but research from other states

indicates that female snapping turtles may move up to a kilometer between the water bodies and nesting areas.

Although this species is common in many parts of its range, it is rare in Montana, having been recorded in only a few watersheds of southeastern Montana. Due to this restricted range and the lack of information about this species in Montana, it is considered a state Species of Concern and is listed as sensitive by the BLM. Roads often have negative effects on population size and distribution of reptiles, and particularly turtles. High road density has been positively correlated to low population size. This has led to the absence of the species in road-developed areas and to local extirpation. Large reservoirs on rivers (e.g., Fort Peck Reservoir) may inhibit population continuity to some degree, judging by the apparent lack of viable populations on the Missouri River in Montana.

Western Hog-nosed Snake (*Heterodon nasicus*)

While specific habitat use by western (plains) hog-nosed snake in Montana has been little studied, it seems that preferred habitat in the state includes sandy alluvial beds and riverbanks and loose soil below sandstone outcrops. They have been reported in areas of sagebrush-grassland habitat and near pine savannah in grassland underlain by sandy soil. Western hog-nosed snakes appear to be sparsely distributed in the Great Plains region of eastern and north central Montana. Documented occurrences of the species in the state have declined in recent years, and the status in Montana is uncertain. The snake is currently a Species of Concern in Montana. Agricultural activities are the greatest risk factor to western hog-nosed snake populations by destroying habitat which creates barriers to dispersal, by direct killing during plowing and harvesting activities, and by ingestion of pesticides and herbicides. Oil and gas energy development may pose threats associated with roadbuilding, high traffic, and creation of long trenches which are known to trap snakes.

Central Plains Milksnake (*Lampropeltis gentilis*)

Central plains (western) milksnakes occur in Montana in areas of open sagebrush-grassland habitat and ponderosa pine savannah with sandy soils, most often in or near areas of rocky outcrops and hillsides or badland scarps, sometimes within city limits. The widely scattered recent records indicate that milksnakes continue to occupy a large part of the known range in the state, with some sites occupied for the last 40 to 45 years. Management for this species is hampered by a lack of basic information on abundance, food habits, and habitat associations. No specific management activities have been suggested by the State of Montana other than to protect dens and regulate or restrict commercial harvest for the pet trade.

Greater Short-horned Lizard (*Phrynosoma hernandesi*)

The greater short-horned lizard occurs in sagebrush and grassland habitats in Montana, as well as in areas with open stands of limber pine and Utah juniper or Ponderosa pine. Sedimentary rock outcrops (limestone, sandstone) and glacial drift are sometimes present. Favored areas in Montana tend to have a relatively high percentage of open bare ground and loose, sunbaked soils. The lizard is no longer common anywhere in Montana, except some counties bordering Wyoming. Risk factors relevant to the viability of populations of this species are likely to include habitat loss/fragmentation,

grazing, fire, road and trail development, on- and off-road vehicle use, use of pesticides and herbicides, oil and gas development, and surface mining. Local extirpations of greater short-horned lizard have occurred in areas of intense cultivation and urban expansion, although this species seems to do well in areas used for livestock grazing, perhaps because grazing reduces vegetative cover. Increased vehicular traffic in areas of oil and gas exploration and development have probably reduced populations. Use of insecticides to control grasshopper infestations could also depress populations of this species, which feeds on these and other ground-dwelling insects.

Amphibian Species

Great Plains Toad (*Anaxyrus cognatus*)

The Great Plains toad can be found in floodplain habitats but are more common in upland grasslands with harder packed soils. Great Plains toads have been reported from sagebrush-grassland, rainwater pools in road ruts, in stream valleys, at small reservoirs and stock ponds, and around rural farms; breeding has been documented in small reservoirs and backwater sites along streams. When inactive, adults lie dormant in rodent or self-excavated burrows and under rocks and wood when terrestrial conditions are not favorable. When conditions are warmer and moist, they emerge to feed. In the past 150 years Great Plains toads have only been documented at about 30 localities across the plains east of the Rocky Mountains and at the present time their status across this region is almost completely unknown. Risk factors relevant to the viability of populations of this species are likely to include grazing, use of pesticides and herbicides, nonindigenous species, road and trail development, on- and off-road vehicle use, development of water impoundments, and habitat loss/fragmentation. Prairie dog burrows are important refugia to the extent that the viability of Great Plains toad may in part depend on the viability of prairie dog populations.

Fish Species

Northern Redbelly Dace (*Chrosomus eos*)

Northern redbelly dace are found in clear, cool, slow-flowing creeks, ponds and lakes with aquatic vegetation, including filamentous algae, and sandy or gravelly bottoms interspersed with silt. In Montana, this species is an indicator species of the Northern Glaciated Prairie Stream Ecological System and may occur in the intermittent prairie stream systems. As with many small native stream fishes, Northern redbelly dace is adversely affected by stream channelization, reductions to discharge, changes in water quality and temperature, and introductions of non-native predatory fishes. Their presence in livestock ponds indicates an ability to coexist with livestock under certain conditions. Northern pike introduction across the glaciated prairie streams of northern Montana have significantly affected the small native minnow communities. No management activities specific to northern redbelly dace currently implemented in Montana.

Blue Sucker (*Cycleptus elongatus*)

The blue sucker is currently listed as a Species of Concern in Montana because they are potentially at risk of extirpation in the state owing to limited and declining numbers and declining range and habitat, even though it may be abundant in some areas. The blue sucker has a widespread

distribution extending throughout the Mississippi, Missouri, Ohio, and portions of the Rio Grande River systems. In Montana, it is found in the Missouri River as far upriver as Morony Dam near Great Falls, and in the Yellowstone upriver of Forsyth. Blue suckers make long spawning movements from the lower Missouri River to upstream areas and tributary streams. Blue suckers prefer waters with low turbidity and swift currents. Like all big-river fish, riverine losses have occurred due to impoundments, where there have been major population losses and blue sucker populations have been fragmented. In Montana, the blue sucker is present in most places that have available habitat. Diversion dams on the Yellowstone River likely restrict upriver passage. Management of the blue sucker consists mainly of routine monitoring of population status and habitat protection. The blue sucker is considered an indicator species for ecosystem health because of its habitat-specific requirements. Current monitoring information indicates the populations are in stable condition. Habitat protection includes protecting or promoting the natural spring-time hydrograph. Establishment of more natural seasonal flow conditions are presently being discussed and initiated for three storage reservoirs in Montana.

Iowa Darter (*Etheostoma exile*)

Iowa darters prefer clear slow-flowing streams with solid bottoms, although they have a wide range of tolerance for changes in water flow rates. They are also found in lakes and reservoirs. Iowa darter ranges across much of south-central Canada and the north-central United States, in the St. Lawrence-Great Lakes, Hudson Bay, and Mississippi River basins. In Montana, Iowa darter ranges more widely within the northern glaciated regions than the southern Great Plains ecoregions. As with many small native stream fishes, Iowa darters could be adversely affected by stream channelization, reductions to discharge, changes in water quality, and introductions of non-native predatory fishes, especially northern pike. No management activities specific to Iowa darter are currently being implemented in Montana. The Iowa darter is designated a Species of Concern in Montana because they are potentially at risk because of limited and/or declining numbers, range and/or habitat, even though the fish may be abundant in some areas.

Shortnose Gar (*Lepisosteus platostomus*)

The shortnose gar is widely distributed throughout North America within the Missouri and Mississippi River system. Its distribution within Montana is primarily in the Missouri River dredge cuts downstream of Fort Peck dam. More recent observations of shortnose gar in Montana are from specimens collected on the Yellowstone River ~70 miles upstream of the proposed Fort Peck Reservoir intake. Shortnose gars are typically found in large rivers, quiet pools, backwaters, and oxbow lakes. It has a higher tolerance to turbid water than the other four gar species found in North America. The shortnose gar is designated a Species of Concern in Montana. No management activities specific to shortnose gar are currently being implemented in Montana.

Sturgeon Chub (*Macrhybopsis gelida*)

The sturgeon chub is native to the Missouri-Mississippi river basins from Montana to Louisiana. The historic distribution included approximately 3,379 km (about 2,100 mi) of the main stem Missouri River and ~1,850 km (about 1,150 mi) of the Mississippi River, plus the Yellowstone River in Montana and 30 tributaries to the Yellowstone and Missouri rivers. The current distribution

entails about 55% of their historical range in the Missouri River and only 11 of 30 tributaries. Sturgeon chubs are found in turbid water with moderate to strong currents over bottoms ranging from rocks and gravel to coarse sand. Major threats to the sturgeon chub and other large river fishes are habitat and flow alterations from dams, diversions, irrigation operations and riparian development. Sturgeon chubs need gravel riffles and runs in turbid flowing running waters for their life history requirements, thus decreased flows and excessive siltation of gravels are threats facing all lithophilic spawning fish species. Reservoirs created behind dams inundate riverine habitats and replace the river with lentic conditions, which is unsuitable habitat for sturgeon chubs. Dams also create unsuitable habitat downstream by reducing turbidities and altering temperature and flow regimes. In 2017, USFWS published a notice announcing a substantial finding on the listing petition for this species. In 2023, USFWS published a not-warranted 12-month finding.

Sicklefin Chub (*Macrhybopsis meeki*)

The sicklefin chub is a rare, large-river minnow species found in the lower Missouri and Yellowstone rivers of Montana. It has only been found in about a dozen river segments. Because it is rare and endemic to these large river systems, it is a Montana Fish of Special Concern. Its general habitat and distribution are much like that of the sturgeon chub. The sicklefin chub is found in large, turbid streams in the plains region of Montana. The historic distribution included approximately 3,379 km (about 2,100 mi) of the main stem Missouri River and ~1,850 km (about 1,150 mi) of the Mississippi River, plus the Yellowstone River in Montana. Current distribution includes about 55% of their historical range in the Missouri River because of dams and loss of habitat. In 2017, USFWS published a notice announcing a substantial finding on the listing petition for this species. In 2023, USFWS published a not-warranted 12-month finding.

Northern Pearl Dace (*Margariscus nachtriebi*)

The pearl dace is designated a Species of Concern in Montana because they are potentially at risk of extirpation in the state, because of limited or declining numbers, and declining range or habitat, even though it may be abundant in some areas. Pearl dace are not abundant when they are collected at the relatively few sites in cool, small streams and ponds they are known to inhabit. This factor has caused them to be designated as vulnerable to extinction in the state. Threats include introduced species, especially northern pike, and loss of habitat from stock ponds, dams and diversions disrupting hydrologic regimes in the permanent pools of the prairie streams they inhabit.

Paddlefish (*Polyodon spathula*)

In Montana, paddlefish are found in the Yellowstone River as far upriver as Forsyth and the Missouri River above and below Fort Peck Dam. Paddlefish above Fort Peck Dam (known as the Fort Peck stock) are now isolated from fish below the dam, although some upriver fish can pass downstream. An important recreational snag fishery exists for this stock in areas near the Fred Robinson Bridge. The downstream fish are part of the population inhabiting the Yellowstone River and Lake Sakakawea, known as the Yellowstone-Sakakawea stock. Habitat includes slow or quiet waters of large rivers or impoundments. They spawn on the gravel bars of large rivers during spring high water. Paddlefish stocks in Montana are adequate to support a recreational fishery. The paddlefish is designated a Species of Concern in Montana.

Sauger (*Sander canadensis*)

The sauger is designated a Species of Concern in Montana. Population losses from the reservoir sections of the Missouri River and the Bighorn River are likely permanent. Competition and hybridization from the introduced walleye is another threat to native sauger populations. Spawning is often accompanied by migration upstream and/or into tributary streams in the spring. Long migrations occur in the Yellowstone and Missouri rivers. Sauger inhabits the larger turbid rivers and the muddy shallows of lakes and reservoirs. They spawn in gravelly or rocky areas in shallow water and seem to prefer turbid water. Angler harvest, channelization, water flow fluctuations, migration barriers, loss of spawning and rearing habitat, and environmental degradation have resulted in declines in distribution and abundance of sauger populations range wide. Similar factors have been implicated in the declines observed in Montana.

Pallid Sturgeon (*Scaphirhynchus albus*)

The pallid sturgeon is one of the rarest fishes in North America and was federally listed as endangered in 1990 by USFWS. It is currently designated an S1 Species of Concern in Montana due to extremely limited and/or rapidly declining population numbers, range, and/or habitat, making it highly vulnerable to global extinction or extirpation in the state. The pallid sturgeon has been declining during at least the past 50 years with only about 200 adults remaining in the upper Missouri River and no natural reproduction. To increase population numbers, USFWS has been stocking hatchery-origin pallid sturgeon since 1998. Pallid sturgeon are primarily found in the Missouri River above Fort Peck Reservoir, in the Missouri and lower Yellowstone River below Fort Peck, the Missouri River below Gavins Point Dam, and major tributaries such as the Powder, Tongue, Marias, and Platte rivers.

Even with stocking efforts, pallid sturgeon are scarce in the upper Missouri River above Fort Peck Reservoir, scarce in the Missouri and lower Yellowstone Rivers between Fort Peck Dam and Lake Sakakawea, very scarce in the other Missouri River reservoir reaches, and scarce in the Missouri River downstream of Gavins Point Dam. Pallid sturgeon inhabit large, turbid rivers with sand and gravel bottoms, usually in strong currents. One of the most obvious detrimental changes in the pallid sturgeon environment was the damming of the Missouri River and several other important tributaries. Efforts are now being directed at restoring the river to a more normal condition. In 2018, the USFWS completed an ESA consultation with the USACE about the operation of Missouri River dams. This included potential flow modifications out of Fort Peck and Gavins Point reservoirs. Reclamation has also been working on pallid sturgeon efforts, which includes experimental releases out of Tiber Dam on the Marias River and improving fish passage at Intake Diversion Dam on the Yellowstone River.

Invertebrate Species

Monarch Butterfly (*Danaus plexippus*)

Monarch butterflies in Montana breed on both sides of the continental divide during the migration period that peaks in July and August, occurring in open places, native prairie, foothills, valley bottoms, weedy fields, roadsides, pastures, marshes, and suburban areas. In 2020 USFWS

announced that after a review of available data on the species' status, the monarch butterfly warranted protection under the ESA, but listing was precluded by higher priority listing actions. On December 12, 2024 USFWS proposed to list the monarch butterfly as "threatened" under the ESA. The species is also designated by Montana as a Species of Concern. They occur in the project area primarily in riparian habitat along the Missouri and Yellowstone rivers.

A Mayfly (*Leucrocuta petersi*)

This species of mayfly has no common name, hence it is identified as "a mayfly." It is a flatheaded mayfly in the family Heptageniidae. In Montana it is found primarily in the Yellowstone River, with a few occurrences on the Missouri River. Larvae are found on silt covered rocks in moderate current of warm, medium-sized streams that are in part sandy bottomed. Adults inhabit adjacent riparian habitats. Little other information is available about this species. It is designated a Species of Concern by the State of Montana.

Gray Comma (*Polygonia progne*)

Gray comma is a butterfly species found in deciduous woodlands, riparian woodlands, forest openings, and aspen stands. It ranges from central and northeastern British Columbia and southeastern Yukon Territory east through boreal Canada and the northern US to Maine and the Maritimes, south to the central US east of the Rocky Mountains. In Montana, it is reported from 11 counties east of the Rocky Mountains. Within the DRWA service area, all reported sightings (n-2) are from the two easternmost counties. Gray comma is designated a Species of Concern by the State of Montana.

Plant Species

Painted Milkvetch (*Astragalus ceramicus* var. *Filifolius*)

Painted milkvetch is associated with sandy soils of the sandhills and sandstone outcrops in eastern Montana. It is considered rare for the region except in the Nebraska sandhill area where it was somewhat common. A reported threat to Montana's populations of painted milkvetch includes natural ecological succession of the habitat. Plants need early successional habitat, which can be maintained by grazing and/or fire. Potential threats to populations could also come from incompatible recreational activities and invasion by non-native plant species. Based on aging data, limited distribution, and an association with a specific habitat type it is considered a Species of Concern in Montana.

American Bittersweet (*Celastrus scandens*)

Bittersweet occurs in woodlands, rocky hillsides, thickets, fence rows, and roadsides in the Great Plains. In the DRWA service area it occurs in Richland and Dawson counties. Threats to Montana's populations of bittersweet are those that have negative effects to its habitat in woody draws. Plants were observed to have lower vigor from livestock grazing and trampling. Colonization of woody draws by non-native grasses, smooth brome, and Kentucky bluegrass are suspected of affecting bittersweet's ability to regenerate and thrive. Herbicides to control non-native grasses can negatively

affect bittersweet. The Montana sites appear to represent the western edge of its range, and currently it ranks as an S1 Species of Concern.

Silky Prairie Clover (*Dalea villosa*)

Silky prairie clover is a Great Plains species known from Saskatchewan, Manitoba and Wisconsin south to New Mexico, Texas and Oklahoma. In the DRWA service area it occurs in Richland and Dawson counties. Sandy soils of prairies and open woodlands often near sandstone outcrops or on dunes and roadsides. Sites are typically sparsely vegetated. In Montana, it is known from a few occurrences in the extreme eastern part of the state. Current population levels and trends are unknown. It is designated an S2 Species of Concern by the State of Montana.

Pale-spiked Lobelia (*Lobelia spicata*)

Pale-spiked lobelia is rare and peripheral in Montana, where it is known from a few locations in the northeast corner of the state. In the DRWA service area it occurs in Richland and Dawson counties. It requires very wet to saturated soils and occurs primarily in wetlands. It is unclear if any of the documented occurrences are subject to negative effects or disturbance, or what types of threats might affect its distribution and persistence in Montana. It is designated an S1/S2 Species of Concern by the State of Montana.

Bractless Blazingstar (*Mentzelia nuda*)

Bractless blazingstar occurs in Montana on sandy or gravelly soil of open hills and roadsides on the plains. It is rare and peripheral in Montana, where it is known from a few locations in the eastern half of the state. In the DRWA service area, it has been found only in Dawson County. It is designated an S2 Species of Concern by the State of Montana.

Prairie Goldenrod (*Solidago ptarmicoides*)

Prairie goldenrod occurs in Montana on open, dry grasslands, often on sandy soil or limestone on the plains. The Montana populations are peripheral to the overall range, being limited to a small number of plants found only in a few easternmost counties. In the DRWA service area, it has been found only in Richland County. It is designated an S2/S3 Species of Concern by the State of Montana.