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FINAL
ENVIRONMENTAL ASSESSMENT

Project Name:	Farmers Canal Irrigation Improvement Project
Proposed Implementation Date:	Winter 2024/Spring 2025, prior to irrigation season
Proponent:	Gallatin Conservation District
Location:	45.600635°, -111.202087°
County:	Gallatin

I. TYPE AND PURPOSE OF ACTION

The purpose of this project is to improve irrigation efficiency, increase stream flow in Cottonwood Creek, and protect an important irrigation diversion from failure. The Farmers Canal Headgate on Cottonwood Creek is in poor condition and one wall surrounding the intake is failing. Due to its condition the headgate is only partially functional, inefficient, and susceptible to failure. The project will address these issues while also protecting the safety of Farmers Canal Company workers and the financial interests of agricultural water users and adjacent property owners.

The Farmers Canal Headgate Replacement Project has been proposed by the Gallatin Conservation District (CD) and the Farmers Canal Company to improve the functionality of the Cottonwood Headgate and to prevent structural failure caused by seepage. The project is located at the confluence of Cottonwood Creek and the Farmer's Canal (45.600635°, -111.202087°; Figure 1) in Gallatin County, MT. The project proponents plan to repair or replace the Cottonwood Creek Headgate to ensure that only the intended amount of water is diverted into the Farmers Canal. The project will also decrease the likelihood of headgate failure which would in turn protect the canal from erosion and protect water quality resulting from increased sediment loading in the event of a headgate blow-out. An analysis of seepage within the Farmer's Canal and around the Cottonwood Creek Headgate indicated that seepage under the structure likely exists, which could be addressed by extending the concrete aprons around the intake and lining those structures.

The project proponents are evaluating the feasibility of repair versus full replacement of the structure. They have proposed a study phase to determine which options to pursue. The study phase will include:

- Structural inspection
- Geotechnical inspection
- Evaluation of the wooden retaining wall adjacent to the structure
- Evaluation of hydraulic capacity and function
- Detailed permitting review

The proposed timeline for the project is winter 2024 through the end of 2025. Permitting is scheduled for spring 2024, with construction slated for October 2024 through December 2025.

Depending on the selected alternative, construction is expected to last 2-4 weeks.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS, OR INDIVIDUALS CONTACTED:

Provide a brief chronology of the scoping and ongoing involvement for this project. List number of individuals contacted, number of responses received, and newspapers in which notices were placed and for how long. Briefly summarize issues received from the public.

No public comment has been sought on this project. However, according to the Gallatin CD, the Farmers Canal water users and neighboring property owners see the need to implement the project.

DNRC will post a draft of this Environmental Assessment on the DNRC public notices webpage and will provide a letter to the local newspaper stating that the DNRC will accept public comment for 30 days. The MEPA coordinator will review any public comments, work in conjunction with the Grant Manager and project proponents, and adequately respond to any public comments received.

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

Examples: cost-share agreement with U.S. Forest Service, 124 Permit, 3A Authorization, Air Quality Major Open Burning Permit.

310 Permit – Gallatin Conservation District
404 Permit – US Army Corps of Engineers
401 Certification – Montana Department of Environmental Quality
318 Authorization - Montana Department of Environmental Quality
SWPP Authorization - Montana Department of Environmental Quality
Cultural resources records check – Montana State Historic Preservation Office

3. ALTERNATIVE DEVELOPMENT:

Describe alternatives considered and, if applicable, provide brief description of how the alternatives were developed. List alternatives that were considered but eliminated from further analysis and why. Include the No Action alternative.

Alternative 1 – Repair the Existing Headgate Structure:

Alternative 1 would be the least environmentally impactful of the alternatives considered as it would require minimal soil disturbance. This alternative needs to be evaluated by the engineering team to determine feasibility and likelihood of success. If the engineering team determines this to be a viable option, this alternative will need to be further evaluated to determine the feasibility and cost effectiveness of obtaining the required custom-machined parts. Repairing the structure will improve irrigation efficiency and may keep more water in Cottonwood Creek.

Alternative 2 – Replace the Existing Structure:

Alternative 2 would be the most environmentally disruptive alternative as is would involve disturbing the soils surrounding the headgate and diverting flows during the construction period. However, structure replacement may benefit Cottonwood Creek by improving irrigation efficiency

and keeping more water in Cottonwood Creek. Even if repaired, the headgate will eventually need to be replaced and thus these impacts will be realized at some point in time.

Alternative 3 – No Action Alternative:

Alternative 3 would be the least environmentally impactful alternative for the area surrounding the headgate. However, the no action alternative would leave the failing headgate at risk of failure. Should the headgate fail, there would be no practical way to control the amount of water going into the Farmers Canal. In this event, the Farmers Canal could be damaged, which would likely have a much larger impact footprint. The Farmers Canal would be subject to erosion which could undermine the integrity of the canal and potentially have a negative impact on water quality and/or reduce water available for water rights users. Additionally, flows in Cottonwood Creek could be depleted which could have a negative impact on the ecological community in the creek.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" If no impacts are identified or the resource is not present.*

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Consider the presence of fragile, compactable, or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify direct, indirect, and cumulative effects to soils.

The project area is in a rural and relatively undeveloped floodplain between the West Gallatin River and Highway 191. The Farmers Canal Headgate is located on Cottonwood Creek approximately 0.2 miles upstream from the confluence with the West Gallatin River.

Geologic maps of the project area indicate that the near-surface geology is primarily alluvium comprised of gravels, boulders, and sand (Vuke et al. 2007). The soils in the project area are mapped as the Bandy-Riverwash-Bonebasin complex, 0-2% slopes. This complex is 50% Bandy soils which, based on the soil descriptions, are most likely present around Farmers Canal Headgate. The typical Bandy soil profile consists of eight inches of loam on top of nine inches of sandy loam. Below 17 inches, Bandy soils are typically comprised of very cobbly loamy sand (SSURGO 2023, Attachment C).

Proposed Alternative – The proposed alternative should have short-term, localized, nonrecurring adverse impacts on soil stability, as the soil surrounding the Farmers Canal Headgate on Cottonwood Creek will be disturbed during construction. Due to the unstable nature of the sub-soils in the project area, care should be taken to follow the engineers soil compaction specifications. Additionally, revegetation best management practices (BMPs), including potentially importing clay-loam soils to cap areas with exposed sandy-cobbly material, should be followed to prevent erosion.

No Action Alternative – The current conditions allow erosion around the Farmers Canal headgate. The no action alternative would perpetuate the adverse impacts of erosion. Should the erosion become more severe, installation of a new headgate will become more difficult and could cause damage to the existing canal, thereby necessitating repairs to that infrastructure in addition to the headgate.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify direct, indirect, and cumulative effects to water resources.

Project area occurs within the South Cottonwood Creek watershed (HUC 100200080703) which is approximately 59.5 square miles in area. South Cottonwood Creek is listed as impaired for aquatic life due to modification in the flow regime (MTDEQ 2020). South Cottonwood Creek is a tributary of the Gallatin River, which is approximately twelve miles long from its origin at the confluence of the West and East Gallatin rivers to Three Forks, Montana, where it joins the Jefferson and Madison rivers to form the Missouri River. The river flows through a narrow valley consisting of agricultural and grazing lands at elevations less than 5,000 feet. The banks are primarily undercuts, and long, deep pools provide much of the fish cover. Water can be slightly turbid year-round due to the sediment input from the East Gallatin. The Gallatin River below the confluence of its forks suffers from sedimentation, warm water temperatures, dewatering, and the presence of *Myxobolus cerebralis*, the causative agent of whirling disease. Trout populations decline in the lower river due to these factors and a variety of other cumulative impacts (Montana Fish, Wildlife & Parks).

Proposed Alternative – The proposed alternative will have short-term, localized, non-reoccurring adverse impacts to water quality during construction activities. Construction will disturb soils both above ground and within South Cottonwood Creek, causing sedimentation and turbidity and reducing water quality. These adverse impacts should be limited to construction activity. Contractors should strive to limit soil disturbance and use BMPs to prevent soils from entering South Cottonwood Creek. There is an anticipated beneficial impact on flows within Cottonwood Creek and the West Gallatin River that would be long-term and reoccurring. These impacts would be an indirect result of implementing this project as, which would keep more water in the lower end of South Cottonwood Creek by improving efficiency of the Farmers Canal Diversion. Additionally, the project may benefit the water quality in the Farmers Canal, and subsequently in the West Gallatin River, by reducing sediment loads in the canal.

No Action Alternative – The no action alternative will perpetuate adverse impacts of water loss due to irrigation inefficiency, and unreliable water supplies to downstream water users. Left unaddressed, water losses and supply issues will worsen over time.

6. AIR QUALITY:

What pollutants or particulate would be produced (i.e. particulate matter from road use or harvesting, slash pile burning, prescribed burning, etc.)? Identify the Airshed and Impact Zone (if any) according to the Montana/Idaho Airshed Group. Identify direct, indirect, and cumulative effects to air quality.

The proposed project is not located in an air quality Attainment Area, as set by the United States Environmental Protection Agency's National Ambient Air Quality Standards. The project area is not listed as impaired in air quality particulates per the Montana DEQ Air Quality Nonattainment Status List (Montana DEQ Air Quality Website visited 09/03/2023). No air pollution facilities are in, or near (within 1/2-mile) the project area. No nonattainment areas exist in the vicinity of the project. The nearest air pollution facility (A private sand and gravel pit) is approximately 1.0 mile to the north of the project area.

Proposed Alternative – The proposed project may have a direct, localized, adverse impact to air quality from dust produced during construction. However the impact will be short-term, minor to negligible, non-re-occurring, and limited to the construction duration. Dust control and other Best Management Practices will be used to limit air quality impacts. Construction is anticipated to last approximately two months. The project will not have long term impacts to air quality.

No Action Alternative – No impact to air quality.

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7. VEGETATION COVER, QUANTITY AND QUALITY:

What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify direct, indirect, and cumulative effects to vegetation.

The project area is located within a riparian forest on the edge of the West Gallatin River floodplain and adjacent to a rural residential area. The mapped vegetation types for the project area are Human Land Use – Cultivated Crops (23% of project area), Rocky Mountain Lower Montane-Foothill Riparian Woodland and Shrubland (22% of project area), Wetland and Riparian Systems – Alpine-Montane Wet Meadow (11% of project area), Wetland and Riparian Systems – Rocky Mountain Lower Montane-Foothill Riparian Woodland and Shrubland (8% of project area), Human Land Use – Pasture/Hay (6% of project area), Human Land Use – Low Intensity Residential (5% of project area), Grassland Systems – Rocky Mountain Subalpine-Montane Mesic Meadow (5% of project area), Human Land Use – Developed, Open Space (5% of project area), Human Land Use – Developed Roads (5% of project area), Recently Disturbed of Modified – Introduced Upland Vegetation (2% of project area), Human Land Use – Commercial/Industrial (2% of project area), Wetland and Riparian Systems – Open Water (2% of project area; MTNHP 2023).

There are 15 plant state species of concern and one bryophyte that could potentially be present in the project area:

Oregon Checker-mallow	*Sidalcea oregana*
Beaked Spikerush	*Eleocharis rostellata*
Crawe's Sedge	*Carex crawei*
Fleshy Stitchwort	*Stellaria crassifolia*
Pale-yellow Jewel-weed	*Impatiens aurella*
Slender Indian Paintbrush	*Castilleja gracillima*
Platte Cinquefoil	*Potentilla plattensis*
Railhead Milkvetch	*Astragalus terminalis*
High Northern Buttercup	*Ranunculus hyperboreus*
Wedge-leaf Saltbrush	*Atriplex truncata*
Mealy Primrose	*Primula incana*
Panic Grass	*Dichanthelium acuminatum*
Small Yellow Lady's-slipper	*Cypripedium parviflorum*
Linear-leaf Fleabane	*Erigeron linearis*
Letterman's Needlegrass	*Stipa lettermanii*
Meesia Moss	*Meesia triquetra*

Proposed Alternative – The proposed alternative may have a direct, local, negligible, non-

reoccurring adverse impact on the vegetation surrounding the Farmers Canal Headgate as vegetation will be disturbed during construction. The footprint of the project is very small and very little vegetation will be impacted. Construction that will affect existing vegetation will be required to be revegetated after construction is complete. Efforts should be made to preserve existing vegetation during construction where applicable. BMPs should be installed and monitored per the MPDES CGP, SWPPP, and other required permits.

No Action Alternative – No impact on vegetation cover, quantity and quality.

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8. TERRESTRIAL, AVIAN, AND AQUATIC LIFE AND HABITATS:
Consider substantial habitat values and use of the area by wildlife, birds, or fish. Identify direct, indirect, and cumulative effects to fish and wildlife.

Project location is not identified as a priority area for terrestrial or aquatic conservations efforts within the Montana State Wildlife Action Plan (SWAP). The project does not exist within boundaries for Montana Sage Grouse habitat (Montana Sage Grouse Habitat Conservation Plan web mapping tool). According to the FWS, no critical habitat exists within the project area.

The project area provides habitat for birds and wildlife and limited habitat for aquatic life. MTNHP records indicate that there are 9 species of concern that have been observed within the project area and 71 species of concern that could potentially occur within the project area, based on their habitat preferences (Tables 1 to 3, MTNHP 2023).

Table 1. Species Occurrences

Grizzly Bear	*Ursus arctos*
Hoary Bat	*Lasiurus cinereus*
Bald Eagle	*Haliaeetus leucocephalus*
Bobolink	*Dolichonyx oryzivorus*
Evening Grosbeak	*Coccothraustes vespertinus*
Great Blue Heron	*Ardea herodias*
Lewis's Woodpecker	*Melanerpes lewis*
Veery	*Catharus fuscescens*
Alberta Snowfly	*Isocapnia integra*

Table 2. Other Occurrences

Uinta Ground Squirrel	*Urocitellus armatus*
Black Rosy-Finch	*Leucosticte atrata*
Black-and-white Warbler	*Mniotilta varia*
Franklin's Gull	*Leucophaeus pipixcan*
Golden Eagle	*Aquila chrysaetos*
Gray-crowned Rosy-Finch	*Leucosticte tephrocotis*
Greater Sage-Grouse	*Centrocercus urophasianus*
Loggerhead Shrike	*Lanius ludovicianus*
Long-billed Curlew	*Numenius americanus*
Northern Goshawk	*Accipiter gentilis*
Rufous Hummingbird	*Selasphorus rufus*
Sharp-tailed Grouse	*Tympanuchus phasianellus*

Trumpeter Swan	*Cygnus buccinator*

Table 3. Potential Species

Canada Lynx	*Lynx canadensis*
Dwarf Shrew	*Sorex nanus*
Fringed Myotis	*Myotis thysanodes*
Little Brown Myotis	*Myotis lucifugus*
Long-eared Myotis	*Myotis evotis*
Long-legged Myotis	*Myotis volans*
Merriam's Shrew	*Sorex merriami*
North American Porcupine	*Erethizon dorsatum*
North American Water Vole	*Microtus richardsoni*
Silver-haired Bat	*Lasionycteris noctivagans*
Spotted Bat	*Euderma maculatum*
Western Spotted Skunk	*Spilogale gracilis*
Wyoming Ground Squirrel	*Urocitellus elegans*
American Bittern	*Botaurus lentiginosus*
American White Pelican	*Pelecanus erythrorhynchos*
Barrow's Goldeneye	*Bucephala islandica*
Black Tern	*Chlidonias niger*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Black-crowned Night-Heron	*Nycticorax nycticorax*
Black-necked Stilt	*Himantopus mexicanus*
Brewer's Sparrow	*Spizella breweri*
Broad-tailed Hummingbird	*Selasphorus platycercus*
Common Poorwill	*Phalaenoptilus nuttallii*
Ferruginous Hawk	*Buteo regalis*
Harlequin Duck	*Histrionicus histrionicus*
Hooded Merganser	*Lophodytes cucullatus*
Ovenbird	*Seiurus aurocapilla*
Pileated Woodpecker	*Dryocopus pileatus*
Sage Thrasher	*Oreoscoptes montanus*
Short-eared Owl	*Asio flammeus*
Sprague's Pipit	*Anthus spragueii*
Western Screech-Owl	*Megascops kennicottii*
White-faced Ibis	*Plegadis chihi*
Yellow-billed Cuckoo	*Coccyzus americanus*
Snapping Turtle	*Chelydra serpentina*
Western Milksnake	*Lampropeltis gentilis*
Northern Leopard Frog	*Lithobates pipiens*
Western Toad	*Anaxyrus boreas*
Yellowstone Cutthroat Trout	*Oncorhynchus clarkii bouvieri*
A Caddisfly	*Zumatrichia notosa*
Monarch	*Danaus plexippus*

Suckley Cuckoo Bumble Bee	*Bombus suckleyi*
Beaked Spikerush	*Eleocharis rostellata*
Crawe's Sedge	*Carex crawei*
Fleshy Stitchwort	*Stellaria crassifolia*
High Northern Buttercup	*Ranunculus hyperboreus*
Letterman's Needlegrass	*Stipa lettermanii*
Linear-leaf Fleabane	*Erigeron linearis*
Mealy Primrose	*Primula incana*
Oregon Checker-mallow	*Sidalcea oregana*
Pale-yellow Jewel-weed	*Impatiens aurella*
Panic Grass	*Dichanthelium acuminatum*
Platte Cinquefoil	*Potentilla plattensis*
Railhead Milkvetch	*Astragalus terminalis*
Slender Indian Paintbrush	*Castilleja gracillima*
Small Yellow Lady's-slipper	*Cypripedium parviflorum*
Wedge-leaf Saltbush	*Atriplex truncata*
Meesia Moss	*Meesia triquetra*

The Montana Fish, Wildlife & Parks' FishMT waterbody information for South Cottonwood Creek provides information about the species present based on survey data. Surveys found two native and three introduced fish species are present in South Cottonwood Creek. The native fish species present are Longnose Dace (*Rhinichthys cataractea*) and Rocky Mountain Sculpin (*Cottus bondi*). Both species are widespread throughout Montana and not listed as sensitive species.

Proposed Alternative – Potentially direct, negligible, short-term, local, non-recurring adverse impacts to terrestrial, avian, and aquatic life and habitats during construction. The primary disturbance will likely occur on private property; however, disturbance will be minimal, and contractor will be required to restore any disturbance to preexisting conditions.

No Action Alternative – No impact to terrestrial, avian, and aquatic life and habitats.

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9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:
Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify direct, indirect, and cumulative effects to these species and their habitat.

According the MTNHP, there are no state listed unique, endangered, fragile, or limited environmental resources within the project area. The National Wetlands Inventory (NWI) website was used to determine whether any wetlands were present within the lands adjacent to the project location. This search indicated that five types of wetlands are present near the project area: forested shrub habitats, riverine habitats, freshwater forested/shrub wetland habitats, freshwater emergent wetland habitats, and estuarine wetland habitat. Riverine habitats are generally deepwater habitats contained within a channel, permanently flooded, with intermittent and seasonally flooded channels. The project area is not located in a mapped flood zone or floodway, but it is adjacent to both.

As mentioned in the previous section, there are 80 species of concern listed as present or

potentially present using the project area as viable habitat. DNRC also used the U.S. Fish and Wildlife Service's IPaC tool to generate a resource list summarizing any endangered or threatened species that are known or expected to be near the project area. The IPaC found four (4) species protected under the Federal Endangered Species Act as potentially occurring in the greater project area, including:

- Canada Lynx (*Lynx canadensis*)
- Grizzly Bear (*Ursus arctos horribilis*)
- North American Wolverine (*Gulo gulo luscus*)
- Monarch Butterfly (*Danaus plexippus*)

The IPaC also listed nine (9) migratory bird species:

- Bald Eagle (*Haliaeetus leucocephalus*)
- Bobolink (*Dolichonyx oryzivorus*)
- Cassin's Finch (*Carpodacus cassinii*)
- Evening Grosbeak (*Coccothraustes vespertinus*)
- Franklin's Gull (*Leucophaeus pipixcan*)
- Golden Eagle (*Aquila chrysaetos*)
- Olive-sided Flycatcher (*Contopus cooperi*)
- Rufous Hummingbird (*Selasphorus rufus*)
- Willet (*Tringa semipalmata*)

The nine bird species are protected under the Migratory Bird Treaty Act of 1918 and Lacey Act of 1900, the eagles are protected under the Bald and Golden Eagle Protection Act of 1940, and the Bald Eagle is also protected under the Montana Bald Eagle Management Plan.

Proposed Alternative – Potentially direct, minor to moderate, short-term, local adverse impacts to unique, endangered, fragile, or limited environmental resources. The disturbance caused by the project should not impact any sensitive environmental resources. Construction that will affect existing vegetation will be required to be revegetated after construction is complete. Efforts should be made to preserve existing vegetation where applicable, and BMPs should be installed and monitored per the SWPPP. No construction will occur near the West Gallatin River flood zone or flood way, which are outside of the project area.

No Action Alternative – No impact to unique, endangered, fragile, or limited environmental resources.

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10. HISTORICAL AND ARCHAEOLOGICAL SITES:

Identify and determine direct, indirect, and cumulative effects to historical, archaeological, or paleontological resources.

There are no known historical or archaeological sites within the project area. SHPO has not yet been consulted.

Proposed Alternative – No impact is anticipated from the project construction. However, the Farmers Canal is considered historic and examination by a cultural resource expert should be required. Regardless of the cultural resource search results, if any unknown cultural or paleontological materials are identified during project related activities all work will cease until a

professional assessment of such resources can be made.

No Action Alternative – No impact to historical or archaeological sites.

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11. AESTHETICS:

Determine if the project is located on a prominent topographic feature or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify direct, indirect, and cumulative effects to aesthetics.

The project area is not visible to general public.

Proposed Alternative –Potentially direct and indirect, negligible to minor, short-term, local, nonrecurring impacts to aesthetics during construction. Indirect adverse nuisance impacts from heavy construction equipment will be temporary during the project and may include noise and exhaust fumes. Noise mitigation techniques to minimize impacts to the surrounding areas will be used by the contractor whenever possible. Construction working hours should be limited to 7 AM to 7 PM.

No Action Alternative – No impacts to aesthetics.

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12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Determine the number of limited resources the project would require. Identify other activities nearby that the project would affect. Identify direct, indirect, and cumulative effects to environmental resources.

The current conditions do not place demand on any environmental resources except water.

Proposed Alternative – The proposed project will have an immediate, long term positive effect on water availability in the lower end of South Cottonwood Creek and the West Gallatin River. These impacts are difficult to categorize however, increasing the volume of water in the river will likely benefit a variety of species and environments.

No Action Alternative – The no action alternative will continue to allow more water to be diverted out of South Cottonwood Creek than is needed by water users. In this light, the no action alternative has a reoccurring, regional, long-term adverse impact on the availability of water in the West Gallatin River.

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13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state, or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.

Project Performance have provided a technical document, that provides information about the current conditions at the project site, engineering specifications, project budgets, etc. (see attached).

IV. IMPACTS ON THE HUMAN POPULATION

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" If no impacts are identified or the resource is not present.*

14. HUMAN HEALTH AND SAFETY:
Identify any health and safety risks posed by the project.

The project area is undeveloped and there are no know utilities or hazardous materials or sources that will be disturbed by the proposed project.

Proposed Alternative – Potential direct or indirect adverse impact to human health and safety from use of heavy equipment construction activities. Equipment use could result in spills of hazardous materials such as fuel, hydraulic fluid, anti-freeze, etc., and will generate dust. These substances could cause water and or air pollution. The risk of human exposure to such substances is very low and can be minimized through the use of spill kits, dust abatement, and other BMPs during construction.

No Action Alternative – No impact on human health and safety.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:
Identify how the project would add to or alter these activities.

The current condition has a direct adverse impact on agricultural production through the loss of farmland productivity due to irrigation water seepage. No other industrial or commercial activities are associated with the current conditions.

Proposed Alternative – The proposed alternative may have indirect, localized beneficial impacts by increasing the reliability of water supply for agricultural producers with water rights along the Farmers canal. These positive impacts could be minor to moderate and are difficult to quantify in importance and duration.

No Action Alternative – Direct, local, reoccurring adverse impacts associated with reduced agricultural productivity will continue long-term due to unreliable water supply.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:
Estimate the number of jobs the project would create, move, or eliminate. Identify direct, indirect, and cumulative effects to the employment market.

The current condition impacts the workloads of the Farmers Canal Company workers, who are responsible for maintaining the Farmers Canal Headgate.

Proposed Alternative – Proposed project activities may provide short-term, direct beneficial impacts to contractors completing the work. It will provide indirect benefits by improving employment opportunities locally. The proposed alternative may also have long-term beneficial impacts by reducing the workload of the Farmers Canal Company employees who will not have to spend as much time maintaining the headgate.

No Action Alternative – No impact on the quantity and distribution of employment.

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17. LOCAL AND STATE TAX BASE AND TAX REVENUES:

Estimate tax revenue the project would create or eliminate. Identify direct, indirect, and cumulative effects to taxes and revenue.

No property tax records were available on the MT Cadastral (accessed 09/04/2023).

Proposed Alternative & No Action – No impact on local and state tax base and tax revenues.

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18. DEMAND FOR GOVERNMENT SERVICES:

Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify direct, indirect, and cumulative effects of this and other projects on government services

The current conditions may place a demand on government services as the irrigators with water rights on the Famers Canal can request assistance from various agencies should they not be able to access their allocated water. No other demand is currently being placed on governmental agencies.

Proposed Alternative – The proposed alternative will have a long-term, direct beneficial impact on the demand for governmental agencies, as it will reduce the need for assistance to irrigators and the Farmers Canal Company.

No Action Alternative – The no action alternative could have a short-term and long-term adverse impact on the demand for government services as irrigators who are unable to secure their water rights on a reliably may ask for financial assistance.

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19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

List State, County, City, USFS, BLM, Tribal, and other zoning, or management plans, and identify how they would affect this project.

There are no zoning or management plans that apply to the project area.

Proposed Alternative & *No Action Alternative* – No impact.

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20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify direct, indirect, and cumulative effects to recreational and wilderness activities.

The project is not located in or on a designated recreational, Wild & Scenic River, or Wilderness Area. There are parks and green spaces located within the project area.

Proposed Alternative & No Action Alternative– No direct impacts to access to and quality of recreational and wilderness activities. The preferred alternatives will not impact access to public lands, waterways, or public open spaces.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Estimate population changes and additional housing the project would require. Identify direct, indirect, and cumulative effects to population and housing.

The properties around and adjacent to the project are primarily residential and will not be impacted by the project. The land used within the project area is anticipated to have limited growth expected in the future.

Proposed Alternative & No Action Alternative – No impacts to population density, distribution, or housing. The proposed project is not expected to cause any changes in population demographics or housing.

22. SOCIAL STRUCTURES AND MORES:

Identify potential disruption of native or traditional lifestyles or communities.

Social conduct, structures, and behaviors follow conventions that are typical of rural Gallatin Valley

Proposed Alternative & No Action – No impact or change in social structures are expected to occur as a result of the well replacement.

23. CULTURAL UNIQUENESS AND DIVERSITY:

How would the action affect any unique quality of the area?

There are no facilitates of unique culture or diversity in the project area. The project area is located on the traditional territory of the Cayuse, Umatilla and Walla Walla; Apsaalooke (Crow); Salish, Tsestho'e (Cheyenne); and Niitsitpiis-stahkoii (Blackfoot) peoples.

Proposed Alternative & No Action - The proposed project is not expected to affect any cultural facilities or diversity within the community.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify direct, indirect, and cumulative economic and social effects likely to occur as a result of the proposed action.

The median household income in Gallatin Gateway was $61,094 in 2021.

Proposed Alternative – Potentially direct and indirect beneficial impacts to appropriate social and economic circumstances. Workers and materials required for the construction of the project may temporarily provide beneficial impacts to local businesses throughout construction.

No Action Alternative – No impact on other appropriate social and economic circumstances.

25. DRINKING WATER AND/OR CLEAN WATER

Identify potential impacts to water and/or sewer infrastructure (e.g., community water supply, stormwater, sewage system, solid waste management) and identify direct, indirect, and cumulative effects likely to occur as a result of the proposed action.

The current conditions do not have any impact on drinking water supplies or sewer infrastructure.

Proposed Alternative – The proposed alternative will have short-term, localized, non-reoccurring adverse impacts to drinking water and or clean water that is drawn from South Cottonwood Creek during construction activities. Construction will disturb soils both above ground and within South Cottonwood Creek, causing sedimentation and turbidity and reducing water quality. These adverse impacts should be limited to construction activity. Contractors should strive to limit soil disturbance and use BMPs to prevent soils from entering South Cottonwood Creek.

No Action – No impact to drinking water and/or clean water.

26. ENVIRONMENTAL JUSTICE

Will the proposed project result in disproportionately high or adverse human health or environmental effects on minority or low-income populations per the Environmental Justice Executive Order 12898? Identify potential impacts to and identify direct, indirect, and cumulative effects likely to occur as a result of the proposed action.

The current conditions have no impact on conditions related to environmental justice.

Proposed Alternative & No Action - No impacts to environmental justice are expected. The proposed project will not result in disproportionate health impacts to any population. The economic impacts will be limited to the Farmers Canal irrigators.

EA Prepared By:	**Name:**	Samantha Treu	**Date:**	11/10/2023
	Title:	MEPA/NEPA Coordinator	**Email:**	samantha.treu@mt.gov

V. FINDING

27. ALTERNATIVE SELECTED:

Headgate replacement would be the best alternative for this project. Headgate repair is also a viable alternative, but the no action alternative poses a greater risk to human health and safety, agricultural producers, and to the physical environment.

28. SIGNIFICANCE OF POTENTIAL IMPACTS:

GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE

The proposed alternative should have short-term, localized, nonrecurring adverse impacts on soil stability, as the soil surrounding the Farmers Canal Headgate on Cottonwood Creek will be disturbed during construction. Due to the unstable nature of the sub-soils in the project area, care should be taken to follow the engineers soil compaction specifications. Additionally, revegetation best management practices (BMPs), including potentially importing clay-loam soils to cap areas

with exposed sandy-cobbly material, should be followed to prevent erosion.

WATER QUALITY, QUANTITY AND DISTRIBUTION

The proposed alternative will have short-term, localized, non-reoccurring adverse impacts to water quality during construction activities. Construction will disturb soils both above ground and within South Cottonwood Creek, causing sedimentation and turbidity and reducing water quality. These adverse impacts should be limited to construction activity. Contractors should strive to limit soil disturbance and use BMPs to prevent soils from entering South Cottonwood Creek.

AIR QUALITY

The proposed project may have a direct, localized, adverse impact to air quality from dust produced during construction. However the impact will be short-term, minor to negligible, non-re-occurring, and limited to the construction duration. Dust control and other Best Management Practices will be used to limit air quality impacts. Construction is anticipated to last approximately two months. The project will not have long term impacts to air quality.

VEGETATION COVER, QUANTITY AND QUALITY

The proposed alternative may have a direct, local, negligible, non-reoccurring adverse impact on the vegetation surrounding the Farmers Canal Headgate as vegetation will be disturbed during construction. The footprint of the project is very small and very little vegetation will be impacted. Construction that will affect existing vegetation will be required to be revegetated after construction is complete. Efforts should be made to preserve existing vegetation during construction where applicable. BMPs should be installed and monitored per the MPDES CGP, SWPPP, and other required permits.

TERRESTRIAL, AVIAN, AND AQUATIC LIFE AND HABITATS

Potentially direct, negligible, short-term, local, non-recurring adverse impacts to terrestrial, avian, and aquatic life and habitats during construction. The primary disturbance will likely occur on private property; however, disturbance will be minimal, and contractor will be required to restore any disturbance to preexisting conditions.

UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES

Potentially direct, minor to moderate, short-term, local adverse impacts to unique, endangered, fragile, or limited environmental resources. The disturbance caused by the project should not impact any sensitive environmental resources. Construction that will affect existing vegetation will be required to be revegetated after construction is complete. Efforts should be made to preserve existing vegetation where applicable, and BMPs should be installed and monitored per the SWPPP. No construction will occur near the West Gallatin River flood zone or flood way, which are outside of the project area.

AESTHETICS

Potentially direct and indirect, negligible to minor, short-term, local, nonrecurring impacts to aesthetics during construction. Indirect adverse nuisance impacts from heavy construction equipment will be temporary during the project and may include noise and exhaust fumes. Noise mitigation techniques to minimize impacts to the surrounding areas will be used by the contractor whenever possible. Construction working hours should be limited to 7 AM to 7 PM.

HUMAN HEALTH AND SAFETY

Potential direct or indirect adverse impact to human health and safety from use of heavy equipment construction activities. Equipment use could result in spills of hazardous materials such as fuel,

hydraulic fluid, anti-freeze, etc., and will generate dust. These substances could cause water and or air pollution. The risk of human exposure to such substances is very low and can be minimized through the use of spill kits, dust abatement, and other BMPs during construction.

DRINKING WATER AND/OR CLEAN WATER

The proposed alternative will have short-term, localized, non-reoccurring adverse impacts to drinking water and or clean water that is drawn from South Cottonwood Creek during construction activities. Construction will disturb soils both above ground and within South Cottonwood Creek, causing sedimentation and turbidity and reducing water quality. These adverse impacts should be limited to construction activity. Contractors should strive to limit soil disturbance and use BMPs to prevent soils from entering South Cottonwood Creek.

---

29. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

No significant adverse impacts were identified during the preparation of this Environmental Assessment. This is the final review and no further analysis is required to understand the potential impacts of project work.

☐ EIS ☐ More Detailed EA ☒ No Further Analysis

EA Approved By:	**Name:** Mark W Bostrom **Title:** Division Administrator
Signature: Mark W Bostrom	**Date**: 12/12/2023

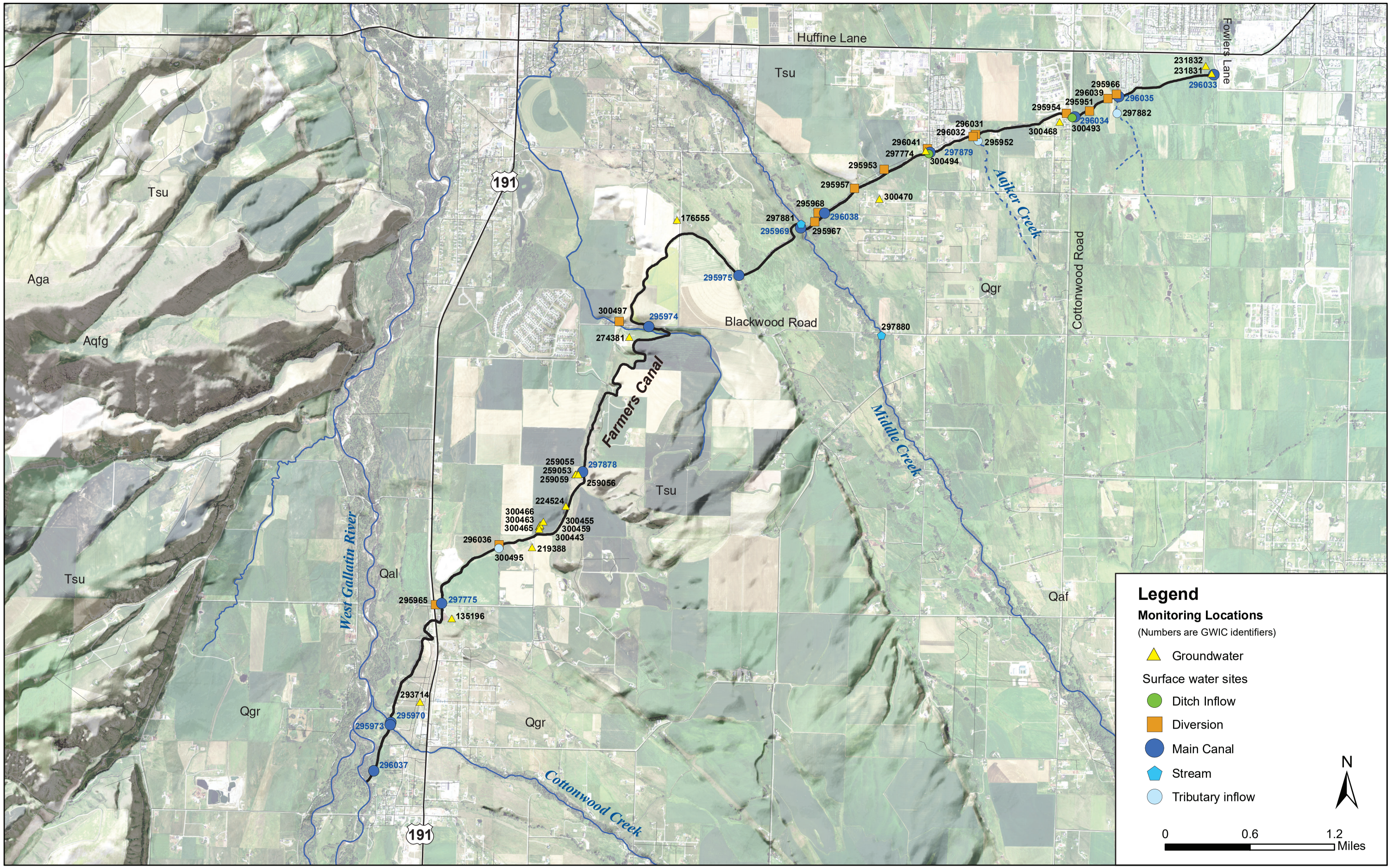
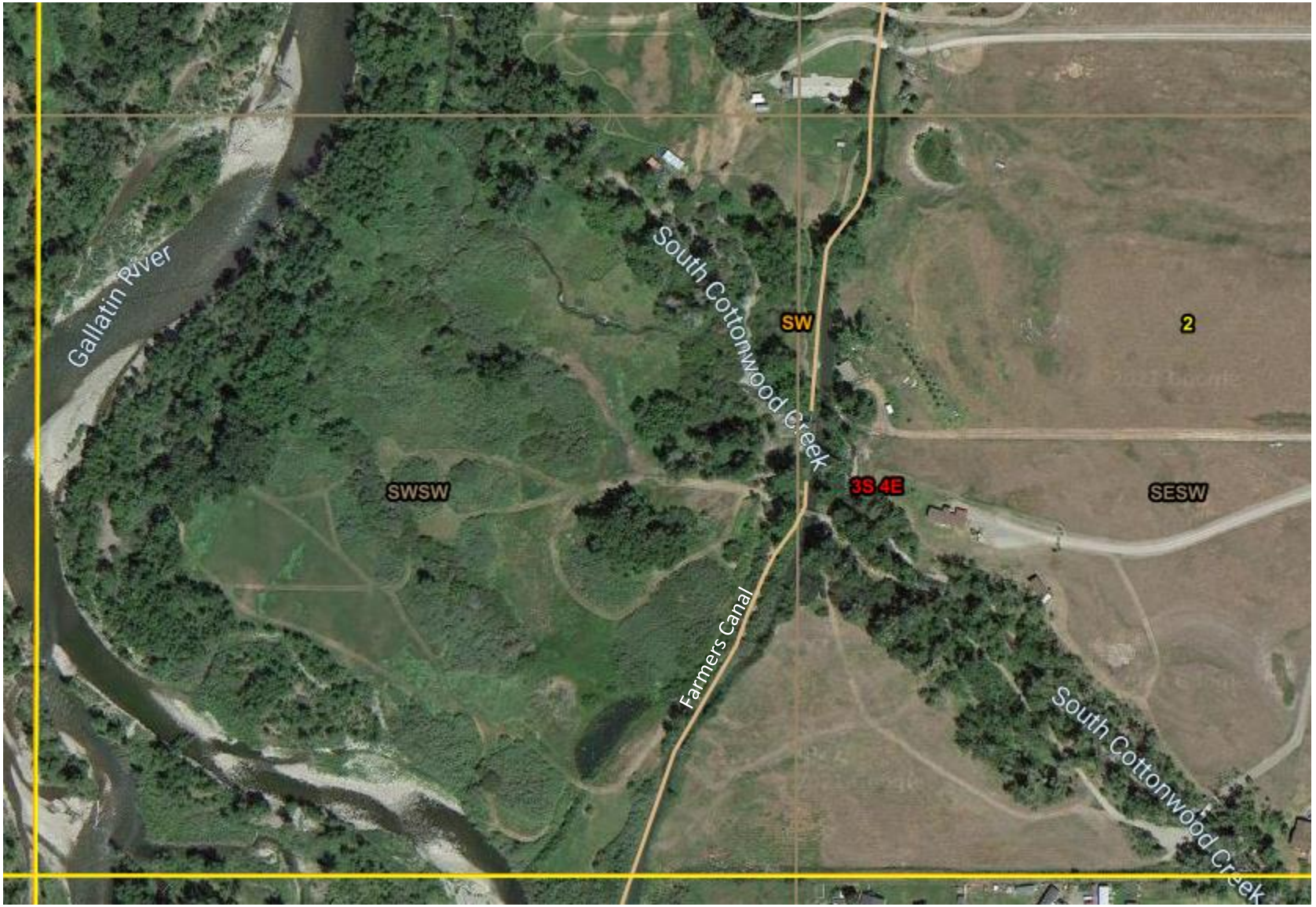


Figure 1. The monitoring network consisted of measuring flows at 13 sites along the main canal, 15 diversions and canal inflows from ditches/tributaries. Groundwater was monitored at 21 locations.

Cottonwood Headgate

Location

South Cottonwood/Farmers Canal Intersection



ATTACHMENT A

PROJECT LOCATION MAPS

Cottonwood Headgate

Location

ATTACHMENT B

MEPA CHECKLIST

Environmental Checklist

Applicant Name: Gallatin Conservation District

Project Title: Farmers Canal Company Cottonwood Headgate Replacement

Environmental Checklist Prepared by: On: 12/30/2021

Shawn Higley, P.E.	WWC Engineering
Name of Person 1	Organization
(406) 443-3962	shigley@wwcengineering.com
Phone Number	Email
Click or tap here to enter text.	Click or tap here to enter text.
Name of Person 2	Organization
Click or tap here to enter text.	Click or tap here to enter text.
Phone Number	Email

Click or tap here to enter text.

List additional people above. Include organization, phone number and email for all.

Physical Environment		
Impact Code	**Impact Type**	**Explanation of Impact to Resource**
1. Soil Suitability, Topographic and/or Geologic Constraints (example: soil lump, steep slopes, subsidence, seismic activity)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The existing canal banks and banks of cottonwood creek are experiencing erosion in the immediate vicinity of the headgate structure due to its poor condition. The no action alternative would result in continued erosion.* Preferred Alternative Environmental Narrative: *All ground disturbing activities will be temporary. Construction practices will include utilizing gentle slopes so that topographic or geologic constraints are not experienced. Best Management Practices (BMPs) will be used during construction to eliminate impacts to soil suitability or topographic constraints.*
2. Hazardous Facilities (example: power lines, hazardous waste sites, acceptable distance from explosive and flammable hazards including chemical/petrochemical storage tanks, underground fuel storage tanks, and related facilities such as natural gas storage facilities and propane storage tanks)		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *There are no hazardous facilities in the vicinity of the project area.* Preferred Alternative Environmental Narrative: *The proposed project would have no effect on hazardous facilities.*

3. Surrounding Air Quality (example: dust, odors, emissions)		
☐ No Impact ☐ Beneficial ☒ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on surrounding air quality.* Preferred Alternative Environmental Narrative: *The proposed project may have a temporary impact on surrounding air quality during construction only via dust pollution. Water trucks will be utilized to control dust pollution if necessary. Additionally, the short duration of the project will limit air quality issues to within that timeframe, approximately six months of construction. The proposed project will not have long-term impacts to air quality.* *Severity: The severity of air quality impacts from the proposed project will be minor or negligible. Measures will be taken during construction to minimize dust pollution and other air quality pollutants.* *Duration: Impacts to air quality will be limited to the construction duration. It is anticipated that construction will last approximately six months.* *Extent: Impacts to air quality are expected to be localized and will only affect the immediate surrounding area of each construction site.* *Frequency: The impacts to air quality are anticipated to be non-recurring and may only be seen during construction of the proposed project.* *Short-term measures such as water application will be utilized during construction to limit dust pollution. Other short-term measures such as Best Management Practices will be utilized during construction to limit air quality issues. Long-term measures such as topsoil placement, revegetation/seeding, and other reclamation measures will be utilized to minimize long-term impacts to air quality.*
4. Groundwater Resources and Aquifers (example: quantity, quality, distribution, depth to groundwater, sole source aquifers)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on groundwater resources and aquifers.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect the groundwater resource.*

<table>
<tr><td colspan="3">5. Surface Water/Water Quality, Quantity and Distribution (example: streams, lakes, storm runoff, irrigation systems, canals)</td></tr>
<tr><td>☐ No Impact
☒ Beneficial
☐ Adverse</td><td>☒ Direct
☒ Indirect
☐ Cumulative</td><td>Current Conditions:
The current condition results in moderate impacts to water quality through erosion of the canal banks and the banks of cottonwood creek that carries this water back to the Gallatin River, which is an impaired water body.
Preferred Alternative Environmental Narrative:
The positive impacts of the proposed project include the conservation of water in the delivery system; increased management efficiency of the surface water; reduced sediment loading; and the preservation of fish and aquatic species habitats. The project will not have any negative impacts on the surface water resource.</td></tr>
<tr><td colspan="3">6. Floodplains and Floodplain Management (Identify any floodplains within one mile of the boundary of the project.)</td></tr>
<tr><td>☒ No Impact
☐ Beneficial
☐ Adverse</td><td>☐ Direct
☐ Indirect
☐ Cumulative</td><td>Current Conditions:
The project is located along the man-made Farmer’s Canal. The FEMA FIRM map (Panel Number 30031C0910D) shows the area is not located within a designated floodplain.
Preferred Alternative Environmental Narrative:
Construction activities would not impact the floodplain.</td></tr>
<tr><td colspan="3">7. Wetlands (Identify any wetlands within one mile of the boundary of the project and state potential impacts.)</td></tr>
<tr><td>☒ No Impact
☐ Beneficial
☐ Adverse</td><td>☐ Direct
☐ Indirect
☐ Cumulative</td><td>Current Conditions:
The proposed project is located immediately adjacent and parallel to the existing Cottonwood Headgate. The NWI identifies Cottonwood Creek and the Farmers Canal as a riverine wetland.
Preferred Alternative Environmental Narrative:
The majority of the construction activities will take place within the existing footprint of the headgate structure. Construction of the proposed project will not negatively impact these wetlands because the construction activities will be conducted during the irrigation offseason and construction will be limited to replacement of the existing structure. Best Management Practices (BMPs) will be implemented to prevent sediment from leaving the site.</td></tr>
</table>

8. Agricultural Lands, Production, and Farmland Protection (example: grazing, forestry, cropland, prime or unique agricultural lands) Identify any prime or important farm ground or forest lands within one mile of the boundary of the project.		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has the ability to negatively impact agricultural lands, production, and farmland protection through loss of the structure due to its degraded state.* Preferred Alternative Environmental Narrative: *The proposed project will provide a significant benefit to the area's agricultural lands by being able to continue to supply water to produces, reduce sediment loading to the downstream Gallatin River system, and provide more consistent control of flow within the Farmer's Canal.*
9. Vegetation and Wildlife Species and Habitats, Including Fish (example: terrestrial, avian and aquatic life and habitats)		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition provides negative impacts to vegetation and wildlife species and habitats through the impairment of water quality due to erosion.* Preferred Alternative Environmental Narrative: *The proposed project will protect water delivery within the Farmers Canal system and reduced sediment loading to the downstream Gallatin River.*
10. Unique, Endangered, Fragile, or Limited Environmental Resources, Including Endangered Species (example: plants, fish or wildlife)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *A search was performed for the proposed project area to obtain information on species of concern within the project area. The search indicated that, within the project township, there are no plant species of concern and but the area may possibly contain habitat for the Canada Lynx, Grizzly Bear, Monarch Butterfly, Bald Eagle and the Olive-sided Flycatcher.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact unique, endangered, fragile, or limited environmental resources. A review of the Sage Grouse Core Area Website showing that the project location is outside of the EO area.*
11. Unique Natural Features (example: geologic features)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The construction area contains no unique natural features that will be impacted by the proposed project.* Preferred Alternative Environmental Narrative: *There are no unique natural features within the project area that will be impacted by the proposed improvements.*

12. Access to, and Quality of, Recreational and Wilderness Activities, Public Lands and Waterways, and Public Open Space		
☐ No Impact ☒ Beneficial ☐ Adverse	☐ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition allows for the uncontrolled waste of irrigation water through the structure which results in significant erosion and sediment loading downstream.* Preferred Alternative Environmental Narrative: *The proposed project will reduce downstream sediment loading and improve supplemental flows within the Gallatin River during normal irrigation seasons which will indirectly benefit recreational opportunities such as fishing, boating, floating, hiking, paddling, etc.*
Human Environment		
Impact Code	**Impact Type**	**Resource**
1. Visual Quality – Coherence, Diversity, Compatibility of Use and Scale, Aesthetics		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition for visual quality is an irrigation structure.* Preferred Alternative Environmental Narrative: *The proposed project will have no impact on visual quality.*
2. Nuisances (example: glare, fumes)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *There are no nuisances in the project area.* Preferred Alternative Environmental Narrative: *The proposed improvements will not create a nuisance.*
3. Noise – Suitable Separation Between Housing and Other Noise Sensitive Activities and Major Noise Sources (example: aircraft, highways and railroads.)		
☐ No Impact ☐ Beneficial ☒ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition does not emit major noise sources, only water flowing over the irrigation structure.* Preferred Alternative Environmental Narrative: *Noise will only be created during the short-term construction period. Noise will be limited to approximately 6 months during construction.* *Severity: Noise will be consistent with typical construction noise, which is anticipated to be a low impact as the project is located in a very remote location with no nearby structures or dwellings.* *Duration: Noise will be limited to six months.* *Extent: Noise will be localized to just the project area and the immediate surroundings.* *Frequency: During construction, the noise will be recurring. Once complete, noise will not be an issue.* *Wherever possible, the contractor will minimize noise and steps will be taken to reduce noise impacts to the surrounding area.*

4. Historic Properties, Cultural, and Archaeological Resources***(Please see end of Environmental Checklist for details if Cultural Survey has not been performed per SHPO Section 106)*		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *There are no historic properties, cultural, or archaeological resources that have been identified within the project area.* Preferred Alternative Environmental Narrative: *There have been no historical properties, cultural, or archaeological resources that have been identified in the area. Should any resources be encountered during construction, the Farmers Canal will take the proper steps to eliminate impacts to these resources.*
5. Changes in Demographic (Population) Characteristics (example: quantity, distribution, density)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no impact on demographic characteristics in the area.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact the demographic characteristics of the area.*
6. General Housing Conditions – Quality, Quantity, Affordability		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no impact on general housing conditions.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect general housing conditions.*
7. Businesses or Residents (example: loss of, displacement, or relocation)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no impact on local businesses or residents.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect local businesses or residents through loss, displacement, or relocation.*
8. Public Health and Safety		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition is unsafe for Farmers Canal personnel as they must enter the structure in over water without safety gear or railing to operate the existing gate structure.* Preferred Alternative Environmental Narrative: *Implementation of the proposed project would provide a safe environment for operation of the structure.*
9. Local Employment – Quantity or Distribution of Employment, Economic Impact		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on local employment.* Preferred Alternative Environmental Narrative: *The proposed project may benefit local shops, gas stations, trucking companies, suppliers, etc. The project will also maximize crop production for the users of the system, resulting in maximized agricultural revenue for the Farmers Canal and its users.*

10. Income Patterns – Economic Impact		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on income patterns.* Preferred Alternative Environmental Narrative: *The proposed improvements will positively impact local income patterns through increased crop production and increased crop revenues.*
11. Local and State Tax Base and Revenues		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on local and state tax base and revenues.* Preferred Alternative Environmental Narrative: *The proposed improvements will positively affect the local tax base and revenues by adding more revenue through increased crop production.*
12. Community and Government Services and Facilities (example: educational facilities; health and medical services and facilities; police; emergency medical services; and parks, playgrounds and open space)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on community and government services and facilities.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect the community and government services and facilities.*
13. Commercial and Industrial Facilities – Production and Activity, Growth or Decline		
☐ No Impact ☒ Beneficial ☐ Adverse	☐ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on commercial and industrial facilities.* Preferred Alternative Environmental Narrative: *During construction, the project could potentially benefit local shops, gas stations, trucking companies, suppliers, etc. indirectly. Increased sales at local businesses may be a result of the construction project.*
14. Social Structures and Mores (example: standards of social conduct/social conventions)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on social structures and mores.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on social structures and mores.*
15. Land Use Compatibility (example: growth, land use change, development activity, adjacent land uses and potential conflicts)		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on land use compatibility.* Preferred Alternative Environmental Narrative: *The proposed improvements will preserve the water supply to water users on the Farmers Canal delivery system. The proposed project will allow the Farmers Canal to efficiently deliver irrigation water to their users therefore maximizing crop production and agricultural development in the area.*

16. Energy Resources – Consumption and Conservation		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on energy resources.* Preferred Alternative Environmental Narrative: *The proposed project will have no effect on energy resources.*
17. Solid Waste Management		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on solid waste management.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on solid waste management in the area.*
18. Wastewater Treatment – Sewage System		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on wastewater treatment.* Preferred Alternative Environmental Narrative: *The proposed project will have no impact on wastewater treatment in the area.*
19. Storm Water – Surface Drainage		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on storm water.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact storm water or surface drainage.*
20. Community Water Supply		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on community water supply.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact community water supply.*
21. Fire Protection – Hazards		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on fire protection.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on fire protection for the area.*
22. Cultural Facilities, Cultural Uniqueness and Diversity		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on cultural facilities, cultural uniqueness and diversity.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on cultural facilities, cultural uniqueness, or diversity.*

23. Transportation Networks and Traffic Flow Conflicts (example: rail; auto including local traffic; airport runway clear zones – avoidance of incompatible land use in airport runway clear zones)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on transportation networks and traffic flow conflicts.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on transportation networks and will not create traffic flow conflicts.*
24. Consistency with Local Ordinances, Resolutions, or Plans (example: conformance with local comprehensive plans, zoning, or capital improvement plans.)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on consistency with local ordinances, resolutions, or plans.* Preferred Alternative Environmental Narrative: *The proposed project will comply with all local ordinances, resolutions, and plans in design and construction.*
25. Private Property Rights (example: a regulatory action or project activity that reduces, minimizes, or eliminates the use of private property.)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on private property rights.* Preferred Alternative Environmental Narrative: *The proposed improvements will not result in regulatory action on private property rights.*

Additional Information

****If no cultural survey has been performed, or is not expected to be needed, applicant must agree to the following statement:**

☒ I hereby agree that, to my knowledge, there are no cultural or paleontological materials in the proposed project site. If previously unknown cultural or paleontological materials are identified during project related activities, the DNRC grant manager will be notified, and all work will cease until a professional assessment of such resources can be made.

List all sources of information used to complete the Environmental Checklist. Sources may include studies, plans, documents, or the individuals, organizations, or agencies contacted for assistance. For individuals, groups, or agencies, please include a contact person and phone number. List any scoping documents or meetings and/or public meetings during project development.

WWC Engineering

Farmers Canal Company

Montana Natural Heritage Program website; http://mtnhp.org/

DNRC Sage Grouse Habitat Conservation Program, https://sagegrouse.mt.gov/

National Wetlands Inventory website, www.fws.gov/nwi/

NRCS Web Soil Survey https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Bing Aerial Photography

FEMA Map Service Center

Google Earth

Below is a list of electronic resources available for data gathering to aid in the development of the Environmental Checklist:

Abandoned Mines (DEQ): https://deq.mt.gov/Land/abandonedmines/bluebook

Agricultural Statistics (USDA): http://www.usda.gov/wps/portal/usda/usdahome?navid=DATA_STATISTICS

Air Quality

- Nonattainment Areas: http://deq.mt.gov/Air/airquality/planning/airnonattainmentstatus
- Citizens' Guide: http://deq.mt.gov/Air/airmonitoring/citguide

Army Corps of Engineers: http://www.usace.army.mil/Home.aspx

Bureau of Business and Economic Research, UM: http://www.bber.umt.edu/

Cadastral (for property ownership info): http://svc.mt.gov/msl/mtcadastral

Census Information, MT Dept. of Commerce: http://ceic.mt.gov

Conservation Districts, MT: http://macdnet.org/

Cultural Records

- Montana Historical Society: http://mhs.mt.gov/shpo/culturalrecords.asp

DEQ data search tools: http://svc.mt.gov/deq/dst/#/home

- Including Clean Water Act Info Center, Hazardous Waste Handlers, Petroleum Release Fund Claims, Unpermitted Releases, Underground Storage Tanks, Source Water Protection

EPA Enforcement and Compliance History Online http://echo.epa.gov/

Farmland Classification: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Fish (Also See Wildlife)

- Montana Fisheries Information System: http://fwp.mt.gov/fishing/mFish/
- Aquatic Invasive Species: http://fwp.mt.gov/fishAndWildlife/species/ais/speciesId/default.html

Floodplain Maps, FEMA: https://msc.fema.gov/portal

Geographic Information, Natural Resources Information System: http://nris.mt.gov/gis

Geologic Information - http://www.mbmg.mtech.edu/information/geologicmap.asp

Maps of Montana for species observations, land cover, wetland and riparian areas, land management: http://mtnhp.org/Tracker/NHTMap.aspx; http://mtnhp.org/mapviewer/?t=6

Montana Department of Transportation Environmental Manual: http://www.mdt.mt.gov/publications/docs/manuals/env/preface.pdf

Montana Board of Oil and Gas Conservation Information System: http://bogc.dnrc.mt.gov/webApps/DataMiner/

Plants

- Plant database, USDA Natural Resources Conservation Service: http://plants.usda.gov/java
- Plant Species, MT Field Guide: http://fieldguide.mt.gov/default.aspx
- Plant Species of Concern: http://mtnhp.org/SpeciesOfConcern/Default.aspx?AorP=p
- Threatened and endangered plants, USDA: http://plants.usda.gov/threat.html

Soils

- USDA Natural Resource Conservation Service database: https://websoilsurvey.nrcs.usda.gov/app/
- Montana soil and water conservation districts: http://swcdmi.org/

State Historic Preservation Office: http://mhs.mt.gov/Shpo

Tourism, UM – Institute of Tourism & Recreation Research: http://www.itrr.umt.edu

Tribal Resources:

- Blackfeet Tribal Environmental Permits: http://www.blackfeetenvironmental.com
- CSKT Natural Resources Department: http://nrd.csktribes.org/
- Montana Office of Indian Affairs: http://tribalnations.mt.gov/
- Tribal Historic Preservation Officer List http://nathpo.org/wp/thpos/find-a-thpo/ Vehicle Traffic Count (MDT): http://www.mdt.mt.gov/publications/datastats/traffic.shtml

Water

- Stream Record Extension Facilitator, USGS: http://pubs.usgs.gov/of/2008/1362/cd_links/WebPart.htm
- Streamstats basin characteristics, USGS: http://water.usgs.gov/osw/streamstats/
- Water Resources Division, DNRC: http://dnrc.mt.gov/divisions/water
- Water Rights Bureau, DNRC: http://dnrc.mt.gov/divisions/water/water-rights
- Water Right Query System, DNRC: http://nris.mt.gov/dnrc/waterrights/default.aspx Wetlands database, USFWS: http://www.fws.gov/wetlands/Data/mapper.html

Wild and Scenic Rivers: http://www.rivers.gov/montana.php

Wildlife

- Animal Species, MT Field Guide: http://fieldguide.mt.gov/default.aspx
- Animal Species of Concern: http://mtnhp.org/SpeciesOfConcern/Default.aspx?AorP=a
- Aquatic Invasive Species: http://fwp.mt.gov/fishAndWildlife/species/ais/speciesId/default.html
- Critical Habitat Mapper, USFWS: http://ecos.fws.gov/crithab/
- Crucial Areas Planning System/Habitat Assessment Tool: http://fwp.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html
- FWP Contact Map: http://fwp.mt.gov/gis/maps/contactUs/ (includes biologist responsibility areas)
- Maps and GIS Data, FWP: http://fwp.mt.gov/doingBusiness/reference/maps/
- Sage grouse management, FWP: http://fwp.mt.gov/fishAndWildlife/management/sageGrouse/
- Sage grouse habitat conservation program, DNRC: http://sagegrouse.mt.gov/
- Sage grouse habitat map: https://sagegrouse.mt.gov/ProgramMap

ATTACHMENT C

MTNHP ENVIRONMENTAL SUMMARY

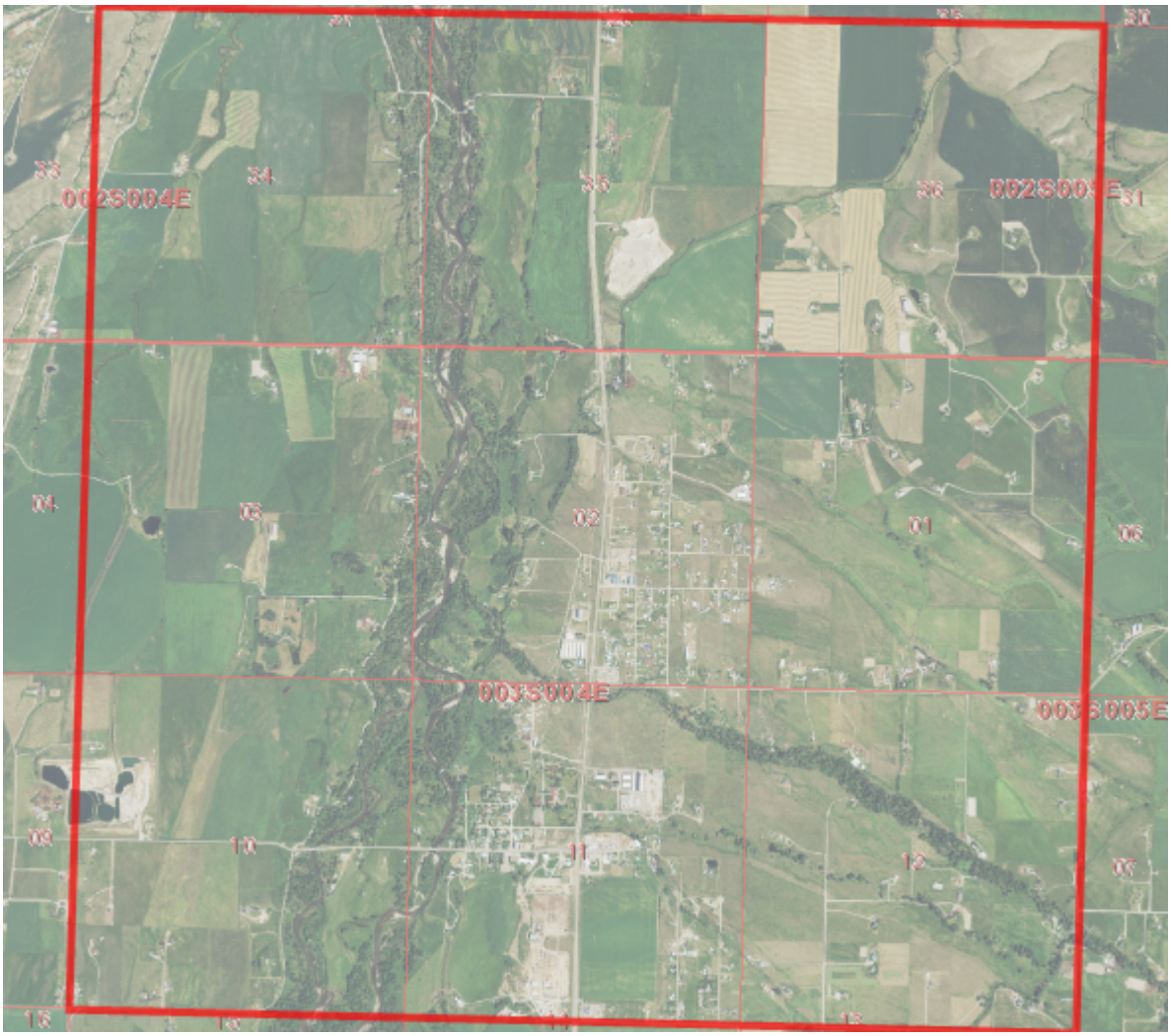
MONTANA STATE LIBRARY

NATURAL HERITAGE PROGRAM mtnhp.org
1201 11th Ave ▫ P.O. Box 201800 ▫ Helena, MT 59620-1800 ▫ fax 406-444-0266 ▫ phone 406-444-3989

Environmental Summary

Latitude	Longitude
45.58282	-111.16572
45.62833	-111.22824

Summarized by:
003S004E002
(Buffered PLSS Section)



Suggested Citation
Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 45.58282 to 45.62833 and Longitude -111.16572 to -111.22824. Retrieved on 8/29/2023.

The Montana Natural Heritage Program is part of the Montana State Library's Natural Resource Information System. Since 1985, it has served as a neutral and non-regulatory provider of easily accessible information on Montana's species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. The program is part of the NatureServe network that is composed of over 60 member programs across North America that work to provide current and comprehensive distribution and status information on species and biological communities.

MONTANA STATE LIBRARY NATURAL HERITAGE PROGRAM

NATURESERVE

Table of Contents

Introduction to Environmental Summary Report

Environmental Summary Reports from the Montana Natural Heritage Program (MTNHP) provide information on species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. For information on environmental permits in Montana, please see permitting overviews by the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Index of Environmental Permits for Montana and our Suggested Contacts for Natural Resource Management Agencies. The report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the MTNHP databases for: (1) species occurrences; (2) other observed species without species occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys that follow a protocol capable of detecting one or more species; (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. If your area of interest corresponds to a statewide polygon layer (e.g., watersheds, counties, or public land survey sections) information summaries in your report will exactly match those boundaries. However, if your report is for a custom area, users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across a layer of hexagons intersected by the polygon they specified as shown on the report cover. Summarizing by these hexagons which are one square mile in area and approximately one kilometer in length on each side allows for consistent and rapid delivery of summaries based on a uniform grid that has been used for planning efforts across North America.

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. Users are reminded that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

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Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- Y Native / Year-round
- S Summer
- W Winter
- M Migratory
- N Non-native
- H Historical

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

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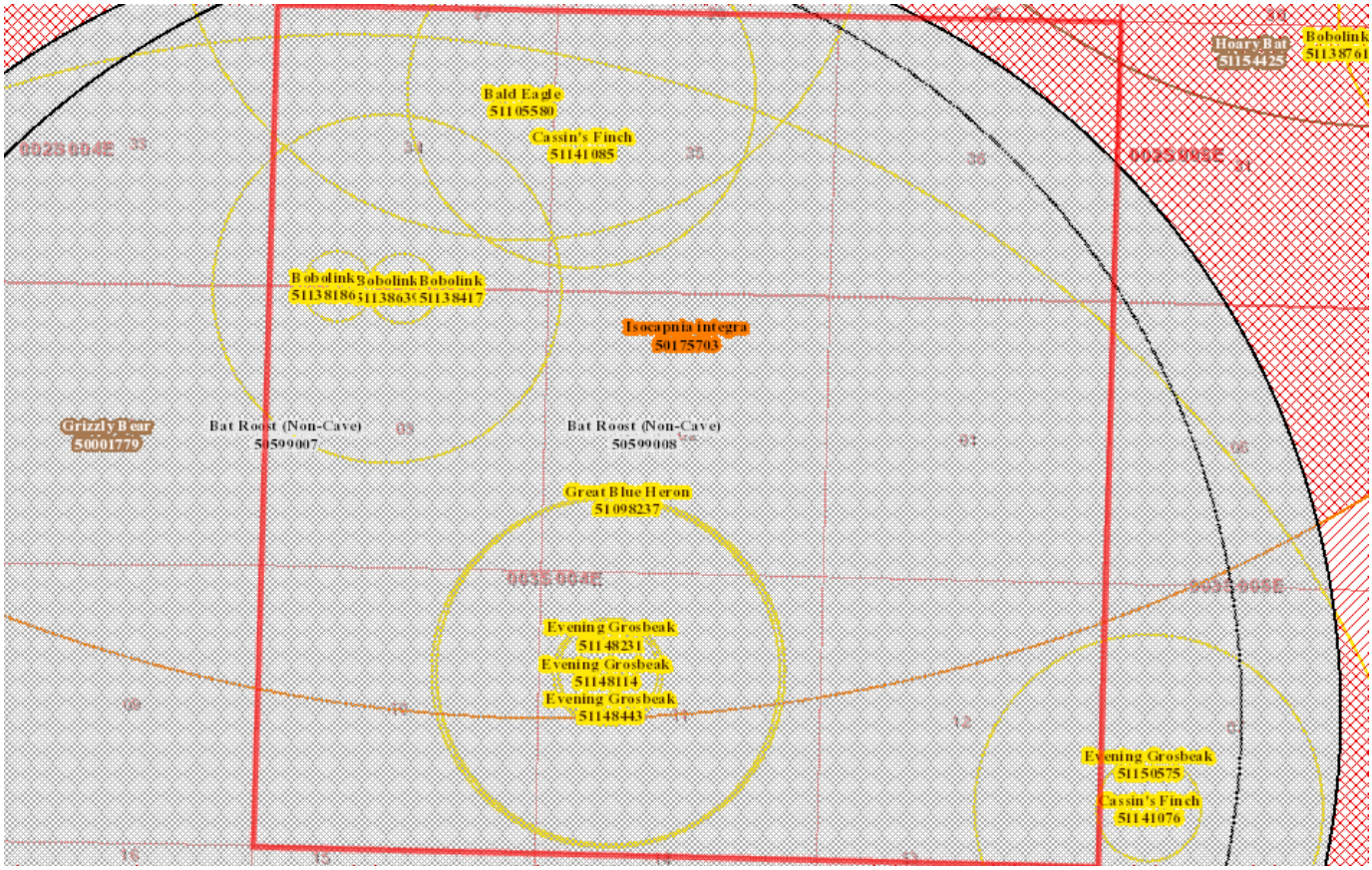
Native Species

Summarized by: **003S004E002** *(Buffered PLSS Section)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predicted Model	Range
B - Veery *(Catharus fuscescens)* SOC		1	1		S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jun 29, 2023)

Predicted Models: O 19% Optimal (inductive), M 30% Moderate (inductive), L 50% Low (inductive)

B - Great Blue Heron *(Ardea herodias)* SOC		1	13		Y S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 6,500 meters in order to be conservative about encompassing the areas commonly used for foraging near the breeding colony and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jun 27, 2023)

Predicted Models: O 19% Optimal (inductive), M 16% Moderate (inductive), L 49% Low (inductive)

B - Bobolink *(Dolichonyx oryzivorus)* SOC		3	4		S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** FWP SWAP: **SGCN3** PIF: **3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 150 meters in order to conservatively encompass male territory size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jun 30, 2023)

Predicted Models: M 76% Moderate (inductive), L 24% Low (inductive)

M - Hoary Bat *(Lasiurus cinereus)* SOC		1			S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3B** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance for the congeneric Lasiurus borealis and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jul 06, 2023)

Predicted Models: M 50% Moderate (inductive), L 50% Low (inductive)

B - Bald Eagle *(Haliaeetus leucocephalus)* SSS — 1 — 25 — Y

Special Status Species - Native Species Global: **G5** State: **S4** USFWS: **BGEPA; MBTA** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)** BLM: **SENSITIVE** PIF: **2**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 2,000 meters in order to be conservative about encompassing the breeding territory and area commonly used for renesting. Only nesting observations with a locational uncertainty of 1,000 meters or less will be used to delineate a nesting area. (Last Updated: Jun 28, 2023)

Predicted Models: M 35% Moderate (inductive), L 53% Low (inductive)

M - Grizzly Bear *(Ursus arctos)* SOC — 1 — Y — H

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **LT** BLM: **THREATENED** FWP SWAP: **SGCN2-3**

Delineation Criteria Species Occurrence polygons represent areas delineated by the U.S. Fish and Wildlife Service (USFWS) that encompass both home ranges and potential transitory movements based on verified sightings. Within these areas, the USFWS wants project proponents to consider whether the species â€œmay be presentâ€ when evaluating the potential impacts of a project and to work with the USFWS to develop and implement best management practices to minimize or eliminate project effects on the species. (Last Updated: Jul 06, 2023)

Predicted Models: L 60% Low (inductive)

B - Lewis's Woodpecker *(Melanerpes lewis)* SOC — 1 — 1 — S — M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA; BCC10; BCC17** USFS: **Species of Conservation Concern in Forests (HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 300 meters in order to encompass the likely foraging area used by breeding adults around the nest tree and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 22, 2023)

Predicted Models: L 57% Low (inductive)

B - Evening Grosbeak *(Coccothraustes vespertinus)* SOC — 4 — 9 — Y — WM

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 1,000 meters in order to encompass the maximum foraging distance from nests reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jun 30, 2023)

Predicted Models: L 32% Low (inductive)

I - Isocapnia integra *(Alberta Snowfly)* SOC — 1 — Not Assessed — Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G4G5** State: **S2**

Delineation Criteria Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 100 meters in order to encompass the home range of the individual as well as adjacent habitat likely to support other individuals and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 22, 2016)

O - Bat Roost (Non-Cave) *(Bat Roost (Non-Cave))* IAH — 2 — Not Assessed

View in Field Guide

Important Animal Habitat - Native Species Global: **GNR** State: **SNR**

Delineation Criteria Confirmed area of occupancy based on the documented presence of adults or juveniles of any bat species at non-cave natural roost sites (e.g. rock outcrops, trees), below ground human created roost sites (e.g. mines), and above ground human created roost sites (e.g., bridges, buildings). Point observation locations are buffered by a distance of 4,500 meters in order to encompass the 95% confidence interval for nightly foraging distance reported for Townsendâ€™s Big-eared Bat (a resident Montana bat Species of Concern) and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Oct 22, 2019)

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Habitat Icons
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Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

Latitude	Longitude
45.58282	-111.16572
45.62833	-111.22824

Native Species

Summarized by: **003S004E002** *(Buffered PLSS Section)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC

Other Observed Species

	USFWS Sec7	# Obs	Predicted Model	Range
M - Uinta Ground Squirrel *(Urocitellus armatus)* PSOC		1		Y
View in Field Guide **View Predicted Models** **View Range Maps** Potential Species of Concern - Native Species Global: **G5** State: **S3S4** FWP SWAP: **SGIN** **Predicted Models:** M 82% Moderate (inductive), L 12% Low (inductive)				
B - Rufous Hummingbird *(Selasphorus rufus)* PSOC		3		S M
View in Field Guide **View Predicted Models** **View Range Maps** Potential Species of Concern - Native Species Global: **G4** State: **S4B** USFWS: **MBTA; BCC10** PIF: **3** **Predicted Models:** M 52% Moderate (inductive), L 30% Low (inductive)				
B - Trumpeter Swan *(Cygnus buccinator)* SOC		1		Y M
View in Field Guide **View Predicted Models** **View Range Maps** Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **MBTA** USFS: **Sensitive - Known in Forests (BD)** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1** **Predicted Models:** M 24% Moderate (inductive), L 64% Low (inductive)				
B - Long-billed Curlew *(Numenius americanus)* SOC		1		S M
View in Field Guide **View Predicted Models** **View Range Maps** Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2** **Predicted Models:** L 97% Low (inductive)				
B - Sharp-tailed Grouse *(Tympanuchus phasianellus)* SOC		1		Y
View in Field Guide **View Predicted Models** **View Range Maps** Species of Concern - Native Species Global: **G5** State: **SX,S4** FWP SWAP: **SGCN1** PIF: **2** **Predicted Models:** L 40% Low (inductive)				
B - Golden Eagle *(Aquila chrysaetos)* SOC		3		Y
View in Field Guide **View Predicted Models** **View Range Maps** Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **BGEPA; MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** **Predicted Models:** L 37% Low (inductive)				
B - Black Rosy-Finch *(Leucosticte atrata)* SOC		3	Not Assessed	Y S M
View in Field Guide **View Range Maps** Species of Concern - Native Species Global: **G4** State: **S2** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN2, SGIN** PIF: **2**				
B - Greater Sage-Grouse *(Centrocercus urophasianus)* SOC		1	Not Assessed	Y
View in Field Guide **View Range Maps** Species of Concern - Native Species Global: **G3G4** State: **S2** USFS: **Sensitive - Known in Forests (BD)** **Species of Conservation Concern in Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **1**				
B - Northern Goshawk *(Accipiter gentilis)* SOC		2	Not Assessed	Y W M
View in Field Guide **View Range Maps** Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **2**				
B - Franklin's Gull *(Leucophaeus pipixcan)* SOC		1	Not Assessed	S M
View in Field Guide **View Range Maps** Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**				
B - Loggerhead Shrike *(Lanius ludovicianus)* SOC		1	Not Assessed	S M
View in Field Guide **View Range Maps** Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**				
B - Gray-crowned Rosy-Finch *(Leucosticte tephrocotis)* SOC		2	Not Assessed	W M
View in Field Guide **View Range Maps** Species of Concern - Native Species Global: **G5** State: **S2** USFWS: **MBTA** FWP SWAP: **SGCN2, SGIN**				
B - Black-and-white Warbler *(Mniotilta varia)* PSOC		1	Not Assessed	M
View in Field Guide **View Range Maps** Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA**				

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Other Potential Species

	USFWS Sec7	Predicted Model	Range
B - Broad-tailed Hummingbird *(Selasphorus platycercus)* PSOC			S M
View in Field Guide · View Predicted Models · View Range Maps Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA; BCC10** FWP SWAP: **SGIN** **Predicted Models:** O 29% Optimal (inductive), M 44% Moderate (inductive), L 27% Low (inductive)			
B - Hooded Merganser *(Lophodytes cucullatus)* PSOC			Y M
View in Field Guide · View Predicted Models · View Range Maps Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2** **Predicted Models:** O 11% Optimal (inductive), M 27% Moderate (inductive), L 62% Low (inductive)			
B - Black-crowned Night-Heron *(Nycticorax nycticorax)* SOC			S M
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3** **Predicted Models:** O 11% Optimal (inductive), M 24% Moderate (inductive), L 50% Low (inductive)			
V - Sidalcea oregana *(Oregon Checker-mallow)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S2S3** USFS: **Species of Conservation Concern in Forests (CG)** Plant Threat Score: **High - Medium** **Predicted Models:** O 11% Optimal (inductive), M 24% Moderate (inductive), L 21% Low (inductive)			
I - Bombus suckleyi *(Suckley Cuckoo Bumble Bee)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G2G3** State: **S1** **Predicted Models:** M 100% Moderate (inductive)			
V - Eleocharis rostellata *(Beaked Spikerush)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (CG, FLAT, HLC)** Plant Threat Score: **Unknown** CCVI: **Less Vulnerable** **Predicted Models:** M 93% Moderate (inductive), L 5% Low (inductive)			
M - Dwarf Shrew *(Sorex nanus)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G4** State: **S2S3** FWP SWAP: **SGCN2-3** **Predicted Models:** M 84% Moderate (inductive), L 16% Low (inductive)			
B - American White Pelican *(Pelecanus erythrorhynchos)* SOC			S M
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3** **Predicted Models:** M 79% Moderate (inductive), L 21% Low (inductive)			
I - Danaus plexippus *(Monarch)* SOC			S
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **C** **Predicted Models:** M 79% Moderate (inductive), L 21% Low (inductive)			
V - Carex crawei *(Crawe's Sedge)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **Low** **Predicted Models:** M 77% Moderate (inductive), L 23% Low (inductive)			
V - Stellaria crassifolia *(Fleshy Stitchwort)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **No Known Threats** **Predicted Models:** M 77% Moderate (inductive), L 22% Low (inductive)			
V - Impatiens aurella *(Pale-yellow Jewel-weed)* SOC			Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G4** State: **S3** Plant Threat Score: **No Known Threats** **Predicted Models:** M 56% Moderate (inductive), L 39% Low (inductive)			
B - Yellow-billed Cuckoo *(Coccyzus americanus)* SOC			S M
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **PS: LT; MBTA** BLM: **THREATENED** FWP SWAP: **SGCN3, SGIN** PIF: **2** **Predicted Models:** M 54% Moderate (inductive), L 44% Low (inductive)			

M - Wyoming Ground Squirrel *(Urocitellus elegans)* PSOC

Potential Species of Concern - Native Species Global: **G5** State: **S3S4**

Predicted Models: M 49% Moderate (inductive), L 51% Low (inductive)

B - White-faced Ibis *(Plegadis chihi)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: M 45% Moderate (inductive), L 41% Low (inductive)

M - North American Porcupine *(Erethizon dorsatum)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S3S4** FWP SWAP: **SGIN**

Predicted Models: M 40% Moderate (inductive), L 60% Low (inductive)

M - Little Brown Myotis *(Myotis lucifugus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** FWP SWAP: **SGCN3**

Predicted Models: M 35% Moderate (inductive), L 65% Low (inductive)

M - Merriam's Shrew *(Sorex merriami)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**

Predicted Models: M 21% Moderate (inductive), L 79% Low (inductive)

B - Barrow's Goldeneye *(Bucephala islandica)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2**

Predicted Models: M 19% Moderate (inductive), L 69% Low (inductive)

V - Castilleja gracillima *(Slender Indian Paintbrush)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S2** Plant Threat Score: **Low** CCVI: **Highly Vulnerable**

Predicted Models: M 19% Moderate (inductive), L 65% Low (inductive)

V - Potentilla plattensis *(Platte Cinquefoil)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** Plant Threat Score: **No Known Threats** CCVI: **Highly Vulnerable**

Predicted Models: M 19% Moderate (inductive), L 37% Low (inductive)

V - Astragalus terminalis *(Railhead Milkvetch)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G3** State: **S2S3** BLM: **SENSITIVE** Plant Threat Score: **Unknown** CCVI: **Moderately Vulnerable**

Predicted Models: M 19% Moderate (inductive)

M - Western Spotted Skunk *(Spilogale gracilis)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **SU** FWP SWAP: **SGIN**

Predicted Models: M 13% Moderate (inductive), L 76% Low (inductive)

B - Black Tern *(Chlidonias niger)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: M 11% Moderate (inductive), L 42% Low (inductive)

B - Pileated Woodpecker *(Dryocopus pileatus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: M 11% Moderate (inductive), L 25% Low (inductive)

V - Ranunculus hyperboreus *(High Northern Buttercup)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S3S4**

Predicted Models: M 8% Moderate (inductive), L 71% Low (inductive)

M - Fringed Myotis *(Myotis thysanodes)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predicted Models: M 5% Moderate (inductive), L 73% Low (inductive)

B - American Bittern *(Botaurus lentiginosus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: M 5% Moderate (inductive), L 72% Low (inductive)

B - Black-necked Stilt *(Himantopus mexicanus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: L 98% Low (inductive)

V - Atriplex truncata *(Wedge-leaf Saltbush)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **Unknown**

Predicted Models: L 88% Low (inductive)

M - Spotted Bat *(Euderma maculatum)* SOC

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known in Forests (BD)** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Predicted Models: L 82% Low (inductive)

B - Harlequin Duck *(Histrionicus histrionicus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA** USFS: **Sensitive - Known in Forests (BD, KOOT, LOLO)** FWP SWAP: **SGCN2** PIF: **1**

Predicted Models: L 82% Low (inductive)

B - Meesia triquetra *(Meesia Moss)* SOC

View in Field Guide View Predicted Models View Range Maps

USFS: **Sensitive - Known in Forests (BRT, KOOT)**
Sensitive - Suspected in Forests (LOLO)

Species of Concern - Native Species Global: **G5** State: **S2** **Species of Conservation Concern in Forests (CG, FLAT)**

Predicted Models: L 77% Low (inductive)

B - Black-billed Cuckoo *(Coccyzus erythropthalmus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN** PIF: **2**

Predicted Models: L 77% Low (inductive)

M - Long-legged Myotis *(Myotis volans)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S3**

Predicted Models: L 73% Low (inductive)

M - Silver-haired Bat *(Lasionycteris noctivagans)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G3G4** State: **S4**

Predicted Models: L 67% Low (inductive)

B - Ovenbird *(Seiurus aurocapilla)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** PIF: **3**

Predicted Models: L 65% Low (inductive)

R - Snapping Turtle *(Chelydra serpentina)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native/Non-native Species - (depends on location or taxa) Global: **G5** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Predicted Models: L 65% Low (inductive)

M - Canada Lynx *(Lynx canadensis)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **LT; CH** BLM: **THREATENED** FWP SWAP: **SGCN3**

Predicted Models: L 64% Low (inductive)

M - Long-eared Myotis *(Myotis evotis)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3**

Predicted Models: L 60% Low (inductive)

V - Primula incana *(Mealy Primrose)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **Sensitive - Known in Forests (BD)** Plant Threat Score: **High** CCVI: **Highly Vulnerable**

Predicted Models: L 58% Low (inductive)

V - Dichanthelium acuminatum *(Panic Grass)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **Unknown**

Predicted Models: L 56% Low (inductive)

B - Sage Thrasher *(Oreoscoptes montanus)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: L 52% Low (inductive)

B - Short-eared Owl *(Asio flammeus)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA; BCC11; BCC17** PIF: **3**

Predicted Models: L 50% Low (inductive)

A - Northern Leopard Frog *(Lithobates pipiens)* SOC

View in Field Guide View Predicted Models View Range Maps

USFS: **Sensitive - Known in Forests (KOOT)**

Species of Concern - Native Species Global: **G5** State: **S1,S4** **Sensitive - Suspected in Forests (BRT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN1**

Predicted Models: L 50% Low (inductive)

B - Ferruginous Hawk *(Buteo regalis)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: L 49% Low (inductive)

M - North American Water Vole *(Microtus richardsoni)* PSOC

Potential Species of Concern - Native Species Global: **G5** State: **S4**

Predicted Models: L 46% Low (inductive)

A - Western Toad *(Anaxyrus boreas)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Predicted Models: L 39% Low (inductive)

B - Brewer's Sparrow *(Spizella breweri)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: L 35% Low (inductive)

B - Common Poorwill *(Phalaenoptilus nuttallii)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**

Predicted Models: L 32% Low (inductive)

V - Cypripedium parviflorum *(Small Yellow Lady's-slipper)* PSOC

View in Field Guide View Predicted Models View Range Maps

USFS: **Sensitive - Known in Forests (KOOT, LOLO)**
Sensitive - Suspected in Forests (BRT)

Potential Species of Concern - Native Species Global: **G5** State: **S3S4** **Species of Conservation Concern in Forests (CG, HLC)**

Predicted Models: L 30% Low (inductive)

V - Erigeron linearis *(Linear-leaf Fleabane)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **Low** CCVI: **Less Vulnerable**

Predicted Models: L 29% Low (inductive)

I - Zumatrichia notosa *(A Caddisfly)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G2G4** State: **S3**

Predicted Models: L 27% Low (inductive)

B - Western Screech-Owl *(Megascops kennicottii)* PSOC

View in Field Guide View Predicted Models View Range Maps

Potential Species of Concern - Native Species Global: **G4G5** State: **S3S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**

Predicted Models: L 26% Low (inductive)

V - Stipa lettermanii *(Letterman's Needlegrass)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1S3** USFS: **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **No Known Threats**

Predicted Models: L 24% Low (inductive)

R - Western Milksnake *(Lampropeltis gentilis)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Predicted Models: L 22% Low (inductive)

F - Yellowstone Cutthroat Trout *(Oncorhynchus clarkii bouvieri)* SOC

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native/Non-native Species - (depends on location or taxa) Global: **G5T4** State: **S2** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Predicted Models: I 30% Suitable (introduced range) (deductive)

B - Sprague's Pipit *(Anthus spragueii)* SOC

7 Not Assessed

View in Field Guide View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **1**

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Structured Surveys

Summarized by: **003S004E002** *(Buffered PLSS Section)*

The Montana Natural Heritage Program (MTNHP) records information on the locations where more than 80 different types of well-defined repeatable survey protocols capable of detecting an animal species or suite of animal species have been conducted by state, federal, tribal, university, or private consulting biologists. Examples of structured survey protocols tracked by MTNHP include: visual encounter and dip net surveys for pond breeding amphibians, point counts for birds, call playback surveys for selected bird species, visual surveys of migrating raptors, kick net stream reach surveys for macroinvertebrates, visual encounter cover object surveys for terrestrial mollusks, bat acoustic or mist net surveys, pitfall and/or snap trap surveys for small terrestrial mammals, track or camera trap surveys for large mammals, and trap surveys for turtles. Whenever possible, photographs of survey locations are stored in MTNHP databases.

MTNHP does not typically manage information on structured surveys for plants; surveys for invasive species may be a future exception.

Within the report area you have requested, structured surveys are summarized by the number of each type of structured survey protocol that has been conducted, the number of species detections/observations resulting from these surveys, and the most recent year a survey has been conducted.

A-Nocturnal Calling Amphibian *(Nocturnal Breeding Amphibian Calling Survey)*	**Survey Count**: 3	**Obs Count**:	**Recent Survey**: 2010
E-Eastern Heath Snail *(Eastern Heath Snail Survey)*	**Survey Count**: 1	**Obs Count**:	**Recent Survey**: 2012
E-Eurasian Water-milfoil Rake *(Rake tows/pulls for Eurasian Water-milfoil)*	**Survey Count**: 2	**Obs Count**:	**Recent Survey**: 2020
E-Invasive Mussel Plankton Tow *(Plankton tows for veligers of Invasive Mussels)*	**Survey Count**: 6	**Obs Count**:	**Recent Survey**: 2022
E-Kicknet *(Kicknet Collection Survey for Invasive Mussels and Snails)*	**Survey Count**: 5	**Obs Count**:	**Recent Survey**: 2022
E-Noxious Weed, Road-based *(Noxious Weed Road-based Visual Surveys)*	**Survey Count**: 4	**Obs Count**: 14	**Recent Survey**: 2004
E-Noxious Weed, Visual *(Noxious Weed Visual Surveys)*	**Survey Count**: 2	**Obs Count**: 30	**Recent Survey**: 2009
E-Visual Aquatic Invasives *(Visual Encounter Surveys for Aquatic Invasives on Shorelines or Underwater)*	**Survey Count**: 4	**Obs Count**:	**Recent Survey**: 2022
F-Fish Other Survey *(Fish Other Survey (FWP Survey Type))*	**Survey Count**: 3	**Obs Count**: 1	**Recent Survey**: 1951
I-Bumble Bee *(Bumble Bee Collection Surveys)*	**Survey Count**: 1	**Obs Count**: 1	**Recent Survey**: 1993
I-Odonates/Butterfly VES *(Visual Encounter Survey for Damselfly/Dragonfly/Butterfly)*	**Survey Count**: 2	**Obs Count**: 4	**Recent Survey**: 1987
M-Bat Roost (Active Season) *(Bat Roost (Active Season) Survey)*	**Survey Count**: 3	**Obs Count**: 2	**Recent Survey**: 2019
P-Algal scraping *(Algal Scraping)*	**Survey Count**: 4	**Obs Count**: 203	**Recent Survey**: 2002

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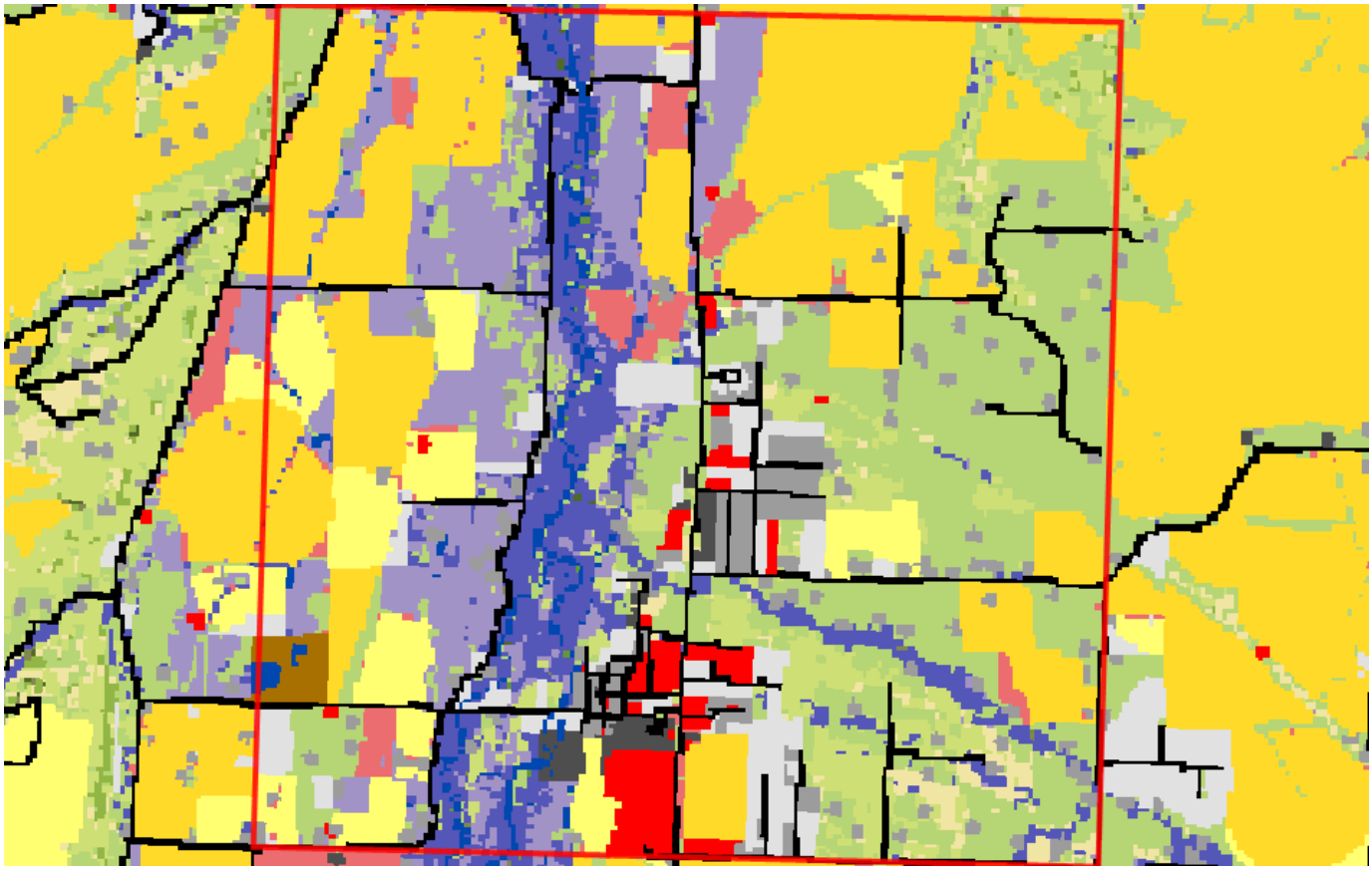
Land Cover

Summarized by: **003S004E002** *(Buffered PLSS Section)*



23% (*1,308 Acres*)

Human Land Use
Agriculture
Cultivated Crops

These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.

22% (*1,293 Acres*)

Grassland Systems
Montane Grassland
Rocky Mountain Lower Montane, Foothill, and Valley Grassland

This grassland system of the northern Rocky Mountains is found at lower montane to foothill elevations in mountains and valleys throughout Montana. These grasslands are floristically similar to Big Sagebrush Steppe but are defined by shorter summers, colder winters, and young soils derived from recent glacial and alluvial material. They are found at elevations from 548 - 1,650 meters (1,800-5,413 feet). In the lower montane zone, they range from small meadows to large open parks surrounded by conifers; below the lower treeline, they occur as extensive foothill and valley grasslands. Soils are relatively deep, fine-textured, often with coarse fragments, and non-saline. Microphytic crust may be present in high-quality occurrences. This system is typified by cool-season perennial bunch grasses and forbs (>25%) cover, with a sparse shrub cover (<10%). Rough fescue (*Festuca campestris*) is dominant in the northwestern portion of the state and Idaho fescue (*Festuca idahoensis*) is dominant or co-dominant throughout the range of the system. Bluebunch wheatgrass (*Pseudoroegneria spicata*) occurs as a co-dominant throughout the range as well, especially on xeric sites. Western wheatgrass (*Pascopyrum smithii*) is consistently present, often with appreciable coverage (>10%) in lower elevation occurrences in western Montana and virtually always present, with relatively high coverages (>25%), on the edge of the Northwestern Great Plains region. Species diversity ranges from a high of more than 50 per 400 square meter plot on mesic sites to 15 (or fewer) on xeric and disturbed sites. Most occurrences have at least 25 vascular species present. Farmland conversion, noxious species invasion, fire suppression, heavy grazing and oil and gas development are major threats to this system.

11% (*645 Acres*)

Alpine-Montane Wet Meadow

These moderate-to-high-elevation systems are found throughout the Rocky Mountains, dominated by herbaceous species found on wetter sites with very low-velocity surface and subsurface flows. Occurrences range in elevation from montane to alpine at 1,000 to 3,353 meters (3,280-11,000 feet). This system typically occurs in cold, moist basins, seeps and alluvial terraces of headwater streams or as a narrow strip adjacent to alpine lakes (Hansen et al., 1996). Wet meadows are typically found on flat areas or gentle slopes, but may also occur on sub-irrigated sites with slopes up to 10 percent. In alpine regions, sites are typically small depressions located below late-melting snow patches or on snowbeds. The growing season may only last for one to two months. Soils of this system may be mineral or organic. In either case, soils show typical hydric soil characteristics, including high organic content and/or low chroma and redoximorphic features. This system often occurs as a mosaic of several plant associations, often dominated by graminoids such as tufted hairgrass (*Deschampsia caespitosa*), and a diversity of montane or alpine sedges such as small-head sedge (*Carex illota*), small-winged sedge (*Carex microptera*), black alpine sedge (*Carex nigricans*), Holmâ€™s Rocky Mountain sedge (*Carex scopulorum*) shortstalk sedge (*Carex podocarpa*) and Paysonâ€™s sedge (*Carex paysonis*). Drummondâ€™s rush (*Juncus drummondii*), Mertenâ€™s rush (*Juncus mertensianus*), and high elevation bluegrasses (*Poa arctica* and *Poa alpina*) are often present. Forbs such as arrow-leaf groundsel (*Senecio triangularis*), slender-sepal marsh marigold (*Caltha leptosepala*), and spreading globeflower (*Trollius laxus*) often form high cover in higher elevation meadows. Wet meadows are associated with snowmelt and are usually not subjected to high disturbance events such as flooding.

8% (*474 Acres*)

Wetland and Riparian Systems
Floodplain and Riparian

Rocky Mountain Lower Montane-Foothill Riparian Woodland and Shrubland

This ecological system is found throughout the Rocky Mountain and Colorado Plateau regions. In Montana, it ranges from approximately 945 to 2,042 meters (3,100 to 6,700 feet), characterristically occuring as a mosaic of multiple communities that are tree-dominated with a diverse shrub component. It is dependent on a natural hydrologic regime, especially annual to episodic flooding. Occurrences are found within the flood zone of rivers, on islands, sand or cobble bars, and on immediate streambanks. It can form large, wide occurrences on mid-channel islands in larger rivers or narrow bands on small, rocky canyon tributaries and well-drained benches. It is also typically found in backwater channels and other perennially wet but less scoured sites, such as floodplains swales and irrigation ditches. In some locations, occurrences extend into moderately high intermountain basins where the adjacent vegetation is sage steppe. Dominant trees may include boxelder maple (*Acer negundo*), narrowleaf cottonwood (*Populus angustifolia*), Plains cottonwood (*Populus deltoides*), Douglas-fir (*Pseudotsuga menziesii*), peachleaf willow (*Salix amygdaloides*), or Rocky Mountain juniper (*Juniperus scopulorum*). Dominant shrubs include Rocky Mountain maple (*Acer glabrum*), thinleaf alder (*Alnus incana*), river birch (*Betula occidentalis*), redoiser dogwood (*Cornus sericea*), hawthorne (*Crataegus spp.*), chokecherry (*Prunus virginiana*), skunkbush sumac (*Rhus trilobata*), Drummondâ€™s willow (*Salix drummondiana*), sandbar willow (*Salix exigua*), Pacific willow (*Salix lucida*), rose (*Rosa* species), silver buffaloberry (*Shepherdia argentea*), or snowberry (*Symphoricarpos* species). Exotic trees of Russian olive (*Elaeagnus angustifolia*) and saltcedar (*Tamarix* species) may invade some stands in southeastern and south-central Montana.

6% (*357 Acres*)

Human Land Use
Agriculture

Pasture/Hay

These agriculture lands typically have perennial herbaceous cover (e.g. regularly-shaped plantings) used for livestock grazing or the production of hay. There are obvious signs of management such as irrigation and haying that distinguish it from natural grasslands. Identified CRP lands are included in this land cover type.

5% (*314 Acres*)

Human Land Use
Developed

Low Intensity Residential

Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units in rural and suburban areas. Paved roadways may be classified into this category.

5% (*313 Acres*)

Grassland Systems
Montane Grassland

Rocky Mountain Subalpine-Montane Mesic Meadow

This system is restricted to sites from lower montane to subalpine elevations where finely textured soils, snow deposition, or windswept conditions limit tree establishment. Many occurrences are small patches, and are often found in mosaics within woodlands, dense shrublands, or just below alpine communities. Elevations range from 600 to2,011 meters (2,000-6,600 feet) in the northern Rocky Mountains and up to 2,286- 2,682 meters (7,500-8,800 feet) in the mountains of southwestern Montana. This system occurs on gentle to moderate-gradient slopes and in relatively moist habitats. Soils are typically seasonally moist to saturated in the spring, but dry out later in the growing season. At montane elevations, soils are usually clays or silt loams, and some occurrences may have inclusions of hydric soils in low, depressional areas. At subalpine elevations, soils are derived a variety of parent materials, and are usually rocky or gravelly with good aeration and drainage, but with a well developed organic layer. Some occurrences are more heavily dominated by grasses, while others are more dominated by forbs. Common grasses include tufted hairgrass (*Deschampsia caespitosa*), showy oniongrass (*Melica spectabilis*), mountain brome (*Bromus carinatus*), blue wildrye (*Elymus glaucus*), awned sedge (*Carex atherodes*), and small wing sedge (*Carex microptera*). Forb dominated meadows usually comprise a wide species diversity which differs from montane to subalpine elevations. Shrubs such as shrubby cinquefoil (*Dasiphora fruticosa* ssp. *floribunda*) and snowberry (*Symphoricarpos* species) are occasional but not abundant. This system differs from the Rocky Mountain Alpine Montane Wet Meadow system in that it soils dry out by mid-summer.

5% (*280 Acres*)

Human Land Use
Developed

Developed, Open Space

Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. This category often includes highway and railway rights of way and graveled rural roads.

No Image

5% (*264 Acres*)

Human Land Use
Developed

Other Roads

County, city and or rural roads generally open to motor vehicles.

2% (*137 Acres*)

Recently Disturbed or Modified
Introduced Vegetation

Introduced Upland Vegetation - Annual and Biennial Forbland

Land cover is significantly altered/disturbed by introduced annual and biennial forbs. Natural vegetation types are no longer recognizable. Typical species that dominate these areas are knapweed, oxeye daisy, Canada thistle, leafy spurge, pepperweed, and yellow sweetclover.

No Image

2% (*130* Acres)

Human Land Use
Developed
Commercial / Industrial

Businesses, industrial parks, hospitals, airports; utilities in commercial/industrial areas.

2% (*88* Acres)

Wetland and Riparian Systems
Open Water
Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil

Additional Limited Land Cover

1% (*71 Acres*) Montane Sagebrush Steppe

1% (*48 Acres*) High Intensity Residential

1% (*37 Acres*) Major Roads

1% (*33 Acres*) Quarries, Strip Mines and Gravel Pits

<1% (*7 Acres*) Rocky Mountain Montane-Foothill Deciduous Shrubland

<1% (*3 Acres*) Rocky Mountain Lodgepole Pine Forest

<1% (*3 Acres*) Aspen Forest and Woodland

<1% (*2 Acres*) Big Sagebrush Steppe

<1% (*1 Acres*) Rocky Mountain Montane Douglas-fir Forest and Woodland

<1% (*1 Acres*) Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland

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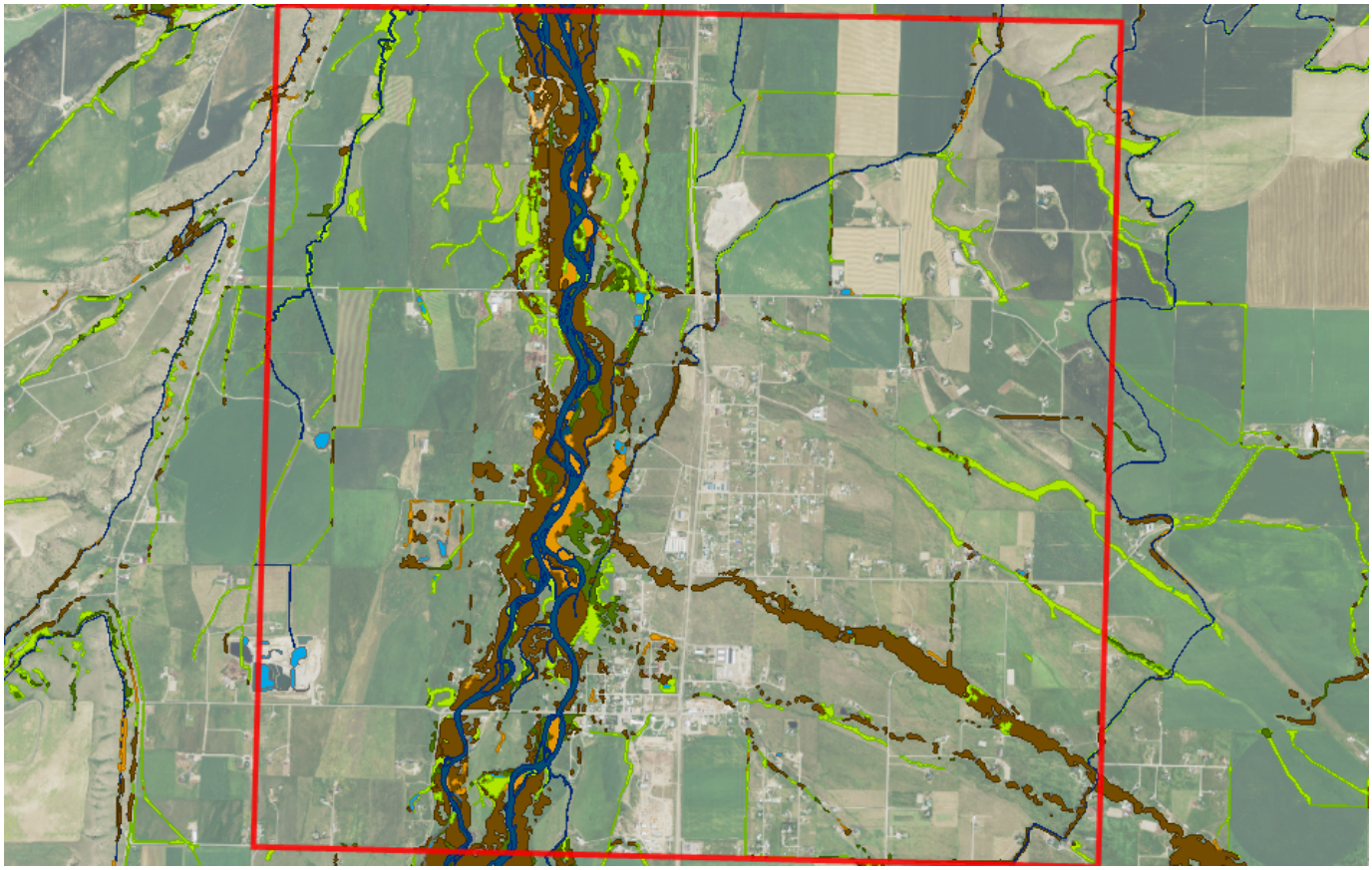
Wetland and Riparian

Summarized by: **003S004E002** *(Buffered PLSS Section)*



Wetland and Riparian Mapping

Explain

P - Palustrine

UB - Unconsolidated Bottom

P - Palustrine, UB - Unconsolidated Bottom
Wetlands where mud, silt or similar fine particles cover at least 25% of the bottom, and where vegetation cover is less than 30%.

F - Semipermanently Flooded	7 Acres	
x - Excavated	**7 Acres**	**PUBFx**

AB - Aquatic Bed

P - Palustrine, AB - Aquatic Bed
Wetlands with vegetation growing on or below the water surface for most of the growing season.

F - Semipermanently Flooded	8 Acres	
(no modifier)	**1 Acres**	**PABF**
h - Diked/Impounded	**1 Acres**	**PABFh**
x - Excavated	**6 Acres**	**PABFx**

EM - Emergent

P - Palustrine, EM - Emergent
Wetlands with erect, rooted herbaceous vegetation present during most of the growing season.

A - Temporarily Flooded	126 Acres	
(no modifier)	**108 Acres**	**PEMA**
h - Diked/Impounded	**1 Acres**	**PEMAh**
x - Excavated	**17 Acres**	**PEMAx**
C - Seasonally Flooded	50 Acres	
(no modifier)	**22 Acres**	**PEMC**
h - Diked/Impounded	**1 Acres**	**PEMCh**
x - Excavated	**27 Acres**	**PEMCx**
F - Semipermanently Flooded	1 Acres	
(no modifier)	**<1 Acres**	**PEMF**
h - Diked/Impounded	**<1 Acres**	**PEMFh**
x - Excavated	**1 Acres**	**PEMFx**

SS - Scrub-Shrub

P - Palustrine, SS - Scrub-Shrub
Wetlands dominated by woody vegetation less than 6 meters (20 feet) tall. Woody vegetation includes tree saplings and trees that are stunted due to environmental conditions.

A - Temporarily Flooded	49 Acres	
(no modifier)	**46 Acres**	**PSSA**
x - Excavated	**3 Acres**	**PSSAx**
C - Seasonally Flooded	5 Acres	
(no modifier)	**1 Acres**	**PSSC**
x - Excavated	**4 Acres**	**PSSCx**

R - Riverine (Rivers)

2 - Lower Perennial

F - Semipermanently Flooded — 1 Acres
x - Excavated — **1 Acres** R2UBFx

H - Permanently Flooded — 85 Acres
(no modifier) — **85 Acres** R2UBH

R - Riverine (Rivers), 2 - Lower Perennial, UB - Unconsolidated Bottom
Stream channels where the substrate is at least 25% mud, silt or other fine particles.

US - Unconsolidated Shore

A - Temporarily Flooded — 9 Acres
(no modifier) — **9 Acres** R2USA

C - Seasonally Flooded — 12 Acres
(no modifier) — **12 Acres** R2USC

R - Riverine (Rivers), 2 - Lower Perennial, US - Unconsolidated Shore
Shorelines with less than 75% areal cover of stones, boulders, or bedrock and less than 30% vegetation cover. The area is also irregularly exposed due to seasonal or irregular flooding and subsequent drying.

3 - Upper Perennial

UB - Unconsolidated Bottom

F - Semipermanently Flooded — 5 Acres
x - Excavated — **5 Acres** R3UBFx

R - Riverine (Rivers), 3 - Upper Perennial, UB - Unconsolidated Bottom
Stream channels where the substrate is at least 25% mud, silt or other fine particles.

4 - Intermittent

SB - Stream Bed

C - Seasonally Flooded — 4 Acres
x - Excavated — **4 Acres** R4SBCx

R - Riverine (Rivers), 4 - Intermittent, SB - Stream Bed
Active channel that contains periodic water flow.

Rp - Riparian

1 - Lotic

SS - Scrub-Shrub
(no modifier) — **39 Acres** Rp1SS

Rp - Riparian, 1 - Lotic, SS - Scrub-Shrub
This type of riparian area is dominated by woody vegetation that is less than 6 meters (20 feet) tall. Woody vegetation includes tree saplings and trees that are stunted due to environmental conditions.

FO - Forested
(no modifier) — **368 Acres** Rp1FO

Rp - Riparian, 1 - Lotic, FO - Forested
This riparian class has woody vegetation that is greater than 6 meters (20 feet) tall.

EM - Emergent
(no modifier) — **4 Acres** Rp1EM

Rp - Riparian, 1 - Lotic, EM - Emergent
Riparian areas that have erect, rooted herbaceous vegetation during most of the growing season.

2 - Lentic

SS - Scrub-Shrub
(no modifier) — **<1 Acres** Rp2SS

Rp - Riparian, 2 - Lentic, SS - Scrub-Shrub
This type of riparian area is dominated by woody vegetation that is less than 6 meters (20 feet) tall. Woody vegetation includes tree saplings and trees that are stunted due to environmental conditions.

FO - Forested
(no modifier) — **<1 Acres** Rp2FO

Rp - Riparian, 2 - Lentic, FO - Forested
This riparian class has woody vegetation that is greater than 6 meters (20 feet) tall.

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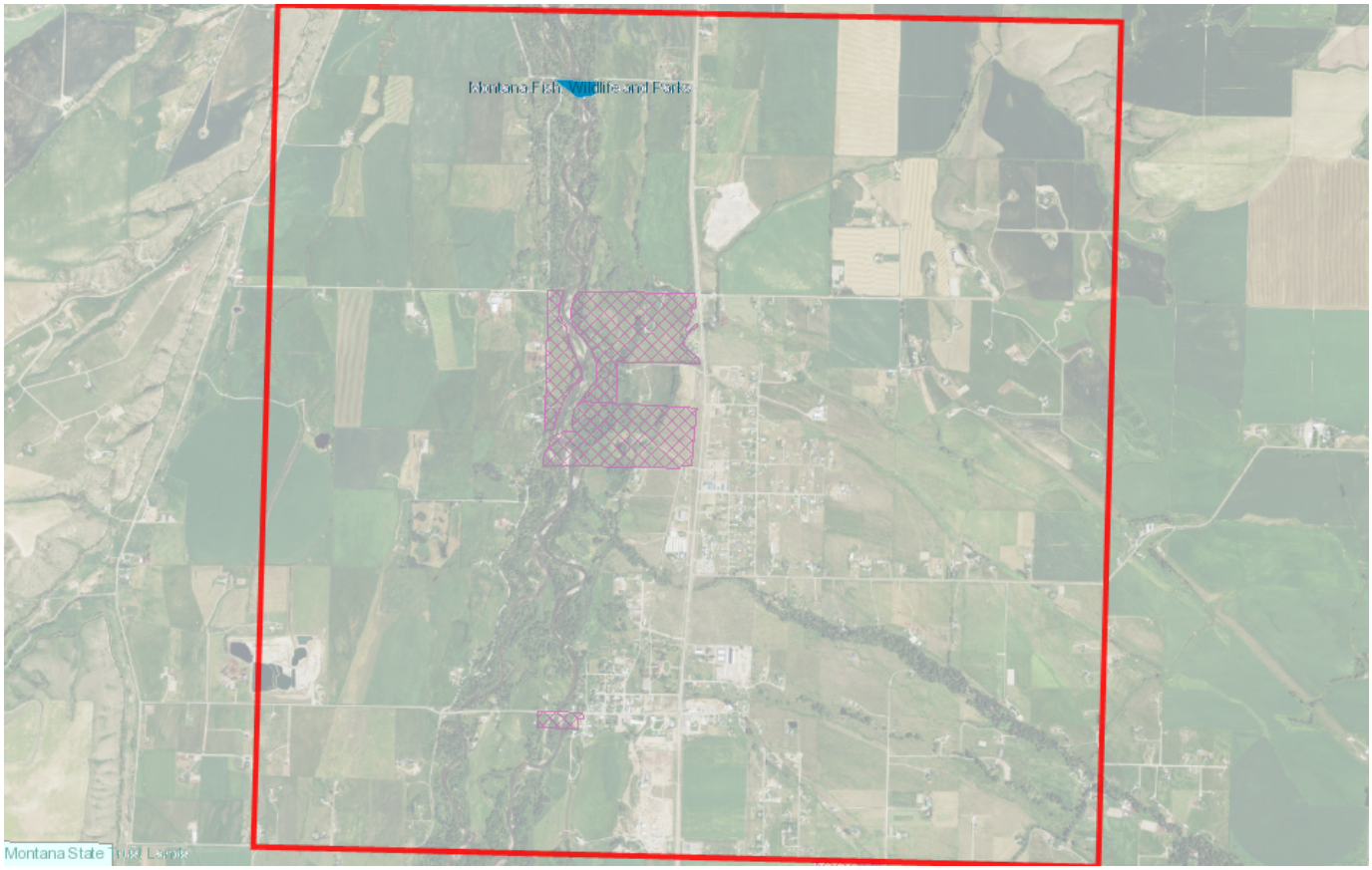
45.62833	-111.22824

Land Management

Summarized by: **003S004E002** *(Buffered PLSS Section)*



Land Management Summary

Explain

	Ownership	Tribal	Easements	Other Boundaries (possible overlap)
Public Lands	**4 Acres (<1%)**			
State	4 Acres (<1%)			
Montana Fish, Wildlife and Parks	4 Acres (<1%)			
MTFWP Owned	4 Acres (<1%)			
MTFWP Fishing Access Sites				4 Acres
Axtell Bridge Fishing Access Site				4 Acres
Conservation Easements			**169 Acres (3%)**	
Private			169 Acres (3%)	
Montana Land Reliance			140 Acres (2%)	
The Nature Conservancy			6 Acres (<1%)	
Gallatin Valley Land Trust			23 Acres (<1%)	
Private Lands or Unknown Ownership	**5,632 Acres (97%)**			

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Biological Reports

Summarized by: **003S004E002** *(Buffered PLSS Section)*

Within the report area you have requested, citations for all reports and publications associated with plant or animal observations in Montana Natural Heritage Program (MTNHP) databases are listed and, where possible, links to the documents are included.

The MTNHP plans to include reports associated with terrestrial and aquatic communities in the future as allowed for by staff resources. If you know of reports or publications associated with species or biological communities within the report area that are not shown in this report, please let us know: mtnhp@mt.gov

- Greater Yellowstone Coordinating Committee. ***GYA Weed Mapping Update and Database Augmentation***. 2000-04.
- Hodgson, J.R. 1970. Ecological distribution of Microtus montanus and Microtus pennsylvanicus in an area of geographic sympatry in southwestern Montana. Ph.D. Dissertation. Bozeman, Montana: Montana State University. 65 p.

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Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- N Non-native

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

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Invasive and Pest Species

Summarized by: **003S004E002** *(Buffered PLSS Section)*

	# Obs	Predicted Model	Range

Aquatic Invasive Species

V - Iris pseudacorus *(Yellowflag Iris)* N2A/AIS

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 37% Optimal (inductive), M 63% Moderate (inductive), L 0% Low (inductive)

V - Myriophyllum spicatum *(Eurasian Water-milfoil)* N2A/AIS

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 11% Moderate (inductive), L 44% Low (inductive)

V - Potamogeton crispus *(Curly-leaf Pondweed)* N2B/AIS

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**

Predicted Models: L 88% Low (inductive)

V - Nymphaea odorata *(American Water-lily)* AIS

View in Field Guide | View Predicted Models | View Range Maps

Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**

Predicted Models: I 68% Suitable (introduced range) (deductive)

Noxious Weeds: Priority 1A

V - Centaurea solstitialis *(Yellow Starthistle)* N1A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 81% Optimal (inductive), M 18% Moderate (inductive), L 1% Low (inductive)

V - Isatis tinctoria *(Dyer's Woad)* N1A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 40% Optimal (inductive), M 58% Moderate (inductive), L 2% Low (inductive)

V - Taeniatherum caput-medusae *(Medusahead)* N1A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1A - Non-native Species Global: **G4G5** State: **SNA**

Predicted Models: L 41% Low (inductive)

Noxious Weeds: Priority 1B

V - Lythrum salicaria *(Purple Loosestrife)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **G5** State: **SNA**

Predicted Models: O 46% Optimal (inductive), M 42% Moderate (inductive), L 12% Low (inductive)

V - Echium vulgare *(Blueweed)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 30% Optimal (inductive), M 52% Moderate (inductive), L 18% Low (inductive)

V - Polygonum cuspidatum *(Japanese Knotweed)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **GNRTNR** State: **SNA**

Predicted Models: M 59% Moderate (inductive), L 40% Low (inductive)

V - Polygonum x bohemicum *(Bohemian Knotweed)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **GNA** State: **SNA**

Predicted Models: L 64% Low (inductive)

V - Cytisus scoparius *(Scotch Broom)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 29% Low (inductive)

Noxious Weeds: Priority 2A

V - Ventenata dubia *(Ventenata)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 40% Optimal (inductive), M 60% Moderate (inductive), L 0% Low (inductive)

V - Rhamnus cathartica *(Common Buckthorn)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 40% Optimal (inductive), M 30% Moderate (inductive), L 15% Low (inductive)

V - Ranunculus acris *(Tall Buttercup)* N2A

Noxious Weed: Priority 2A - Non-native Species Global: **G5** State: **SNA**

Predicted Models: O 39% Optimal (inductive), M 48% Moderate (inductive), L 13% Low (inductive)

V - Iris pseudacorus *(Yellowflag Iris)* N2A/AIS

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 37% Optimal (inductive), M 63% Moderate (inductive), L 0% Low (inductive)

V - Lepidium latifolium *(Perennial Pepperweed)* N2A

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 29% Moderate (inductive), L 59% Low (inductive)

V - Senecio jacobaea *(Tansy Ragwort)* N2A

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 11% Moderate (inductive), L 51% Low (inductive)

V - Myriophyllum spicatum *(Eurasian Water-milfoil)* N2A/AIS

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 11% Moderate (inductive), L 44% Low (inductive)

V - Hieracium aurantiacum *(Orange Hawkweed)* N2A

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 67% Low (inductive)

Noxious Weeds: Priority 2B

V - Lepidium draba *(Whitetop)* N2B 4

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 64% Optimal (inductive), M 35% Moderate (inductive), L 1% Low (inductive)

V - Berteroa incana *(Hoary False-alyssum)* N2B 1

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 31% Optimal (inductive), M 56% Moderate (inductive), L 12% Low (inductive)

V - Cynoglossum officinale *(Common Hound's-tongue)* N2B 6

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 19% Optimal (inductive), M 81% Moderate (inductive)

V - Centaurea diffusa *(Diffuse Knapweed)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 18% Optimal (inductive), M 82% Moderate (inductive), L 0% Low (inductive)

V - Linaria vulgaris *(Yellow Toadflax)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 11% Optimal (inductive), M 53% Moderate (inductive), L 24% Low (inductive)

V - Centaurea stoebe *(Spotted Knapweed)* N2B 41

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 85% Moderate (inductive), L 15% Low (inductive)

V - Tanacetum vulgare *(Common Tansy)* N2B 3

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 82% Moderate (inductive), L 18% Low (inductive)

V - Linaria dalmatica *(Dalmatian Toadflax)* N2B 1

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**

Predicted Models: M 80% Moderate (inductive), L 20% Low (inductive)

V - Convolvulus arvensis *(Field Bindweed)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 71% Moderate (inductive), L 29% Low (inductive)

V - Cirsium arvense *(Canada Thistle)* N2B 24

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**

Predicted Models: M 60% Moderate (inductive), L 40% Low (inductive)

V - Leucanthemum vulgare *(Oxeye Daisy)* N2B 1

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 53% Moderate (inductive), L 47% Low (inductive)

V - Euphorbia virgata *(Leafy Spurge)* N2B

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 52% Moderate (inductive), L 48% Low (inductive)

V - Potentilla recta *(Sulphur Cinquefoil)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 14% Moderate (inductive), L 86% Low (inductive)

V - Potamogeton crispus *(Curly-leaf Pondweed)* N2B/AIS

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**

Predicted Models: L 88% Low (inductive)

V - Tamarix ramosissima *(Salt Cedar)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 62% Low (inductive)

V - Hypericum perforatum *(Common St. John's-wort)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 50% Low (inductive)

V - Acroptilon repens *(Russian Knapweed)* N2B

View in Field Guide View Predicted Models View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 47% Low (inductive)

Regulated Weeds: Priority 3

V - Bromus tectorum *(Cheatgrass)* R3

View in Field Guide View Predicted Models View Range Maps

Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 20% Moderate (inductive), L 61% Low (inductive)

V - Elaeagnus angustifolia *(Russian Olive)* R3

View in Field Guide View Predicted Models View Range Maps

Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 53% Low (inductive)

Biocontrol Species

I - Mecinus janthinus *(Yellow Toadflax Stem-boring Weevil)* BIOCNTRL

View in Field Guide View Predicted Models View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 82% Optimal (inductive), M 18% Moderate (inductive)

I - Mecinus janthiniformis *(Dalmatian Toadflax Stem-boring Weevil)* BIOCNTRL

View in Field Guide View Predicted Models View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 100% Moderate (inductive), L 0% Low (inductive)

I - Aphthona lacertosa *(Brown-legged Leafy Spurge Flea Beetle)* BIOCNTRL

View in Field Guide View Predicted Models View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 96% Moderate (inductive), L 4% Low (inductive)

I - Oberea erythrocephala *(Red-headed Leafy Spurge Stem Borer)* BIOCNTRL

View in Field Guide View Predicted Models View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 64% Moderate (inductive), L 20% Low (inductive)

I - Cyphocleonus achates *(Knapweed Root Weevil)* BIOCNTRL

View in Field Guide View Predicted Models View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 51% Moderate (inductive), L 45% Low (inductive)

I - Aphthona nigriscutis *(Black Dot Leafy Spurge Flea Beetle)* BIOCNTRL

View in Field Guide View Predicted Models View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 34% Moderate (inductive), L 50% Low (inductive)

Introduction to Montana Natural Heritage Program

P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • phone 406.444.5363 • mtnhp.org

Introduction

The Montana Natural Heritage Program (MTNHP) is Montana's source for reliable and objective information on Montana's native species and habitats, emphasizing those of conservation concern. MTNHP was created by the Montana legislature in 1983 as part of the Natural Resource Information System (NRIS) at the Montana State Library (MSL). MTNHP is "a program of information acquisition, storage, and retrieval for data relating to the flora, fauna, and biological community types of Montana" (MCA 90-15-102). MTNHP's activities are guided by statute as well as through ongoing interaction with, and feedback from, principal data source agencies such as Montana Fish, Wildlife, and Parks, the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Montana University System, the US Forest Service, and the US Bureau of Land Management. Since the first staff was hired in 1985, the Program has logged a long record of success, and developed into a highly respected, service-oriented program. MTNHP is widely recognized as one of the most advanced and effective of over 60 natural heritage programs that are distributed across North America.

Vision

Our vision is that public agencies, the private sector, the education sector, and the general public will trust and rely upon MTNHP as the source for information and expertise on Montana's species and habitats, especially those of conservation concern. We strive to provide easy access to our information to allow users to save time and money, speed environmental reviews, and make informed decisions.

Core Values

- We endeavor to be a single statewide source of accurate and up-to-date information on Montana's plants, animals, and aquatic and terrestrial biological communities.
- We actively listen to our data users and work responsively to meet their information and training needs.
- We strive to provide neutral, trusted, timely, and equitable service to all of our information users.
- We make every effort to be transparent to our data users in setting work priorities and providing data products.

Confidentiality

All information requests made to the Montana Natural Heritage Program are considered library records and are protected from disclosure by the Montana Library Records Confidentiality Act (MCA 22-1-11).

Information Managed

Information managed at the Montana Natural Heritage Program is botanical, zoological, and ecological information that describes the distribution (e.g., observations, structured surveys, range polygons, predicted habitat suitability models), conservation status (e.g., global and state conservation status ranks, including threats), and other supporting information (e.g., accounts and references) on the biology and ecology of species and biological communities.

Data Use Terms and Conditions

- Montana Natural Heritage Program (MTNHP) products and services are based on biological data and the objective interpretation of those data by professional scientists. MTNHP does not advocate any particular philosophy of natural resource protection, management, development, or public policy.
- MTNHP has no natural resource management or regulatory authority. Products, statements, and services from MTNHP are intended to inform parties as to the state of scientific knowledge about certain natural resources, and to further develop that knowledge. The information is not intended as natural resource management guidelines or prescriptions or a determination of environmental impacts. MTNHP recommends consultation with appropriate state, federal, and tribal resource management agencies and authorities in the area where your project is located.
- Information on the status and spatial distribution of biological resources produced by MTNHP are intended to inform parties of the state-wide status, known occurrence, or the likelihood of the presence of those resources. **These products are not intended to substitute for field-collected data, nor are they intended to be the sole basis for natural resource management decisions.**
- MTNHP does not portray its data as exhaustive or comprehensive inventories of rare species or biological communities. **Field verification of the absence or presence of sensitive species and biological communities will always be an important obligation of users of our data.**
- MTNHP responds equally to all requests for products and services, regardless of the purpose or identity of the requester.
- Because MTNHP constantly updates and revises its databases with new data and information, products will become outdated over time. Interested parties are encouraged to obtain the most current information possible from MTNHP, rather than using older products. We add, review, update, and delete records on a daily basis. Consequently, we strongly advise that you update your MTNHP data sets at a minimum of every four months for most applications of our information.
- MTNHP data require a certain degree of biological expertise for proper analysis, interpretation, and application. Our staff is available to advise you on questions regarding the interpretation or appropriate use of the data that we provide. See Contact Information for MTNHP Staff
- The information provided to you by MTNHP may include sensitive data that if publicly released might jeopardize the welfare of threatened, endangered, or sensitive species or biological communities. This information is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work.
- MTNHP data are made freely available. Duplication of hard-copy or digital MTNHP products with the intent to sell is prohibited without written consent by MTNHP. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to MTNHP.
- MTNHP and appropriate staff members should be appropriately acknowledged as an information source in any third-party product involving MTNHP data, reports, papers, publications, or in maps that incorporate MTNHP graphic elements.
- Sources of our data include museum specimens, published and unpublished scientific literature, field surveys by state and federal agencies and private contractors, and reports from knowledgeable individuals. MTNHP actively solicits and encourages additions, corrections and updates, new observations or collections, and comments on any of the data we provide.
- MTNHP staff and contractors do not enter or cross privately-owned lands without express permission from the landowner. However, the program cannot guarantee that information provided to us by others was obtained under adherence to this policy.

Suggested Contacts for Natural Resource Management Agencies

As required by Montana statute (MCA 90-15), the Montana Natural Heritage Program works with state, federal, tribal, nongovernmental organizations, and private partners to ensure that the latest animal and plant distribution and status information is incorporated into our databases so that it can be used to inform a variety of permitting and planning processes and management decisions. We encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located and review the permitting overviews by the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation and the Index of Environmental Permits for Montana for guidelines relevant to your efforts. In particular, we encourage you to contact the Montana Department of Fish, Wildlife, and Parks for the latest data and management information regarding hunted and high-profile management species and to use the U.S. Fish and Wildlife Service's Information Planning and Consultation (IPAC) website regarding U.S. Endangered Species Act listed Threatened, Endangered, or Candidate species.

For your convenience, we have compiled a list of relevant agency contacts and links below:

Montana Fish, Wildlife, and Parks

Fish Species	Zachary Shattuck zshattuck@mt.gov (406) 444-1231 or Eric Roberts eroberts@mt.gov (406) 444-5334
American Bison Black-footed Ferret Black-tailed Prairie Dog Bald Eagle Golden Eagle Common Loon Least Tern Piping Plover Whooping Crane	Kristian Smucker KSmucker@mt.gov (406) 444-5209
Grizzly Bear Greater Sage Grouse Trumpeter Swan Big Game Upland Game Birds Furbearers	Brian Wakeling brian.wakeling@mt.gov (406) 444-3940
Managed Terrestrial Game Data	Cara Whalen– MFWP Data Analyst cara.whalen@mt.gov (406) 444-3759
Fisheries Data and Nongame Animal Data	Ryan Alger – MFWP Data Analyst ryan.alger@mt.gov (406) 444-5365
Wildlife and Fisheries Scientific Collector's Permits	https://fwp.mt.gov/buyandapply/commercialwildlifeandscientificpermits/scientific Kristina Smucker for Wildlife ksmucker@mt.gov (406) 444-5209 Dave Schmetterling for Fisheries dschmetterling@mt.gov (406) 542-5514
Fish and Wildlife Recommendations for Subdivision Development	Charlie Sperry csperry@mt.gov (406) 444-3888 See https://fwp.mt.gov/conservation/living-with-wildlife/subdivision-recommendations
Regional Contacts  	Region 1 (Kalispell) (406) 752-5501 fwprg12@mt.gov Region 2 (Missoula) (406) 542-5500 fwprg22@mt.gov Region 3 (Bozeman) (406) 577-7900 fwprg3@mt.gov Region 4 (Great Falls) (406) 454-5840 fwprg42@mt.gov Region 5 (Billings) (406) 247-2940 fwprg52@mt.gov Region 6 (Glasgow) (406) 228-3700 fwprg62@mt.gov Region 7 (Miles City) (406) 234-0900 fwprg72@mt.gov

Montana Department of Agriculture
General Contact Information: https://agr.mt.gov/About/Office-Locations/Office-Locations-and-Field-Offices
Noxious Weeds: https://agr.mt.gov/Noxious-Weeds

Montana Department of Environmental Quality
Permitting and Operator Assistance for all Environmental Permits: https://deq.mt.gov/Permitting

Montana Department of Natural Resources and Conservation
Overview of, and contacts for, licenses and permits for state lands, water, and forested lands: https://dnrc.mt.gov/Permits-Services

Stream Permitting (310 permits) and an overview of various water and stream related permits (e.g., Stream Protection Act 124, Federal Clean Water Act 404, Federal Rivers and Harbors Act Section 10, Short-term Water Quality Standard for Turbidity 318 Authorization, etc.).
https://dnrc.mt.gov/Licenses-and-Permits/Stream-Permitting

Wildfire Resources: https://dnrc.mt.gov/Forestry/Wildfire

Bureau of Land Management

Montana Field Office Contacts:

Billings	(406) 896-5013
Butte	(406) 533-7600
Dillon	(406) 683-8000
Glasgow	(406) 228-3750
Havre	(406) 262-2820
Lewistown	(406) 538-1900
Malta	(406) 654-5100
Miles City	(406) 233-2800
Missoula	(406) 329-3914

United States Army Corps of Engineers
Montana Regulatory Office for federal permits related to construction in water and wetlands
https://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/ (406) 441-1375

United States Environmental Protection Agency
Environmental information, notices, permitting, and contacts https://www.epa.gov/mt
Gateway to state resource locators https://www.envcap.org/srl/index.php

United States Fish and Wildlife Service
Information Planning and Conservation (IPAC) website: https://ipac.ecosphere.fws.gov
Montana Ecological Services Field Office: https://www.fws.gov/office/montana-ecological-services (406) 449-5225

United States Forest Service

Regional Office – Missoula, Montana Contacts			
Wildlife Program Leader	Tammy Fletcher	tammy.fletcher2@usda.gov	(406) 329-3086
Wildlife Ecologist	Cara Staab	cara.staab@usda.gov	(406) 329-3677
Aquatic Ecologist	Justin Jimenez	justin.jimenez@usda.gov	(435) 370-6830
TES Program	Lydia Allen	lydia.allen@usda.gov	(406) 329-3558
Interagency Grizzly Bear Coordinator	Scott Jackson	scott.jackson@usda.gov	(406) 329-3664
Regional Botanist	Amanda Hendrix	amanda.hendrix@usda.gov	(651) 447-3016
Regional Vegetation Ecologist	Mary Manning	marry.manning@usda.gov	(406) 329-3304
Invasive Species Program Manager	Michelle Cox	michelle.cox2@usda.gov	(406) 329-3669

Tribal Nations

[Assiniboine & Gros Ventre Tribes – Fort Belknap Reservation]
[Assiniboine & Sioux Tribes – Fort Peck Reservation]
[Blackfeet Tribe - Blackfeet Reservation]
[Chippewa Creek Tribe - Rocky Boy's Reservation]
[Crow Tribe – Crow Reservation]
[Little Shell Chippewa Tribe]
[Northern Cheyenne Tribe – Northern Cheyenne Reservation]
[Salish & Kootenai Tribes - Flathead Reservation]

Natural Heritage Programs and Conservation Data Centers in Surrounding States and Provinces

[Alberta Conservation Information Management System]
[British Columbia Conservation Data Centre]
[Idaho Natural Heritage Program]
[North Dakota Natural Heritage Program]
[Saskatchewan Conservation Data Centre]
[South Dakota Natural Heritage Program]
[Wyoming Natural Diversity Database]

Invasive Species Management Contacts and Information

Aquatic Invasive Species

[Montana Fish, Wildlife, and Parks Aquatic Invasive Species staff]
[Montana Department of Natural Resources and Conservation's Aquatic Invasive Species Grant Program]
[Montana Invasive Species Council (MISC)]
[Upper Columbia Conservation Commission (UC3)]

Noxious Weeds

[Montana Weed Control Association Contacts Webpage]
[Montana Biological Weed Control Coordination Project]
[Montana Department of Agriculture - Noxious Weeds]
[Montana Weed Control Association]
[Montana Fish, Wildlife, and Parks - Noxious Weeds]
[Montana State University Integrated Pest Management Extension]
[Integrated Noxious Weed Management after Wildfires]
[Fire Management and Invasive Plants]

Introduction to Native Species

Within the report area you have requested, separate summaries are provided for: (1) Species Occurrences (SO) for plant and animal Species of Concern, Special Status Species (SSS), Important Animal Habitat (IAH) and some Potential Plant Species of Concern; (2) other observed non Species of Concern or Species of Concern without suitable documentation to create Species Occurrence polygons; and (3) other non-documented species that are potentially present based on their range, predicted suitable habitat model output, or presence of associated habitats. Each of these summaries provides the following information when present for a species: (1) the number of Species Occurrences and associated delineation criteria for construction of these polygons that have long been used for considerations of documented Species of Concern in environmental reviews; (2) the number of observations of each species; (3) the geographic range polygons for each species that the report area overlaps; (4) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (5) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (6) a variety of conservation status ranks and links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers below or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document native and introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are restricted by budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species and biological communities will always be an important obligation of users of our data.**

If you are aware of observation datasets that the MTNHP is missing, please report them to the Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov If you have animal or plant observations that you would like to contribute, you can also submit them via Excel spreadsheets, geodatabases, iNaturalist, or a Survey123 form. Various methods of data submission are reviewed in this playlist of videos: https://www.youtube.com/playlist?list=PLRaydtZpHu2qOHPoSPq9cnM9uXGmEXACx

Observations

The MTNHP manages information on several million animal and plant observations that have been reported by professional biologists and private citizens from across Montana. The majority of these observations are submitted in digital format from standardized databases associated with research or monitoring efforts and spreadsheets of incidental observations submitted by professional biologists and amateur naturalists. At a minimum, accepted observation records must contain a credible species identification (i.e. appropriate geographic range, date, and habitat and, if species are difficult to identify, a photograph and/or notes on key identifying features), a date or date range, observer name, locational information (ideally with latitude and longitude in decimal degrees), notes on numbers observed, and species behavior or habitat use (e.g., is the observation likely associated with reproduction). Bird records are also required to have information associated with date-appropriate breeding or overwintering status of the species observed. MTNHP reviews observation records to ensure that they are mapped correctly, occur within date ranges when the species is known to be present or detectable, occur within the known seasonal geographic range of the species, and occur in appropriate habitats. MTNHP also assigns each record a locational uncertainty value in meters to indicate the spatial precision associated with the record's mapped coordinates. Only records with locational uncertainty values of 10,000 meters or less are included in environmental summary reports and number summaries are only provided for records with locational uncertainty values of 1,000 meters or less.

Species Occurrences

The MTNHP evaluates plant and animal observation records for species of higher conservation concern to determine whether they are worthy of inclusion in the Species Occurrence (SO) layer for use in environmental reviews; observations not worthy of inclusion in this layer include long distance dispersal events, migrants observed away from key migratory stopover habitats, and winter observations. An SO is a polygon depicting what is known about a species occupancy from direct observation with a defined level of locational uncertainty and any inference that can be made about adjacent habitat use from the latest peer-reviewed science. If an observation can be associated with a map feature that can be tracked (e.g., a wetland boundary for a wetland associated plant) then this polygon feature is used to represent the SO. Areas that can be inferred as probable occupied habitat based on direct observation of a species location and what is known about the foraging area or home range size of the species may be incorporated into the SO. Species Occurrences generally belong to one of the following categories:

Plant Species Occurrences

A documented location of a specimen collection or observed plant population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and their spatial proximity likely allows them to interbreed). Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Plant SO's are only created for Species of Concern and Potential Species of Concern.

Animal Species Occurrences

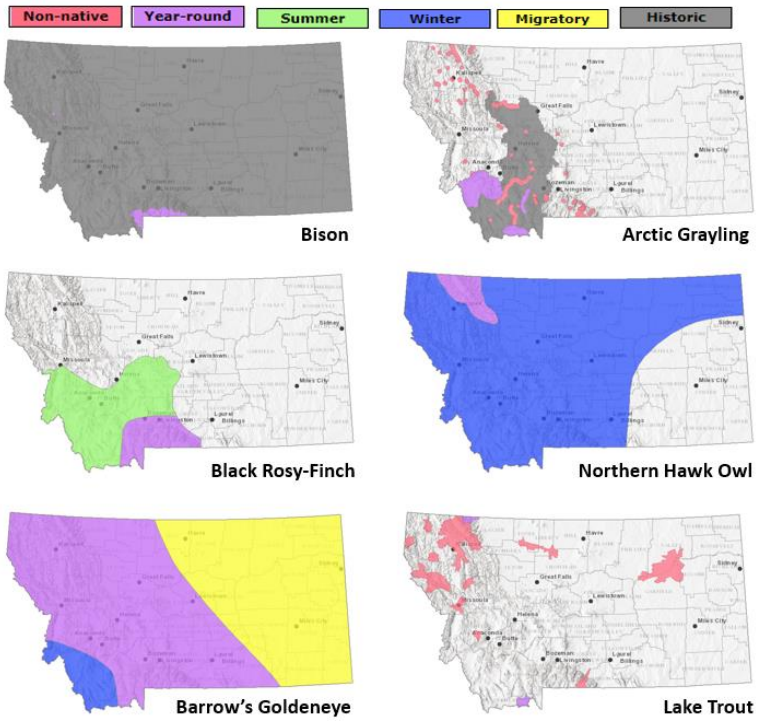
The location of a verified observation or specimen record typically known or assumed to represent a breeding population or a portion of a breeding population. Animal SO's are generally: (1) buffers of terrestrial point observations based on documented species' home range sizes; (2) buffers of stream segments to encompass occupied streams and immediate adjacent riparian habitats; (3) polygonal features encompassing known or likely breeding populations (e.g., a wetland for some amphibians or a forested portion of a mountain range for some wide-ranging carnivores); or (4) combinations of the above. Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Species Occurrence polygons may encompass some unsuitable habitat in some instances in order to avoid heavy data processing associated with clipping out habitats that are readily assessed as unsuitable by the data user (e.g., a point buffer of a terrestrial species may overlap into a portion of a lake that is obviously inappropriate habitat for the species). Animal SO's are only created for Species of Concern and Special Status Species (e.g., Bald Eagle).

Other Occurrence Polygons

These include significant biological features not included in the above categories, such as Important Animal Habitats like bird rookeries and bat roosts, and peatlands or other wetland and riparian communities that support diverse plant and animal communities.

Geographic Range Polygons

Geographic range polygons are still under development for most plant and invertebrate species. Native year-round, summer, winter, migratory and historic geographic range polygons as well as polygons for introduced populations have been defined for most vertebrate animal species for which there are enough observations, surveys, and knowledge of appropriate seasonal habitat use to define them (see examples to left). These native or introduced range polygons bound the extent of known or likely occupied habitats for non-migratory and relative sedentary species and the regular extent of known or likely occupied habitats for migratory and long-distance dispersing species; polygons may include unsuitable intervening habitats. For most species, a single polygon can represent the year-round or seasonal range, but breeding ranges of some colonial nesting water birds and some introduced species are represented more patchily when supported by data. Some ranges are mapped more broadly than actual distributions in order to be visible on statewide maps (e.g., fish).



Predicted Suitable Habitat Models

Predicted habitat suitability models have been created for plant and animal Species of Concern and are undergoing development for non-Species of Concern. For species for which models have been completed, the environmental summary report includes simple rule-based associations with streams for aquatic species and seasonal habitats for game species as well as mathematically complex Maximum Entropy models (Phillips et al. 2006, Ecological Modeling 190:231-259) constructed from a variety of statewide biotic and abiotic layers and presence only data for individual species for most terrestrial species. For the Maximum Entropy models, we reclassified 90 x 90-meter continuous model output into suitability classes (unsuitable, low, moderate, and optimal) then aggregated that into the one square mile hexagons used in the environmental summary report; this is the finest spatial scale we suggest using this information in management decisions and survey planning. Full model write ups for individual species that discuss model goals, inputs, outputs, and evaluation in much greater detail are posted on the MTNHP's Predicted Suitable Habitat Models webpage. Evaluations of predictive accuracy and specific limitations are included with the metadata for models of individual species. **Model outputs should not be used in place of on-the-ground surveys for species. Instead model outputs should be used in conjunction with habitat evaluations to determine the need for on-the-ground surveys for species.** We suggest that the percentage of predicted optimal and moderate suitable habitat within the report area be used in conjunction with geographic range polygons and the percentage of commonly associated habitats to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning.

Associated Habitats

Within the boundary of the intersected hexagons, we provide the approximate percentage of commonly or occasionally associated habitat for vertebrate animal species that regularly breed, overwinter, or migrate through the state; a detailed list of commonly and occasionally associated habitats is provided in individual species accounts in the Montana Field Guide We assigned common or occasional use of each of the ecological

systems mapped in Montana by: (1) using personal knowledge and reviewing literature that summarizes the breeding, overwintering, or migratory habitat requirements of each species; (2) evaluating structural characteristics and distribution of each ecological system relative to the species' range and habitat requirements; (3) examining the observation records for each species in the state-wide point observation database associated with each ecological system; and (4) calculating the percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system to get a measure of numbers of observations versus availability of habitat. Species that breed in Montana were only evaluated for breeding habitat use, species that only overwinter in Montana were only evaluated for overwintering habitat use, and species that only migrate through Montana were only evaluated for migratory habitat use. In general, species were listed as associated with an ecological system if structural characteristics of used habitat documented in the literature were present in the ecological system or large numbers of point observations were associated with the ecological system. However, species were not listed as associated with an ecological system if there was no support in the literature for use of structural characteristics in an ecological system, even if point observations were associated with that system. Common versus occasional association with an ecological system was assigned based on the degree to which the structural characteristics of an ecological system matched the preferred structural habitat characteristics for each species as represented in the scientific literature. The percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system was also used to guide assignment of common versus occasional association.

We suggest that the percentage of commonly associated habitat within the report area be used in conjunction with geographic range polygons and the percentage of predicted optimal and moderate suitable habitat from predictive models to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning. Users of this information should be aware that land cover mapping accuracy is particularly problematic when the systems occur as small patches or where the land cover types have been altered over the past decade. Thus, particular caution should be used when using the associations in assessments of smaller areas (e.g., evaluations of public land survey sections).

Introduction to Land Cover

Land Use/Land Cover is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The layer records all Montana natural vegetation, land cover and land use, classified from satellite and aerial imagery, mapped at a scale of 1:100,000, and interpreted with supporting ground-level data. The baseline map is adapted from the Northwest ReGAP (NWGAP) project land cover classification, which used 30m resolution multi-spectral Landsat imagery acquired between 1999 and 2001. Vegetation classes were drawn from the Ecological System Classification developed by NatureServe (Comer et al. 2003). The land cover classes were developed by Anderson et al. (1976). The NWGAP effort encompasses 12 map zones. Montana overlaps seven of these zones. The two NWGAP teams responsible for the initial land cover mapping effort in Montana were Sanborn and NWGAP at the University of Idaho. Both Sanborn and NWGAP employed a similar modeling approach in which Classification and Regression Tree (CART) models were applied to Landsat ETM+ scenes. The Spatial Analysis Lab within the Montana Natural Heritage Program was responsible for developing a seamless Montana land cover map with a consistent statewide legend from these two separate products. Additionally, the Montana land cover layer incorporates several other land cover and land use products (e.g., MSDI Structures and Transportation themes and the Montana Department of Revenue Final Land Unit classification) and reclassifications based on plot-level data and the latest NAIP imagery to improve accuracy and enhance the usability of the theme. Updates are done as partner support and funding allow, or when other MSDI datasets can be incorporated. Recent updates include fire perimeters and agricultural land use (annually), energy developments such as wind, oil and gas installations (2014), roads, structures and other impervious surfaces (various years): and local updates/improvements to specific ecological systems (e.g., central Montana grassland and sagebrush ecosystems). Current and previous versions of the Land Use/Land Cover layer with full metadata are available for download from the Montana State Library's GIS Data List More information on the land cover layer is available at: https://msl.mt.gov/geoinfo/msdi/land_use_land_cover/

Within the report area you have requested, land cover is summarized by acres of Level 1, Level 2, and Level 3 Ecological Systems.

Literature Cited

Anderson, J.R. E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey Professional Paper 964.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.

Introduction to Wetland and Riparian

Within the report area you have requested, wetland and riparian mapping is summarized by acres of each classification present. Summaries are only provided for modern MTNHP wetland and riparian mapping and not for outdated (NWI Legacy) or incomplete (NWI Scalable) mapping efforts; described here. MTNHP has made all three of these datasets and associated metadata available for separate download on the Montana Wetland and Riparian Framework web page.

Wetland and Riparian mapping is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The wetland and riparian framework layer consists of spatial data representing the extent, type, and approximate location of wetlands, riparian areas, and deep water habitats in Montana.

Wetland and riparian mapping is completed through photointerpretation of 1-m resolution color infrared aerial imagery acquired from 2005 or later. A coding convention using letters and numbers is assigned to each mapped wetland. These letters and numbers describe the broad landscape context of the wetland, its vegetation type, its water regime, and the kind of alterations that may have occurred. Ancillary data layers such as topographic maps, digital elevation models, soils data, and other aerial imagery sources are also used to improve mapping accuracy. Wetland mapping follows the federal Wetland Mapping Standard and classifies wetlands according to the Cowardin classification system of the National Wetlands Inventory (NWI) (Cowardin et al. 1979, FGDC Wetlands Subcommittee 2013). Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands differently than the NWI. Similar coding, based on U.S. Fish and Wildlife Service conventions, is applied to riparian areas (U.S. Fish and Wildlife Service 2009). These are mapped areas where vegetation composition and growth is influenced by nearby water bodies, but where soils, plant communities, and hydrology do not display true wetland characteristics. **These data are intended for use at a scale of 1:12,000 or smaller. Mapped wetland and riparian areas do not represent precise boundaries and digital wetland data cannot substitute for an on-site determination of jurisdictional wetlands.**

See detailed overviews, with examples, of both wetland and riparian classification systems and associated codes as a storymap and companion guide

Literature Cited

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, FWS/OBS-79/31. Washington, D.C. 103pp.

Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, D.C.

U.S. Fish and Wildlife Services. 2009. A system for mapping riparian areas in the western United States. Division of Habitat and Resource Conservation, Branch of Resource and Mapping Support, Arlington, Virginia.

Introduction to Land Management

Within the report area you have requested, land management information is summarized by acres of federal, state, and local government lands, tribal reservation boundaries, private conservation lands, and federal, state, local, and private conservation easements. Acreage for "Owned", "Tribal", or "Easement" categories represents non-overlapping areas that may be totaled. However, "Other Boundaries" represents managed areas such as National Forest boundaries containing private inholdings and other mixed ownership which may cause boundaries to overlap (e.g. a wilderness area within a forest). Therefore, acreages may not total in a straight-forward manner.

Because information on land stewardship is critical to effective land management, the Montana Natural Heritage Program (MTNHP) began compiling ownership and management data in 1997. The goal of the Montana Land Management Database is to manage a single, statewide digital data set that incorporates information from both public and private entities. The database assembles information on public lands, private conservation lands, and conservation easements held by state and federal agencies and land trusts and is updated on a regular basis. Since 2011, the Information Management group in the Montana State Library's Digital Library Division has led the Montana Land Management Database in partnership with the MTNHP.

Public and private conservation land polygons are attributed with the name of the entity that owns it. The data are derived from the statewide Montana Cadastral Parcel layer Conservation easement data shows land parcels on which a public agency or qualified land trust has placed a conservation easement in cooperation with the landowner. The dataset contains no information about ownership or status of the mineral estate. For questions about the dataset or to report errors, please contact the Montana Natural Heritage Program at (406) 444-5363 or mtnhp@mt.gov. You can download various components of the Land Management Database and view associated metadata at the Montana State Library's GIS Data List at the following links:

Public Lands
Conservation Easements
Private Conservation Lands
Managed Areas

Map features in the Montana Land Management Database or summaries provided in this report are not intended as a legal depiction of public or private surface land ownership boundaries and should not be used in place of a survey conducted by a licensed land surveyor. Similarly, map features do not imply public access to any lands. The Montana Natural Heritage Program makes no representations or warranties whatsoever with respect to the accuracy or completeness of this data and assumes no responsibility for the suitability of the data for a particular purpose. The Montana Natural Heritage Program will not be liable for any damages incurred as a result of errors displayed here. Consumers of this information should review or consult the primary data and information sources to ascertain the viability of the information for their purposes.

Introduction to Invasive and Pest Species

Within the report area you have requested, separate summaries are provided for: Aquatic Invasive Species, Noxious Weeds, Agricultural Pests, Forest Pests, and Biocontrol species that have been documented or potentially occur there based on the predicted suitability of habitat. Definitions for each of these invasive and pest species categories can be found on our Species Status Codes page.

Each of these summaries provides the following information when present for a species: (1) the number of observations of each species; (2) the geographic range polygons for each species, if developed, that the report area overlaps; (3) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (4) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (5) links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers under the Introduction to Native Species above or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what invasive and pest species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are limited, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species will always be an important obligation of users of our data.**

If you are aware of observation or survey datasets for invasive or pest species that the MTNHP is missing, please report them to the Program Coordinator bmaxell@mt.gov Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov If you have animal or plant observations that you would like to contribute, you can also submit them via Excel spreadsheets, geodatabases, iNaturalist, or a Survey123 form. Various methods of data submission are reviewed in this playlist of videos:
https://www.youtube.com/playlist?list=PLRaydtZpHu2qOHPoSPq9cnM9uXGmEXACx

Additional Information Resources

- MTNHP Staff Contact Information
- Montana Field Guide
- MTNHP Species of Concern Report - Animals and Plants
- MTNHP Species Status Codes - Explanation
- MTNHP Predicted Suitable Habitat Models (for select Animals and Plants)
- MTNHP Request Information page
- Montana Cadastral
- Montana Code Annotated
- Montana Fisheries Information System
- Montana Fish, Wildlife, and Parks Subdivision Recommendations
- Montana GIS Data Layers
- Montana GIS Data Bundler
- Montana Greater Sage-Grouse Project Submittal Site
- Montana Ground Water Information Center
- Montana Index of Environmental Permits, 21st Edition (2018)
- Montana Environmental Policy Act (MEPA)
- Montana Environmental Policy Act Analysis Resource List
- Laws, Treaties, Regulations, and Agreements on Animals and Plants
- Montana Spatial Data Infrastructure Layers
- Montana State Historic Preservation Office Review and Compliance
- Montana Stream Permitting: a guide for conservation district supervisors and others
- Montana Water Information System
- Montana Web Map Services
- National Environmental Policy Act
- Penalties for Misuse of Fish and Wildlife Location Data (MCA 87-6-222)
- U.S. Fish and Wildlife Service Information for Planning and Consultation (Section 7 Consultation)
- Web Soil Survey Tool

ATTACHMENT D

PROJECT TECHNICAL MEMO

AND TIMELINE

1800 River Drive North
Great Falls, MT 59401

406.761.3010
tdhengineering.com

BUDGET NARRATIVE

Date:	December 29, 2021	**TD&H Job No.:**	21-134-021
Applicant:	Farmers Canal		
Project:	Irrigation Improvements		

The following narrative describes the project background, cost estimating, budget, and permitting for the proposed Farmers Canal Irrigation Improvements project.

TD&H Engineering was asked to provide limited engineering assistance to Farmers Canal Company through the Montana Department of Commerce's CTAP ARPA Engineer Pool program. Farmers requested that TD&H prepare a project scope and budget based on the following:

- 2019 Final Seepage Report and Figures 1 and 3
- Photos and video of the Cottonwood Headgate
- Approximate canal and Cottonwood Headgate dimensions

Project Background

Farmers Canal was incorporated in 1890, and it irrigates about 14,866 acres. Water for Farmers Canal is obtained from the West Gallatin River near Gallatin Gateway, flows for approximately 11 miles to the northeast, and terminates northwest of the Bozeman City limits. The proposed irrigation project began with a 2019 Seepage Study titled Water Efficiency Management for the Farmers Canal, Gallatin County, Montana. This report determined losing and gaining sections of the canal, evaluated the effect of canal seepage on local groundwater levels, and developed conservation options. The report concluded that there is evidence of ground water seepage in the upper canal from Cottonwood Headgate Structure to Blackwood Road, and this area of the canal is not lined. Canal losses in this area ranged from 0.09 cfs/mile to 3.39 cfs/mile. Repairs to the concrete board stabilizer at the Cottonwood Creek Crossing were recommended because the structure that controls flow into Cottonwood Creek is damaged and is no longer structurally sound. The concrete stabilizer was destroyed in 2019; currently, a wood post is used to stabilize the boards.

The Cottonwood Headgate Structure balances flows between Cottonwood Creek and Farmers Canal. During an emergency (canal blowout, structure failure, etc.), this structure is the first relief/drain to the West Gallatin River. The south wall on the Cottonwood Creek side is crumbling, and the flashboards to control flow in the Creek cannot be placed correctly. The north side was lined with steel sheets in the past. There is some rotten wood on the structure. The manual gates can still be operated, but replacement parts are not readily available and must be custom machined. There is possible seepage under the structure; visible bubbling/boiling of the soil has been observed in certain conditions. The concrete aprons may not be large enough. The center concrete support failed in 2019 and was replaced by a wood post. TD&H and Farmers Canal personnel discussed if they would rather

make spot repairs or conduct total replacement. Spot repairs could include lining failed concrete on the south side with steel sheets similar to the north side, repairing concrete through grouting and other methods, and replacing rotten wood. A total replacement may also be worthwhile considering the possible undermining of the structure through seepage. An inspection of the structure by a licensed professional engineer is recommended to determine if repair is possible. Water quality data was obtained from the Montana Ground Water Information Center (GWIC). GWIC data indicates that water in the Farmers Canal, Cottonwood Creek, and the Gallatin River are fairly comparable. Water temperatures were available in Farmers Canal and the Gallatin River and are provided in the attached data.

Results from the 2019 Seepage Study show that the section of canal between Cottonwood Headgate to Blackwood Road constantly loses water ranging from 0.09 cfs/mile to 3.39 cfs/mile. Farmers Canal has prioritized lining the canal from Lehrkind Road to Blackwood Road, which is located within this section of the canal. This length of canal is approximately 1.2 miles. The canal is fairly flat, causing this reach to flow nearly full, which likely contributes to high seepage. Aerial imagery shows green vegetation around the canal, which is expected to be caused by seepage.

Proposed Project

The proposed irrigation system improvements include lining approximately 1.2 miles of the canal to eliminate seepage and replacing the Cottonwood Headgate structure to prevent functional failure through inoperable gates or structural failure caused by the seepage under the structure. Lining the canal would provide stability, reduce water loss due to seepage, control weed growth in the canal bed, and prevent the introduction of soils, salts, and other sediments in this section of canal. Per the US Bureau of Reclamation Research and Development Office, canal lining can reduce seepage, which is especially critical during times of drought, and it can also substantially reduce salinity and selenium in irrigation water.

Reliable headgate structures are required to prevent washouts and canal erosion. Headgate structures can be used to control water quality parameters such as sediment reduction and temperature regulation. In particular, the Cottonwood Headgate is located at the confluence of Cottonwood Creek and the canal, so the structure controls the mixture of Creek and canal water. Failure of the structure would detrimentally affect the quantity and quality of water in Cottonwood Creek.

A brief study phase is recommended prior to designing the proposed improvements. Tasks in the study phase, to be completed by an engineer, may include:

- Cottonwood Headgate:
  - Structural inspection
  - Geotechnical inspection
  - Evaluate repair versus replacement
  - Evaluate the wooden retaining wall adjacent to the structure
  - Evaluate hydraulic capacity and function
  - Detailed permitting review
- Canal Lining
  - Compare canal liner materials
  - Check canal capacity and freeboard

Market Volatility and Cost Estimates

Due to the unprecedented material and labor shortages and surging construction costs caused by COVID-19, providing reliable construction and project cost estimates has become difficult. Feedback from local governments, contractors, and state agencies in Montana caution engineers and local governments to plan and budget conservatively.

Engineer's estimates of probable construction costs (EOPCCs) should be considered a Class 5 estimate according to the Association for the Advancement in Cost Engineering (AACE) estimate class designations. A Class 5 estimate is based on very limited information and is best suited for planning purposes.

The costs are budgetary and conservative, based on recent bid tabulations or supplier quotes where available. Canal liner materials and reinforced concrete are the most significant costs and are highly subject to supplier availability and market forces. EOPCCs are provided in **Tables 1** and **2**.

Table 1
EOPCC Irrigation Improvements - Canal Lining

Item	Quantity	Units	Unit Cost	Cost
Mobilization (5%)	1	LS	$65,000.00	$65,000
Canal Liner Material, Seaming, Installation, and Delivery	640,000	SF	$1.36	$870,400
Crushed Base Course Liner Cover	20,000	CY	$15.00	$300,000
Canal Subgrade Grading and Preparation	1	LS	$60,000.00	$60,000
Cleanup and Restoration	1	LS	$15,000.00	$15,000
Construction Subtotal (rounded up to nearest $5,000)				*$1,315,000*
Contingency			*20%*	*$265,000*
			Total	**$1,580,000**

The Hueskers Canal3 8208 was used as the basis of design for the canal liner. Canal lining material quantity was estimated based on canal dimensions provided by Farmers Canal personnel. Canal liner quantity includes additional material to account for seaming, off-cuts, and anchor trenches. A 12"-thick gravel cover layer is proposed to protect the liner and to allow the Canal Company to remove accumulated sediment. The existing canal will be excavated to allow for installation of the liner and gravel cover.

Table 2 EOPCC Irrigation Improvements - Cottonwood Headgate				
Item	**Quantity**	**Units**	**Unit Cost**	**Cost**
Mobilization (5%)	1	LS	$15,000	$15,000
Reinforced Concrete Headgate and Aprons	1	LS	$140,000	$140,000
Slide Gate	3	EA	$6,000	$18,000
Steel Grate Walkway	2	EA	$3,000	$6,000
Riprap - Class 1	80	CY	$150	$12,000
Channel Grading	1	LS	$8,000	$8,000
Dewatering and Stream Bypass	1	LS	$25,000	$25,000
Restoration and Cleanup	1	LS	$15,000	$15,000
Construction Subtotal (rounded up to nearest $5,000)				*$240,000*
Contingency			*20%*	*$50,000*
Total				**$290,000**

Cottonwood Headgate costs were estimated based on a structure similar in size and function to the existing. The proposed work does not include work to the wooden retaining wall adjacent to the headgate; however, the retaining wall should be investigated during the project study phase.

The headgate is located in both the Farmers Canal and Cottonwood Creek, so water will be present at all times. Stream permitting will be required and some stream bypass and/or dewatering is anticipated as well.

Project Budget Options

Three project budgets have been prepared based on the proposed scope. Both tasks, canal lining and the Cottonwood Headgate, are worthwhile projects; however, budget is an important consideration, so the canal lining and Cottonwood Headgate tasks may be completed as two separate projects to reduce the financial impact to Farmers Canal users. The proposed budget breakdowns, including administrative and activity costs, are provided in Tables 3 through 5.

Table 3
Project Budget
Canal Lining and Cottonwood Headgate

Administrative	
Description	**Estimated Cost**
Grant Management	$40,000
Legal	$10,000
Audit	$15,000
Permits and Fees	$5,000
Subtotal	*$70,000*
Activity Costs	
Description	**Estimated Cost**
Technical Memorandum	$30,000
Preliminary and Final Engineering	$160,000
Environmental Review	$10,000
Construction	$1,555,000
Contingency	$315,000
Subtotal	*$2,070,000*
Project Total	**$2,140,000**

Table 4 Project Budget Canal Lining	
Administrative	
Description	**Estimated Cost**
Grant Management	$30,000
Legal	$10,000
Audit	$15,000
Permits and Fees	$5,000
Subtotal	*$60,000*
Activity Costs	
Description	**Estimated Cost**
Technical Memorandum	$30,000
Preliminary and Final Engineering	$90,000
Environmental Review	$10,000
Construction	$1,315,000
Contingency	$265,000
Subtotal	*$1,710,000*
Project Total	**$1,770,000**

Table 5 Project Budget Cottonwood Headgate	
Administrative	
Description	**Estimated Cost**
Grant Management	$30,000
Legal	$10,000
Audit	$15,000
Permits and Fees	$5,000
Subtotal	*$60,000*
Activity Costs	
Description	**Estimated Cost**
Technical Memorandum	$30,000
Preliminary and Final Engineering	$70,000
Environmental Review	$10,000
Construction	$240,000
Contingency	$50,000
Subtotal	*$400,000*
Project Total	**$460,000**

Administrative Costs

Administrative costs include a variety of tasks and often incorporate assistance from attorneys, accountants, and other specialists. A brief description of the proposed administrative tasks is provided below.

- Grant Management includes the costs to manage the draw requests, documentation, and other required information between the recipient and the funding agencies.
- Legal costs may include preparing and reviewing engineering and construction contracts and a Site Title Opinion.
- An audit will be required if more than $750,000 is received, so the services of an accountant have been included. A single audit may not be required for the Cottonwood Headgate scenario; however, it is been included in case construction bids come in high.
- Permits and fees include, but are not limited to, the MEPA/NEPA process, environmental permit applications and review fees. A discussion of the anticipated environmental permits is provided at the end of this memorandum.

Activity Costs

Activity costs generally include engineering, construction, construction engineering, contingency, and other tasks not considered administrative. A brief description of proposed activity costs is provided below:

- A Technical Memorandum is included in the proposed project to confirm canal lining materials and to inspect and evaluate the Cottonwood Creek structure. Even if the combined project scenario is not selected, the Technical Memorandum's scope can include both so that Farmers Canal will have the information available for a future project or funding application.
- Engineering includes preliminary design, final design, bidding assistance, and inspection services during construction.
- Environmental review including preparation of an Environmental Assessment for MEPA/NEPA compliance.
- Construction costs are considered a Class 5 estimate.
- Contingency is proposed and was calculated to be 20% of the proposed construction costs. A higher percent contingency is proposed due to the market volatility of COVID-19 and the preliminary nature of the construction cost estimates. Materials costs are also a significant portion of the project, so a higher contingency will help accommodate changes in the market.

Preliminary Stream Permitting Review

Environmental permitting is anticipated for the work at the Cottonwood Headgate structure since the structure is located at the confluence of Cottonwood Creek, a natural stream, and the Farmers canal. A preliminary review of environmental and stream permits was performed and is documented in Table 4.

Table 4
Potential Stream Permits

Administrative			
Permit	**Permitting Entity**	**Permit Description – from Montana Guide to Stream Permitting**	**Anticipated?**
310 Permit	Local Conservation District	Private, nongovernmental individual or entity that proposes work in or near a stream on public or private land.	Yes
SPA 124 Permit	FWP Habitat Protection Bureau, Fisheries Division	Any agency or subdivision of federal, state, county, or city government proposing a project that may affect the bed or banks of any stream in Montana.	No
Floodplain Permit	Local Floodplain Administrator	Anyone planning new construction within a designated 100-year floodplain. Check with local planning officials or the Floodplain Management Section of the DNRC to determine whether a 100-year floodplain has been designated for the stream of interest.	No (the Cottonwood Headgate structure is not located in the floodplain) Contact local floodplain administrator to confirm.
404 Permit	ACOE	Any person, agency, or entity, either public or private, proposing a project that will result in the discharge or placement of dredged or fill material into waters of the United States. "Waters of the US" include lakes, rivers, streams (including perennial, intermittent, and ephemeral channels with an ordinary high water mark), wetlands, and other aquatic sites.	Yes Contact ACOE to confirm.
401 Certification	DEQ	In general, projects that require a 404 Permit.	Yes
Section 10 Permit	ACOE	Any person, agency, or entity, either public or private, proposing any alteration of, or any construction activity in, on, under, or over any federally listed navigable water of the United States.	No
318 Authorization	DEQ Water Protection Bureau	Any person, agency, or entity, both public and private, initiating construction activity that will cause short term or temporary violations of state surface water quality standards for turbidity.	Yes Coordinate with DEQ.

Table 4 Potential Stream Permits			
Administrative			
Permit	**Permitting Entity**	**Permit Description – from Montana Guide to Stream Permitting**	**Anticipated?**
Land-Use License or Easement on Navigable Waters	DNRC Land Office	Any entity proposing a project on lands below the low water mark of navigable waters.	No
Water Rights / Change Authorization	DNRC Water Rights Bureau	Any person, agency, or governmental entity intending to acquire new or additional water rights or change an existing water right in the state.	No
Storm Water Discharge Permit Authorization	DEQ Water Protection Bureau	Any person, agency, or entity, either public or private, proposing a construction, industrial, mining, or other defined activity that has a discharge of storm water into surface waters. Under the authority of the Montana WQA, permit authorization is typically obtained under a MPDES “General Permit.”	Yes

GWIC Data

Sample	234315	234313	234202	229842	232061	2011Q1046	2011Q0763	2011Q1027	202229	203560	205298	2011Q1029	2011Q0661
Gwic Id	295970	296037	296037	296037	296037	257437	257437	257437	257349	257349	257349	257349	257349
Site Name	FARMERS CANAL - DOWNSTREAM COTTONWOOD CREEK	FARMERS CANAL - MAIN HEADGATE	FARMERS CANAL - MAIN HEADGATE	FARMERS CANAL - MAIN HEADGATE	FARMERS CANAL - MAIN HEADGATE	COTTONWOOD CREEK AT HERB POTTS * CWCHP	COTTONWOOD CREEK AT HERB POTTS * CWCHP	COTTONWOOD CREEK AT HERB POTTS * CWCHP	WEST GALLATIN AT WILLIAMS BRIDGE * WGWMBR	WEST GALLATIN AT WILLIAMS BRIDGE * WGWMBR	WEST GALLATIN AT WILLIAMS BRIDGE * WGWMBR	WEST GALLATIN AT WILLIAMS BRIDGE * WGWMBR	WEST GALLATIN AT WILLIAMS BRIDGE * WGWMBR
Latitude	45.60067377	45.59565917	45.59565917	45.59565917	45.59565917	45.59675087	45.59675087	45.59675087	45.54042347	45.54042347	45.54042347	45.54042347	45.54042347
Longitude	-111.2020453	-111.2043629	-111.2043629	-111.2043629	-111.2043629	-111.1904586	-111.1904586	-111.1904586	-111.2344708	-111.2344708	-111.2344708	-111.2344708	-111.2344708
Geomethod	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS	SUR-GPS
Datum	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83	NAD83
Basin	AH	AH	AH	AH	AH	AH	AH	AH	AH	AH	AH	AH	AH
Twn	03S	03S	03S	03S	03S	03S	03S	03S	03S	03S	03S	03S	03S
Rng	04E	04E	04E	04E	04E	04E	04E	04E	04E	04E	04E	04E	04E
Sec	2	10	10	10	10	11	11	11	28	28	28	28	28
Q Sec	CCA	BBC	BBC	BBC	BBC	AA	AA	AA	DC	DC	DC	DC	DC
County	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN	GALLATIN
Site Type	DITCH OR CANAL	DITCH OR CANAL	DITCH OR CANAL	DITCH OR CANAL	DITCH OR CANAL	STREAM	STREAM	STREAM	STREAM	STREAM	STREAM	STREAM	STREAM
Agency	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG	MBMG
Sample Date	10/9/2018 10:15	10/9/2018 9:30	9/13/2018 9:13	7/18/2018 9:30	8/16/2018 9:55	4/12/2011 9:45	10/27/2010 9:02	4/11/2011 13:05	7/26/2012 13:50	4/5/2013 10:30	10/8/2013 14:16	4/12/2011 11:40	10/16/2010 13:30
Water Temp			9.1	12.3	12.6				25.6	6.7	7.8	6.3	5.7
Fld pH			7.78	8.27	7.98				8.12	8.35	8.94	8.72	9.06
Fld SC			325	361	295.7				244	309	281	265	315
Lab pH			7.77	8.06	8.21	8.39	8.19	8.48	8.27	7.71	8.04	8.38	8.18
Lab SC			307.72	253.67	298.41	352	212	328	237.2	338	268.56	335	288
Ca (mg/l)			45.08	35.06	40.72	44.1	40.4	38.8	30.28	35.4	35.16	36.6	37.8
Mg (mg/l)			10.95	8.77	10.49	11.6	10.6	10.4	9.44	10.43	11.14	11.5	12
Na (mg/l)			5.33	4.65	5.03	2.37	1.73	1.87	3.84	4.77	4.71	5.02	4.58
K (mg/l)			2	1.74	1.8	1.21	1.22	1.1	1.27	1.91	1.57	1.44	1.51
Fe (mg/l)			<0.015 U	<0.015 U	<0.015 U	<0.005	<0.002	<0.002	<0.015 U	<0.015 U	<0.015 U	0.003	0.005
Mn (mg/l)			0.002 J	0.002 J	<0.002 U	0.001	<0.001	<0.001	<0.002 U	<0.002 U	<0.002 U	0.002	0.001
SiO2 (mg/l)			14.47	13.46	13.54	11.3	11.7	10.6	11.09	11.73	10.94	10.4	11.7
HCO3 (mg/l)			171.04	138.03	154.72	175.6	175.3	172.8	115.63	116.33	125.39	123.9	125.5
CO3 (mg/l)			0	0	1.58	4.41	0	4.31	0	0	0	2.36	0
SO4 (mg/l)			33.58	24.4	34.29	4.48	3.73	4.51	32.88	49.78	43.82	52.97	45.24
Cl (mg/l)			2.37	1.68	2.12	1.15	0.78	1.02	1.15	3.16	1.72	2.62	1.32
NO3-N (mg/l)			0.49	0.26	0.32	0.055	<0.05	<0.05	<0.010 U	<0.010 U	<0.010 U	0.058	<0.05
F (mg/l)			0.1	0.13	0.19	0.056	0.079	0.096	0.17	0.24	0.23	0.252	0.196
OPO4-P (mg/l)			<0.020 U	<0.020 U	<0.020 U	<0.1	<0.1	<0.1	<0.020 U	0.030 J	<0.020 U	<0.1	<0.1
Ag (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Al (ug/l)			<2.000 U	<2.000 U	<2.000 U	<2.0	<2.0	<2.0	1.570 J	2.86	2.610 J	<2.0	<2.0
As (ug/l)			0.64	0.49	0.63	0.587	0.528	0.547	0.78	0.9	0.83	0.884	0.834
B (ug/l)			8.69	5.73	4.02	3.74	3.32	3.35	7.36	10.1	7.34	9.05	8.18
Ba (ug/l)			57.65	44.21	45.54	41.9	35.8	37.5	53.94	39.19	36.83	40.4	38.3
Be (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Br (ug/l)			<10.000 U	<10.000 U	<10.000 U	<50	<50	<50	<10.000 U	<10.000 U	<10.000 U	<50	<50
Cd (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Co (ug/l)			<0.100 U	<0.100 U	<0.100 U	0.551	0.201	0.418	0.100 J	0.280 J	<0.100 U	0.496	0.457
Cr (ug/l)			0.350 J	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	0.190 J	0.230 J	<0.100 U	0.204	<0.2
Cu (ug/l)			<0.500 U	<0.500 U	<0.500 U	0.549	<0.5	<0.5	0.190 J	0.690 J	0.970 J	<0.5	<0.5
Li (ug/l)			2.370 J	<2.000 U	<2.000 U	<2.0	<2.0	<2.0	2.35	2.620 J	2.210 J	3.32	2.79
Mo (ug/l)			0.79	0.63	0.66	0.273	0.286	0.235	0.82	1.03	0.9	1	1.05
Ni (ug/l)			<0.100 U	<0.100 U	<0.100 U	0.247	0.259	3.01	0.64	0.85	0.9	15.7	<0.2
Pb (ug/l)			<0.060 U	<0.060 U	<0.060 U	<0.2	<0.2	<0.2	<0.040 U	<0.060 U	<0.060 U	<0.2	<0.2
Sb (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Se (ug/l)			<0.100 U	<0.100 U	<0.100 U	0.209	<0.2	<0.2	0.330 J	0.390 J	0.340 J	0.363	0.353
Sn (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5	<0.5	<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5
Sr (ug/l)			171.55	144.9	176.56	82.4	77.1	74.5	184.54	207.29	215.8	244	230
Ti (ug/l)			0.460 J	0.53	0.320 J	<0.2	<0.2	<0.2	0.420 J	0.78	0.5	0.697	0.432
Tl (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
U (ug/l)			1.09	0.73	0.79	0.812	0.491	0.69	0.52	0.77	0.66	0.95	0.616
V (ug/l)			1.22	0.83	0.62	1.38	0.958	1.37	0.7	0.63	0.58	0.635	0.592
Zn (ug/l)			<0.500 U	<0.500 U	<0.500 U	<0.5	<1.0	<0.5	<0.200 U	<0.050 U	<0.050 U	1.54	<0.5
Zr (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Ce (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Cs (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5	<0.5	<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5
Ga (ug/l)			3.5	1.83	1.78	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
La (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Nb (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5	<0.5	<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5
Nd (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Pd (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5	<0.5	<0.100 U	<0.100 U	<0.100 U	<0.5	<0.5
Pr (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
Rb (ug/l)			1.04	0.87	0.81	0.8	0.878	0.778	1.15	1.32	1.12	1.35	1.22
Th (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
W (ug/l)			<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2	<0.2	<0.100 U	<0.100 U	<0.100 U	<0.2	<0.2
NO2-N (mg/l)			<0.010 U	<0.010 U	<0.010 U	<0.05	<0.05	<0.05	<0.010 U	<0.010 U	<0.010 U	<0.05	<0.05
NO3+NO2-N (mg/l)			0.46	0.24	0.32	<0.2 P	<0.2 P	<0.2 P	0.97	<0.200 U	<0.200 U	<0.2 P	<0.2 P
Total N as N (mg/l)						<1.0 P	<1.0 P	<1.0 P	1.22	<1.000 U	<1.000 U	<1.0 P	<1.0 P
OH (mg/l)			0	0	0				0	0	0		
SO3 (mg/l)													
Total Dissolved Solids (mg/l)	0	0	197.2665	157.8103	186.5647	165.4005	157.2069	158.4217	146.8629	174.9759	171.8764	183.1857	176.869
Sum Dissolved Constituents (mg/l)	0	0	284.03	227.83	265.21	254.701	246	246.2	205.72	233.833	235.3	246.102	240.8
Hardness (mg/l)	0.0001	0.0001	157.635	123.6421	144.8547	157.8633	144.5084	139.69	114.4642	131.3237	133.6468	138.7242	143.7786
Alkalinity (mg/l)	0	0	140.2492	113.1836	130.4623	151.0217	143.5299	148.5612	95.1398	95.1398	102.5214	105.037	103.3415
SAR	0	0	0.1733	0.1957	0.1808	0.0693	0.0724	0.0736	0.1627	0.1899	0.1882	0.1847	0.1814
TSS													
Procedure	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED	DISSOLVED

ARPA Water & Sewer Infrastructure Grant Program

Project Schedule

Use this document throughout the application and grant period to track the status of project milestones. Documentation associated with each milestone should be included in the ARPA application and/or submitted to the ARPA Grant Manager throughout the project.

	Applicable to Project? (Yes/No)	ESTIMATED Completion Date	ACTUAL Completion Date	Comments
ENGINEERING PROCUREMENT*				
Project Engineer procured and engineering contract executed.	Yes	11/2023		In Progress
Other:				
PLANNING & DESIGN*				
Preliminary design document completed (PER or Tech Memo).	Yes		12/2021	
DEQ Review: Plans and Specifications SUBMITTED to DEQ.	No			No DEQ Review Required
DEQ Review: Plans and Specifications APPROVED by DEQ.	No			No DEQ Review Required
Permit and/or other Agency Review: SUBMITTED for review.	Yes	5/2024		
Permit and/or other Agency Approval: APPROVAL received.	Yes	8/2024		
Water Rights finalized.	No			Operating under Existing Water Rights.
Site Title Opinion, Right-Of Way, Land Purchases finalized.	No			Operating within Existing Right-of-Way.
MEPA/NEPA complete or MEPA checklist submitted to DNRC.	Yes		12/2021	Checklist Submitted w/Start-Up Conditions.
Other:				
PROJECT BIDDING				
Bid document advertised.	Yes		9/2023	
Bid complete and construction contract executed.	Yes		10/2023	
Other:				
PROJECT CONSTRUCTION				
Construction start.	Yes	10/2024		
Construction complete.	Yes	11/2025		
Project closeout.	Yes	12/2025		
Other:				

**Engineering Procurement and Design Phase tasks must be completed before Project Bidding and Construction Phase tasks.*

ATTACHMENT E

PROJECT AREA SOIL DATA

AND GEOLOGIC MAPS

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Gallatin County Area, Montana

Farmers Canal Headgate

September 3, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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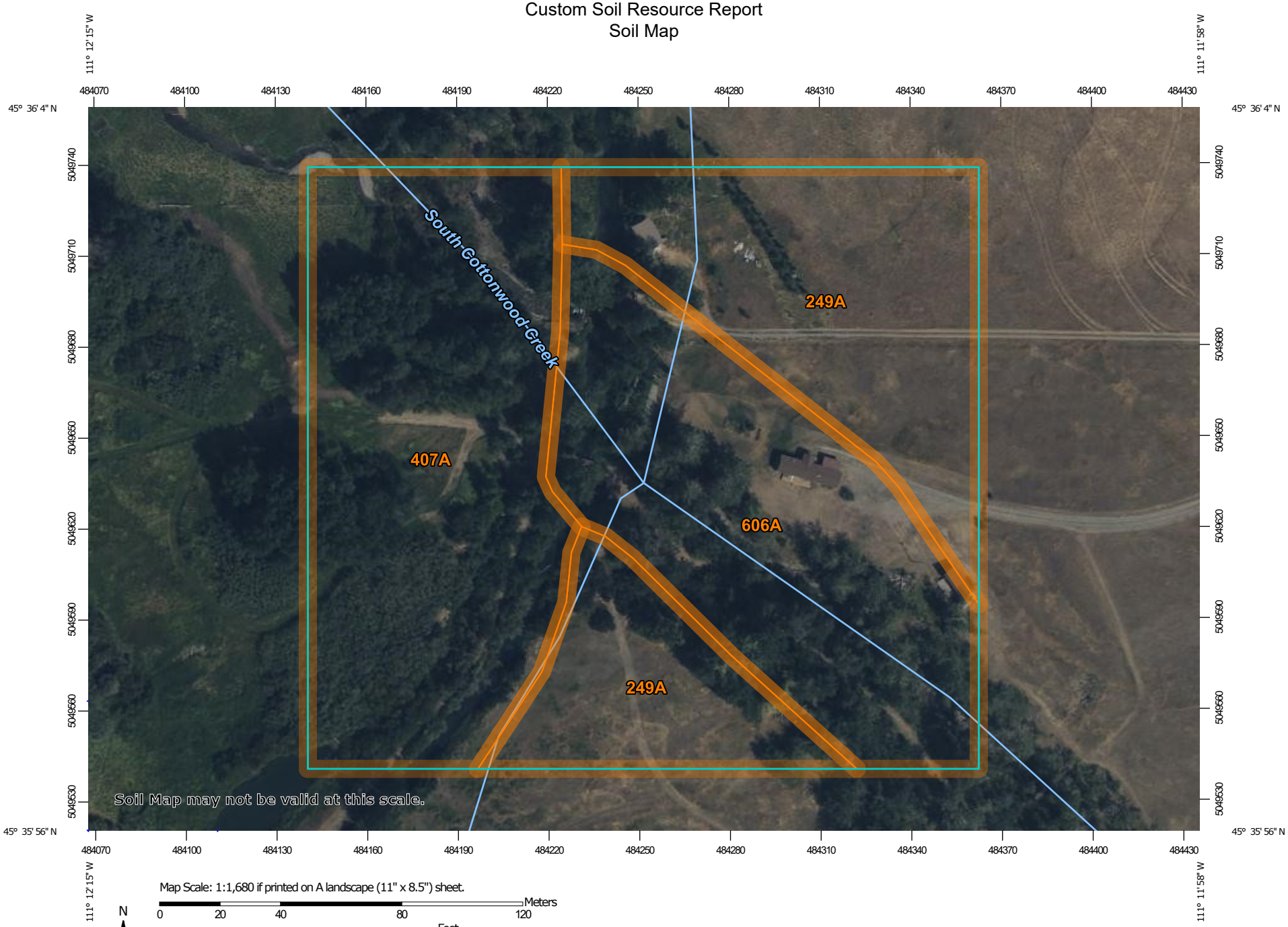
Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gallatin County Area, Montana
Survey Area Data: Version 26, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 18, 2022—Aug 29, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
249A	Beaverton cobbly clay loam, 0 to 2 percent slopes	3.7	33.8%
407A	Sudworth-Nesda loams, 0 to 2 percent slopes	4.0	36.3%
606A	Bandy-Riverwash-Bonebasin complex, 0 to 2 percent slopes	3.3	29.9%
Totals for Area of Interest		**10.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Gallatin County Area, Montana

249A—Beaverton cobbly clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 56n3
Elevation: 4,450 to 5,900 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 110 days
Farmland classification: Farmland of local importance

Map Unit Composition

Beaverton and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaverton

Setting

Landform: Stream terraces, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 5 inches: cobbly loam
Bt - 5 to 21 inches: very gravelly clay loam
Bk - 21 to 25 inches: very cobbly coarse sandy loam
2Bk - 25 to 60 inches: extremely cobbly loamy coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: R043BP818MT - Upland Grassland Group
Hydric soil rating: No

Minor Components

Turner

Percent of map unit: 5 percent
Landform: Stream terraces

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R044BB032MT - Loamy (Lo) LRU 01 Subset B
Hydric soil rating: No

Beaverton

Percent of map unit: 5 percent
Landform: Stream terraces, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R044BP818MT - Upland Grassland
Hydric soil rating: No

407A—Sudworth-Nesda loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 56rt
Elevation: 4,300 to 5,800 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 110 days
Farmland classification: Farmland of local importance

Map Unit Composition

Sudworth and similar soils: 60 percent
Nesda and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudworth

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 24 inches: loam
Bk - 24 to 29 inches: loam
2C - 29 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 96 inches
Frequency of flooding: NoneRare
Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R044BB032MT - Loamy (Lo) LRU 01 Subset B
Hydric soil rating: No

Description of Nesda

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

A - 0 to 11 inches: loam
2C - 11 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 96 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: R044BP815MT - Subirrigated Grassland
Hydric soil rating: No

Minor Components

Meadowcreek

Percent of map unit: 8 percent
Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R044BP815MT - Subirrigated Grassland
Hydric soil rating: No

Enbar

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Ecological site: R044BP815MT - Subirrigated Grassland
Hydric soil rating: No

Bonebasin

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R044BP815MT - Subirrigated Grassland
Hydric soil rating: Yes

606A—Bandy-Riverwash-Bonebasin complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 56xy
Elevation: 4,200 to 5,800 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 110 days
Farmland classification: Not prime farmland

Map Unit Composition

Bandy and similar soils: 50 percent
Riverwash: 25 percent
Bonebasin and similar soils: 10 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bandy

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 8 inches: loam
Bw - 8 to 17 inches: sandy loam
C - 17 to 60 inches: very cobbly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None

Calcium carbonate, maximum content: 3 percent
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: R044BP801MT - Bottomland
Hydric soil rating: Yes

Description of Riverwash

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Description of Bonebasin

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Oa - 0 to 4 inches: muck
A - 4 to 15 inches: loam
Cg - 15 to 25 inches: stratified sandy loam to silty clay loam
2C - 25 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R044BP801MT - Bottomland
Hydric soil rating: Yes

Minor Components

Blossberg

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Ecological site: R044BP815MT - Subirrigated Grassland
Hydric soil rating: Yes

Nesda

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R044BP818MT - Upland Grassland
Hydric soil rating: No

Water

Percent of map unit: 5 percent

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

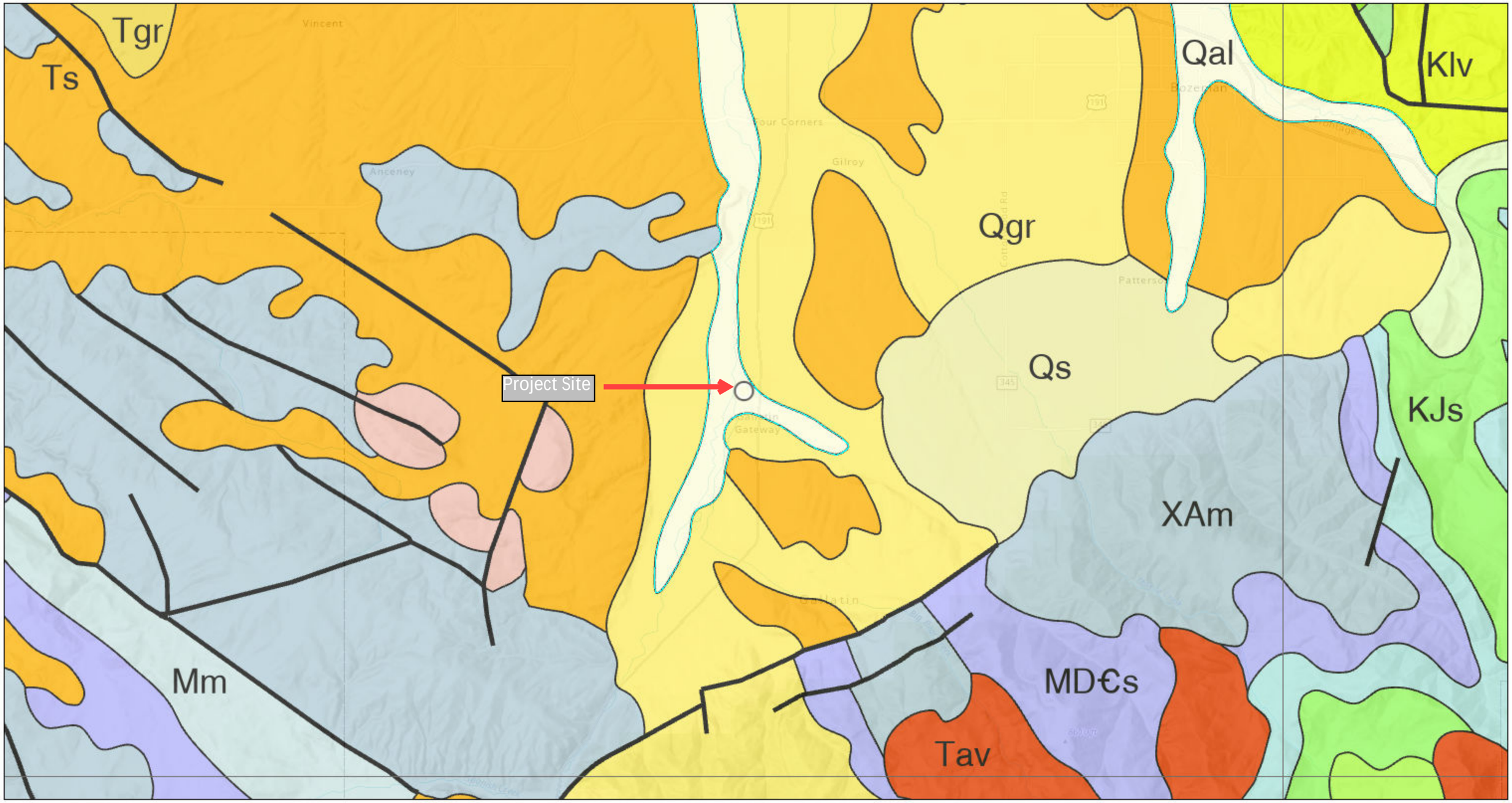
United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Farmers Canal on South Cottonwood Creek



9/5/2023, 9:10:01 AM

30' X 60' quadrangle boundaries

1:156,241

0 1.25 2.5 5 mi

0 2 4 8 km

Esri, NASA, NGA, USGS, Montana State Library, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Gallatin County, Montana

Local office

Montana Ecological Services Field Office

(406) 449-5225
(406) 449-5339

585 Shephard Way, Suite 1

Helena, MT 59601-6287

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Canada Lynx Lynx canadensis There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Grizzly Bear Ursus arctos horribilis There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/7642	Threatened
North American Wolverine Gulo gulo luscus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

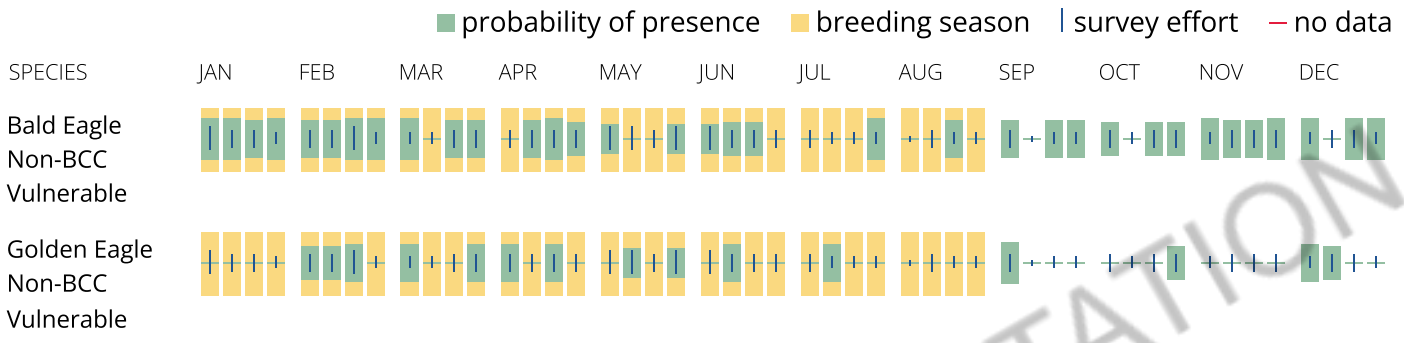
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Cassin's Finch Carpodacus cassinii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Franklin's Gull Leucophaeus pipixcan This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31

Rufous Hummingbird selasphorus rufus — Breeds Apr 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Willet Tringa semipalmata — Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

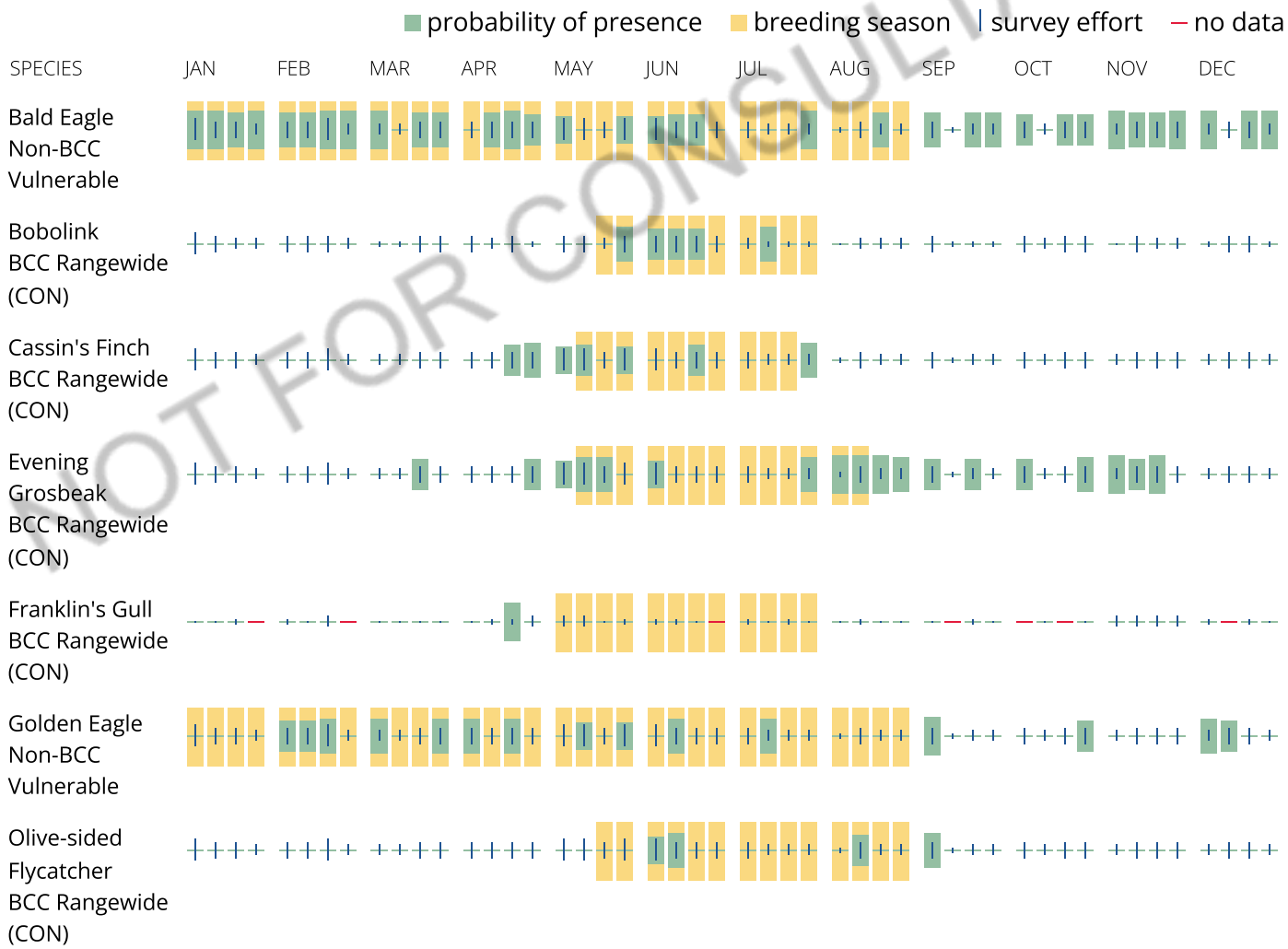
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

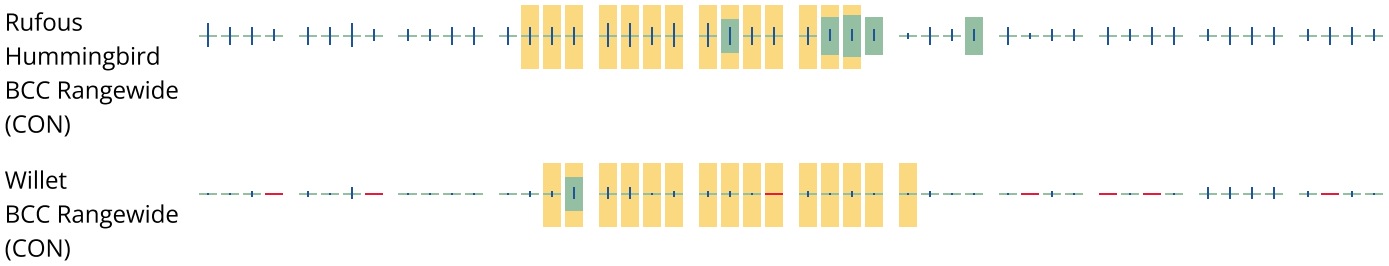
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of

presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

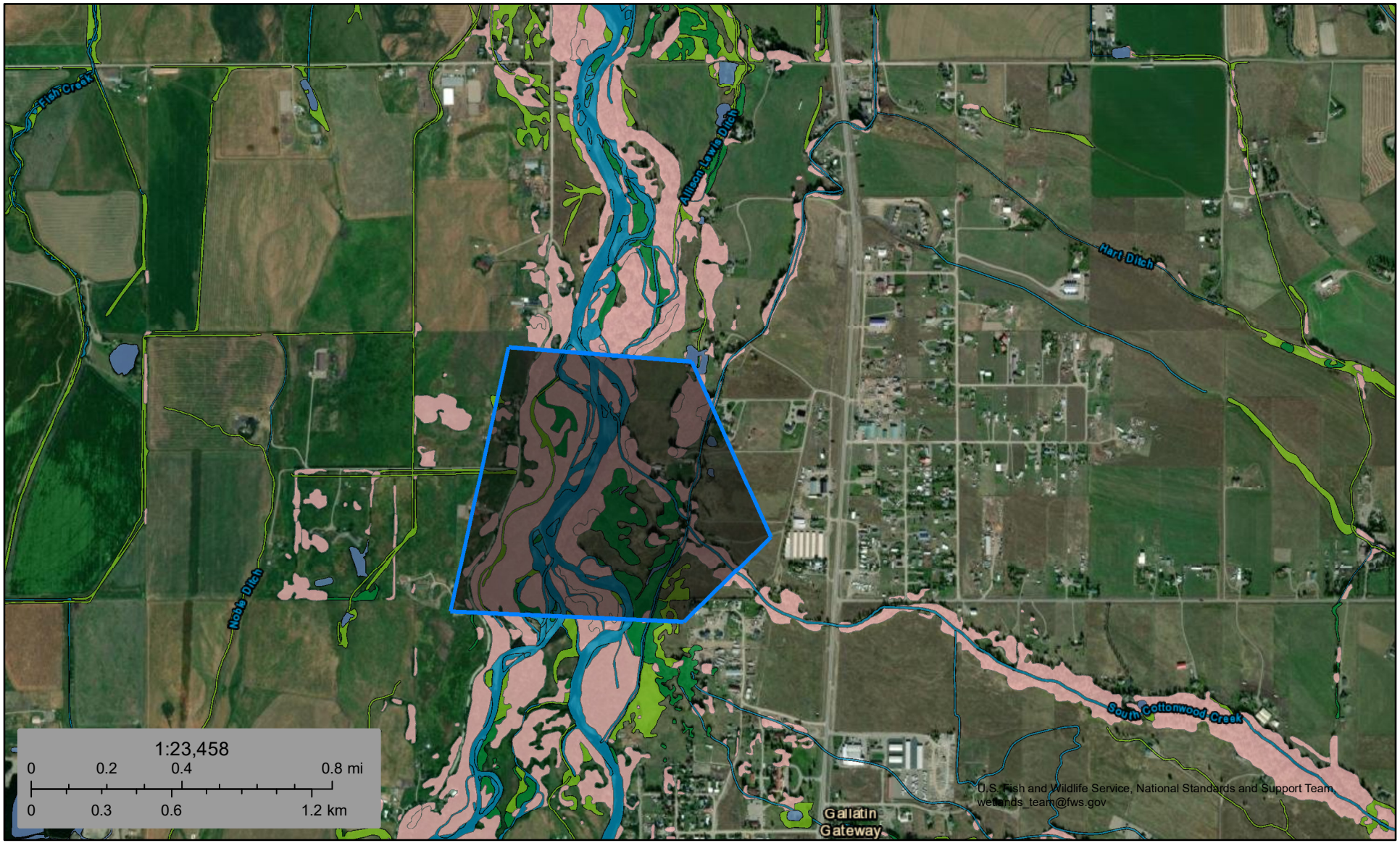
Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

U.S. Fish and Wildlife Service

National Wetlands Inventory

South Cottonwood Creek



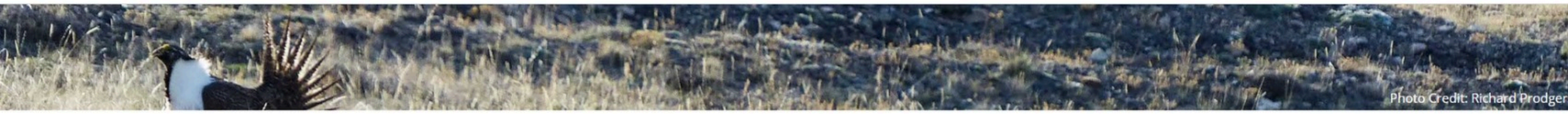
November 8, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

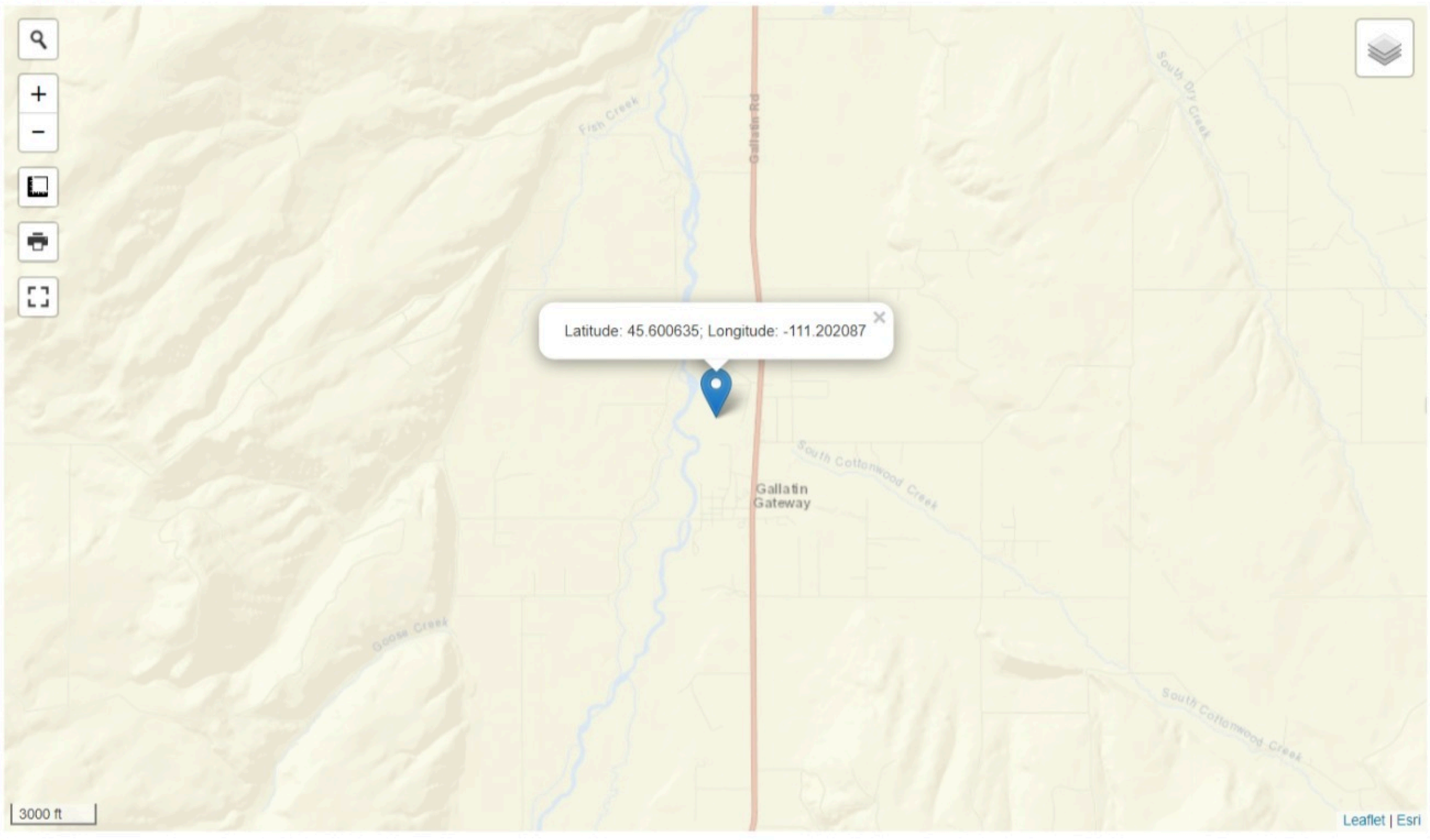


Montana Sage Grouse Habitat Conservation Map

Use this map to view and explore types of sage grouse habitat designated as core (blue), general (green), connectivity (light-blue) habitats or BLM priority areas. To zoom into an area, hold the Shift key and draw a rectangle. Anyone proposing new development activities in sage grouse habitat must submit a development project application for consultation.

If your project is close to designated sage grouse habitat or BLM Priority area, or if you are unsure your project is within designated sage grouse habitat or BLM Priority area,

your project's location.



MONTANA SAGE GROUSE HABITAT CONSERVATION PROGRAM
1539 ELEVENTH AVE. HELENA, MT 59601 | SAGEGROUSE@MT.GOV | 406-444-6340

Last Built on 08/10/2023 4:09 PM

Montana State Wildlife Action Plan (SWAP) - Terrestrial Focal Areas

Montana Fish, Wildlife and Parks
Private Organization

Summary

To assist in the delineation of priority terrestrial habitats and communities for the Montana SWAP.

View Full Details

Download

Details

Dataset
Feature Layer

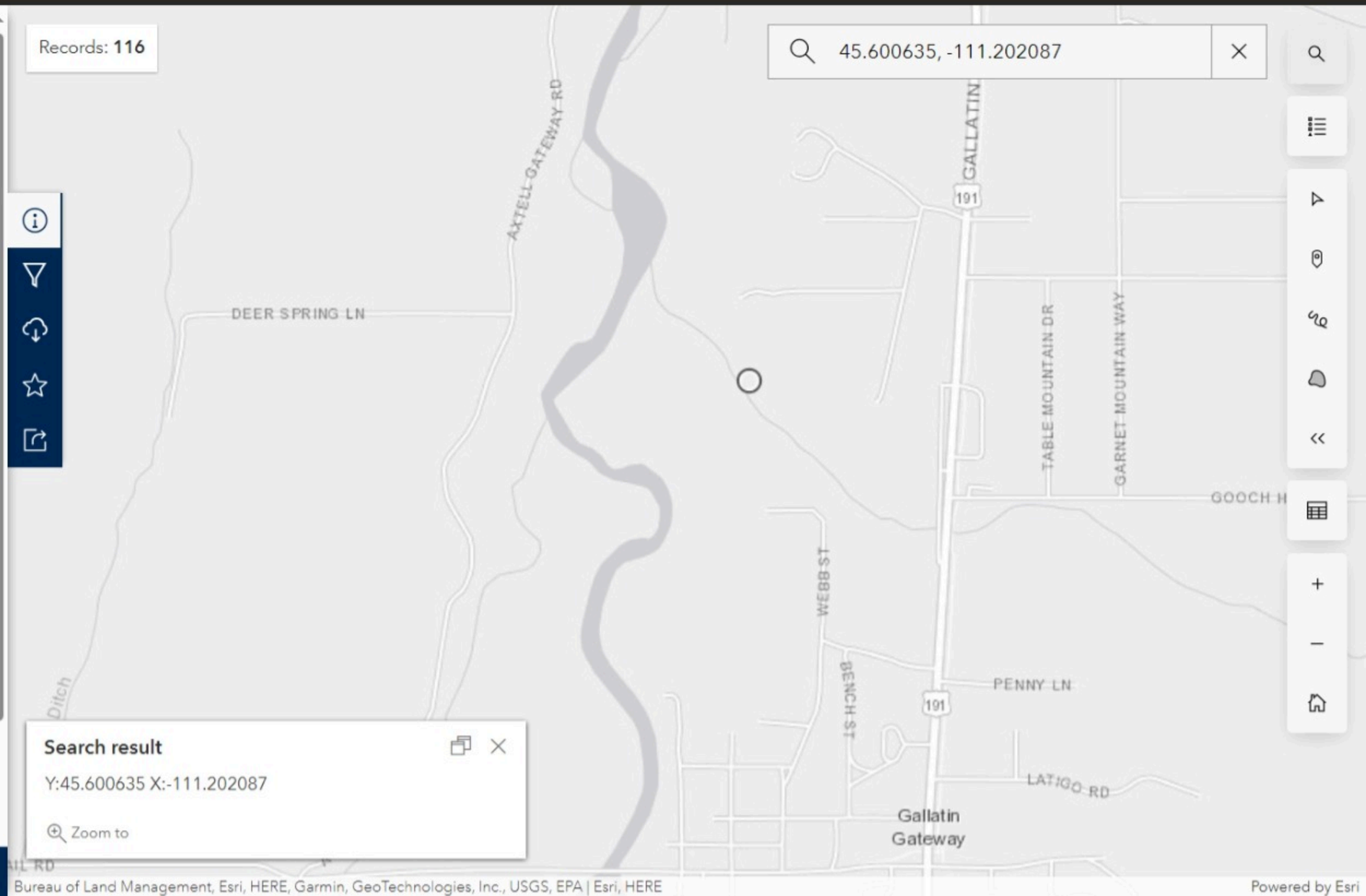
As Needed
Info Updated: September 23, 2022

Not Planned
Data Updated: September 23, 2022

January 16, 2018
Published Date

Records: 116

I want to use this



Montana State Wildlife Action Plan (SWAP) - Aquatic Focal Areas (Watersheds)

Montana Fish, Wildlife and Parks
Private Organization

Summary

To assist in the delineation of priority aquatic habitats for the Montana SWAP.

View Full Details

Download

Details

Dataset
Feature Layer

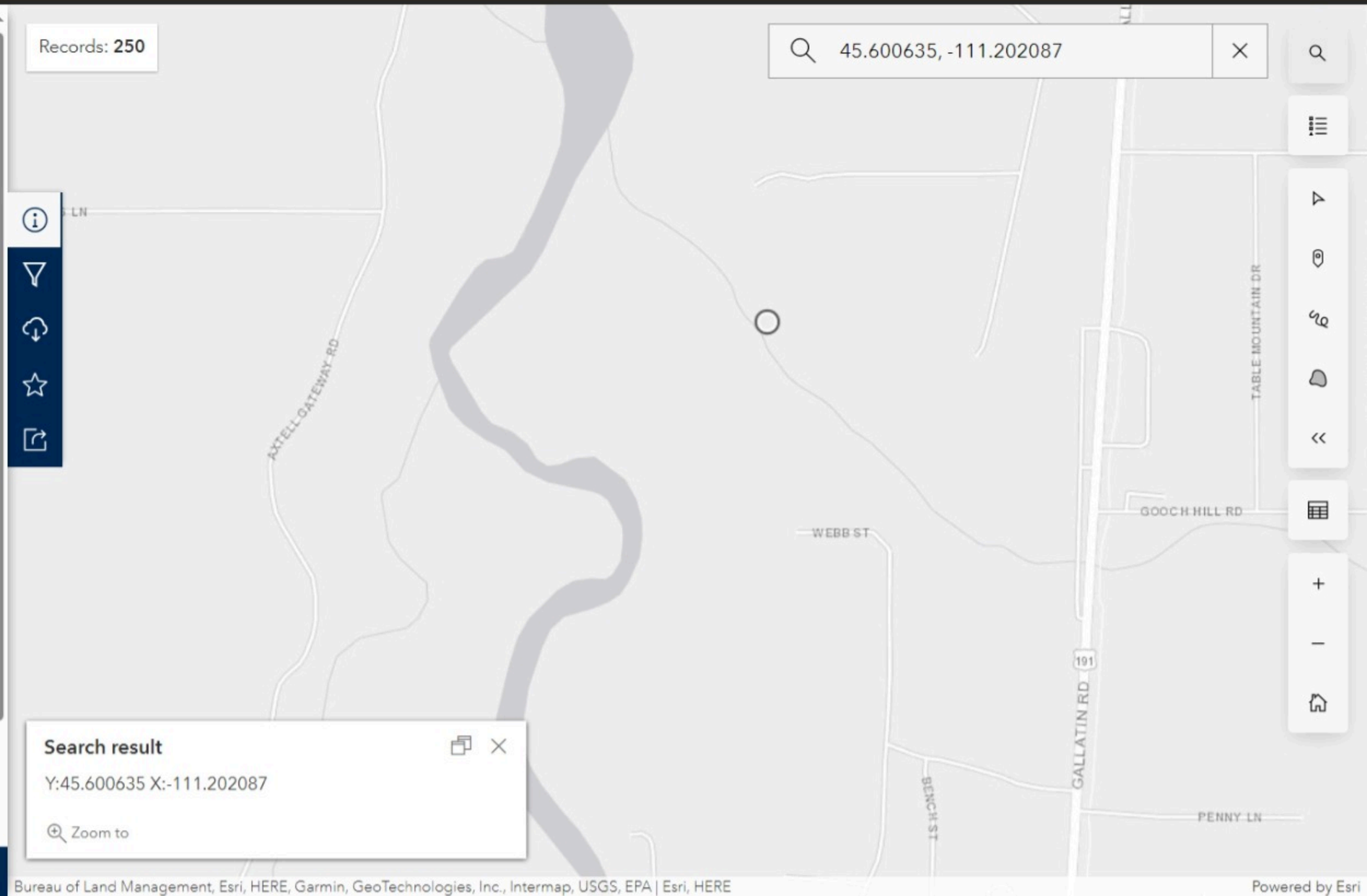
As Needed
Info Updated: September 23, 2022

Not Planned
Data Updated: September 23, 2022

January 23, 2016
Published Date

Records: 250

I want to use this



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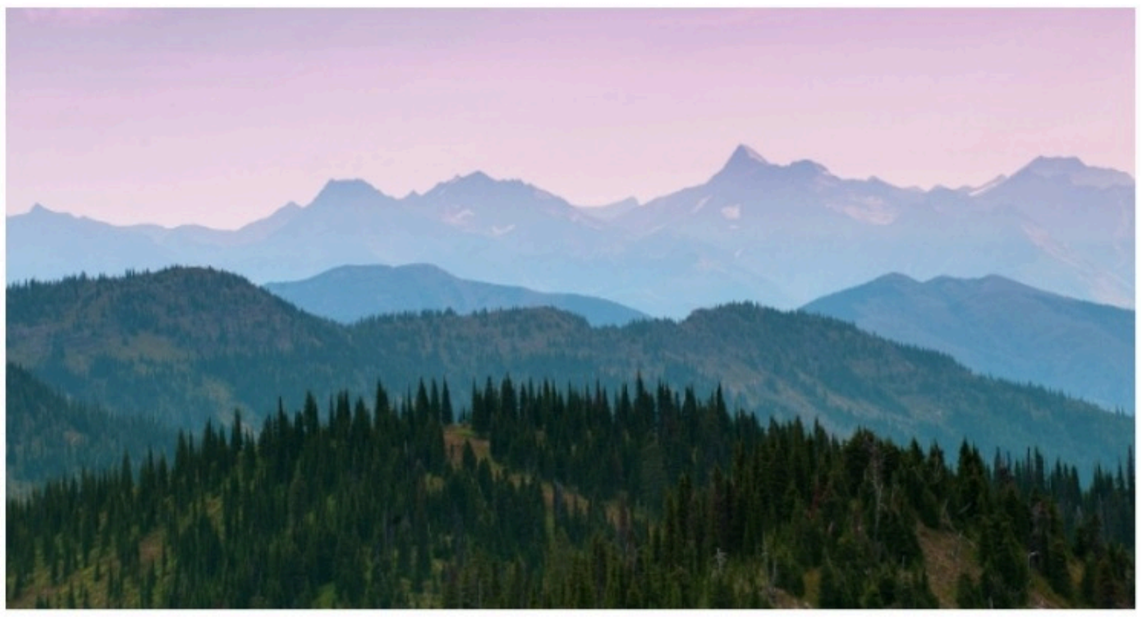
CONTACT
SUPPORT

SOUTH COTTONWOOD CREEK



WATERBODY INFORMATION

CURRENT WATERBODY REPORT

FISH SPECIES

Show 10 entries Search:

Species	Family	Class	Native to MT
Brook Trout	Trout	Coldwater	Introduced
Brown Trout	Trout	Coldwater	Introduced
Longnose Dace	Minnow	Warmwater	Native
Mottled Sculpin	Sculpin		Native
Rainbow Trout	Trout	Coldwater	Introduced

Showing 1 to 5 of 5 entries Previous 1 Next

CONTACT INFORMATION

SURVEY DATA

FWP FISHING ACCESS SITES

FISHING PRESSURE

STOCKING INFORMATION

REGULATIONS

GAUGING STATIONS

FISH CONSUMPTION ADVISORY

REPORTS

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ADDITIONAL INFORMATION

View Interactive Map

South Cottonwood Creek

Fishing Information

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Fishing Newsletter

Environmental Checklist Instructions

Purpose of This Document:

All applicants must consider the potential environmental impacts of their projects. Consideration of these impacts on the location, design, or construction actions may help avoid expensive mitigation or construction costs. A project will not be eligible for funding if it results in significant adverse impact after mitigation.

DNRC requires compliance with the Montana Environmental Policy Act (MEPA) per state law and associated DNRC Administrative Rules (ARM 36.2.523). MEPA requires state agencies to prepare a detailed statement on any project, program, or activity directly undertaken by the agency; a project or activity supported through a contract, grant, subsidy, loan or other form of funding assistance from the agency; and a project or activity involving the issuance of a lease, permit, license, certificate, or other entitlement for use or permission by the agency (MCA Title 75, Chapter 1). All project applications will be subject to MEPA review followed by a public scoping process. DNRC will post the drafted MEPA decision for public comment at a minimum of two weeks (dependent on level of environmental impact). The MEPA document will then require a final decision by DNRC once funds are awarded.

Please complete the Environmental Checklist below as the information provided will be subject to a MEPA assessment by DNRC. If an Environmental Assessment has already been completed for the proposed project, please attach it to the application in place of this evaluation.

Instructions:

Complete the Environmental Checklist on the following pages after the instructions below. DNRC retains the ultimate decision-making authority on all MEPA decisions. If DNRC determines this section to be incomplete, additional information will be required before consideration for funding.

Example		
Impact Code	**Impact Type**	**Explanation of Impact to Resource**
1. Soil Suitability, Topographic and/or Geologic Constraints (example: soil lump, steep slopes, subsidence, seismic activity)		
☐ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	*Current Conditions:* *Preferred Alternative Environmental Narrative:*

1. **Impact Code:** In the first column, identify the impact that the preferred alternative will have on each resource (e.g. 1. Soil Suitability, Topographic and/or Geologic Constraints) in the project area. Select from the following impact codes:
   - *No Impact*: No impact to the resource is anticipated or this is not applicable to this project.
   - *Beneficial*: Potentially beneficial impact to the resource.
   - *Adverse*: Potentially adverse impact to the resource.

   Please note that a resource may have more than one impact. Identify all possible impacts to the resource in the space provided. For example, the preferred alternative may have a short-term direct negative impact and a long-term direct and indirect positive impact on the resource. Check all boxes that apply and use the space provided in the final column "Explanation of Impact to Resource" to explain.

Example		
Impact Code	**Impact Type**	**Explanation of Impact to Resource**
1. Soil Suitability, Topographic and/or Geologic Constraints (example: soil lump, steep slopes, subsidence, seismic activity)		
☐ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	*Current Conditions:* *Preferred Alternative Environmental Narrative:*

2. **Impact Type:** In the second column, identify the type(s) of impact to the resource from the preferred alternative. (Impacts may be direct, indirect or cumulative).
   - *Direct impacts*: Occur at the same time and place as the proposed project.
   - *Indirect or secondary impacts*: Occur at a different location or later time than the proposed project.
   - *Cumulative impacts*: Collective impacts on the environment when considered in conjunction with other past, present, and future actions related to the proposed project. Cumulative impact analysis includes a review of all state and nonstate activities that have occurred, are occurring, or may occur that have impacted or may impact the same resource as the proposed project.

   Just as above, please note that a resource may have more than one impact. Identify all possible impacts to the resource in the space provided. For example, the preferred alternative may have a short-term direct negative impact and a long-term direct and indirect positive impact on the resource. Check all boxes that apply and use the space provided in the final column "Explanation of Impact to Resource" to explain.

Example		
Impact Code	**Impact Type**	**Explanation of Impact to Resource**
1. Soil Suitability, Topographic and/or Geologic Constraints (example: soil lump, steep slopes, subsidence, seismic activity)		
☐ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	*Current Conditions:* *Preferred Alternative Environmental Narrative:*

3. **Explanation of Impact to Resource:** In the final column, use the space provided on the Environmental Checklist to summarize the following information:
   - ***a. Current Conditions***
     - Describe the current environmental resources of the affected area including the impact of no action. Your description of the current natural resources will provide a baseline to compare all alternatives and their associated environmental impacts.
   - ***b. Preferred Alternative Environmental Narrative:***
     - Describe the impact of the preferred alternative or ***indicate why there is no impact*** from the project.
     - Identify any reasonable cumulative impacts that may result from implementing the preferred alternative. Cumulative impacts are the collective impacts on the

environment when considered in conjunction with other past, present, and future actions related to the proposed project.

- If a potentially adverse impact is identified for the preferred alternative, the applicant must provide the following:
  - An analysis of the severity, duration, extent, and frequency of the impact. Please specify and describe the following:
    - Severity: negligible, minor, or major.
    - Duration: short-term or long-term.
    - Extent: local, regional, or statewide.
    - Frequency: non-recurring or recurring.
  - An explanation of short- and/or long-term measures to mitigate the impact with a discussion on the effects of those mitigative measures on the proposed project.
- Identify any required permits.

4. **Additional Information:** Underneath the table the following information must be provided:
   a. Cultural Survey Acknowledgement
   b. Sources of Information: Identify all sources consulted for the completion of the Environmental Checklist. Sources may include studies, plans, documents, or the persons, organizations, or agencies contacted for assistance.

Certain sections of this Environmental Checklist may require specialized knowledge. Please contact the necessary agencies if further specialized knowledge is needed and attach comments provided by those agencies to your application. Below are contacts for certain sections that may require additional review by other agencies:

- *Physical Environment,* ***Section #5*** **– Surface Water Quality** – Montana Department of Environmental Quality, (406) 444 - 3080.
- *Physical Environment,* ***Section #6*** **– Floodplains and Floodplain Management** – The Department of Natural Resources Water Resources Division, (406) 444 - 0860 or visit: http://dnrc.mt.gov/divisions/water/operations/floodplain-management.
- *Physical Environment,* ***Section #7*** **– Wetlands** – U.S. Department of the Army Corps of Engineers, (406) 441 - 1375 or montana.reg@usace.army.mil.
- *Physical Environment,* ***Section #9*** **– Vegetation and Wildlife Species and Habitats** – Montana Fish, Wildlife and Parks, Wildlife Office (406) 444 - 2612 or find your Regional Office at https://fwp.mt.gov/aboutfwp/contact-us.
- *Physical Environment,* ***Section #10*** **– Unique, Endangered, Fragile or Limited Environmental Resources** – U.S. Fish and Wildlife Service for consultation on potential impacts to endangered or limited plants, fish, or other wildlife, (406) 449 - 5225.
- *Human Environment,* ***Section #4*** **– Historic Properties, Cultural or Archaeological Resources –** Montana State Historic Preservation Office (SHPO), (406) 444 – 7718 or pebrown@mt.gov.

For assistance in preparing the Environmental Checklist, contact DNRC grant manager listed on grant application.

Environmental Checklist

Applicant Name: Gallatin Conservation District

Project Title: Farmers Canal Company Cottonwood Headgate Replacement

Environmental Checklist Prepared by: On: 12/30/2021

Shawn Higley, P.E.	WWC Engineering
Name of Person 1	Organization
(406) 443-3962	shigley@wwcengineering.com
Phone Number	Email
Click or tap here to enter text.	Click or tap here to enter text.
Name of Person 2	Organization
Click or tap here to enter text.	Click or tap here to enter text.
Phone Number	Email

Click or tap here to enter text.

List additional people above. Include organization, phone number and email for all.

Physical Environment		
Impact Code	**Impact Type**	**Explanation of Impact to Resource**
1. Soil Suitability, Topographic and/or Geologic Constraints (example: soil lump, steep slopes, subsidence, seismic activity)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The existing canal banks and banks of cottonwood creek are experiencing erosion in the immediate vicinity of the headgate structure due to its poor condition. The no action alternative would result in continued erosion.* Preferred Alternative Environmental Narrative: *All ground disturbing activities will be temporary. Construction practices will include utilizing gentle slopes so that topographic or geologic constraints are not experienced. Best Management Practices (BMPs) will be used during construction to eliminate impacts to soil suitability or topographic constraints.*
2. Hazardous Facilities (example: power lines, hazardous waste sites, acceptable distance from explosive and flammable hazards including chemical/petrochemical storage tanks, underground fuel storage tanks, and related facilities such as natural gas storage facilities and propane storage tanks)		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *There are no hazardous facilities in the vicinity of the project area.* Preferred Alternative Environmental Narrative: *The proposed project would have no effect on hazardous facilities.*

3. Surrounding Air Quality (example: dust, odors, emissions)		
☐ No Impact ☐ Beneficial ☒ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on surrounding air quality.* Preferred Alternative Environmental Narrative: *The proposed project may have a temporary impact on surrounding air quality during construction only via dust pollution. Water trucks will be utilized to control dust pollution if necessary. Additionally, the short duration of the project will limit air quality issues to within that timeframe, approximately six months of construction. The proposed project will not have long-term impacts to air quality.* *Severity: The severity of air quality impacts from the proposed project will be minor or negligible. Measures will be taken during construction to minimize dust pollution and other air quality pollutants.* *Duration: Impacts to air quality will be limited to the construction duration. It is anticipated that construction will last approximately six months.* *Extent: Impacts to air quality are expected to be localized and will only affect the immediate surrounding area of each construction site.* *Frequency: The impacts to air quality are anticipated to be non-recurring and may only be seen during construction of the proposed project.* *Short-term measures such as water application will be utilized during construction to limit dust pollution. Other short-term measures such as Best Management Practices will be utilized during construction to limit air quality issues. Long-term measures such as topsoil placement, revegetation/seeding, and other reclamation measures will be utilized to minimize long-term impacts to air quality.*
4. Groundwater Resources and Aquifers (example: quantity, quality, distribution, depth to groundwater, sole source aquifers)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on groundwater resources and aquifers.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect the groundwater resource.*

<table>
<tr><td colspan="3">5. Surface Water/Water Quality, Quantity and Distribution (example: streams, lakes, storm runoff, irrigation systems, canals)</td></tr>
<tr><td>☐ No Impact
☒ Beneficial
☐ Adverse</td><td>☒ Direct
☒ Indirect
☐ Cumulative</td><td>Current Conditions:
The current condition results in moderate impacts to water quality through erosion of the canal banks and the banks of cottonwood creek that carries this water back to the Gallatin River, which is an impaired water body.
Preferred Alternative Environmental Narrative:
The positive impacts of the proposed project include the conservation of water in the delivery system; increased management efficiency of the surface water; reduced sediment loading; and the preservation of fish and aquatic species habitats. The project will not have any negative impacts on the surface water resource.</td></tr>
<tr><td colspan="3">6. Floodplains and Floodplain Management (Identify any floodplains within one mile of the boundary of the project.)</td></tr>
<tr><td>☒ No Impact
☐ Beneficial
☐ Adverse</td><td>☐ Direct
☐ Indirect
☐ Cumulative</td><td>Current Conditions:
The project is located along the man-made Farmer’s Canal. The FEMA FIRM map (Panel Number 30031C0910D) shows the area is not located within a designated floodplain.
Preferred Alternative Environmental Narrative:
Construction activities would not impact the floodplain.</td></tr>
<tr><td colspan="3">7. Wetlands (Identify any wetlands within one mile of the boundary of the project and state potential impacts.)</td></tr>
<tr><td>☒ No Impact
☐ Beneficial
☐ Adverse</td><td>☐ Direct
☐ Indirect
☐ Cumulative</td><td>Current Conditions:
The proposed project is located immediately adjacent and parallel to the existing Cottonwood Headgate. The NWI identifies Cottonwood Creek and the Farmers Canal as a riverine wetland.
Preferred Alternative Environmental Narrative:
The majority of the construction activities will take place within the existing footprint of the headgate structure. Construction of the proposed project will not negatively impact these wetlands because the construction activities will be conducted during the irrigation offseason and construction will be limited to replacement of the existing structure. Best Management Practices (BMPs) will be implemented to prevent sediment from leaving the site.</td></tr>
</table>

8. Agricultural Lands, Production, and Farmland Protection (example: grazing, forestry, cropland, prime or unique agricultural lands) Identify any prime or important farm ground or forest lands within one mile of the boundary of the project.		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has the ability to negatively impact agricultural lands, production, and farmland protection through loss of the structure due to its degraded state.* Preferred Alternative Environmental Narrative: *The proposed project will provide a significant benefit to the area's agricultural lands by being able to continue to supply water to produces, reduce sediment loading to the downstream Gallatin River system, and provide more consistent control of flow within the Farmer's Canal.*
9. Vegetation and Wildlife Species and Habitats, Including Fish (example: terrestrial, avian and aquatic life and habitats)		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition provides negative impacts to vegetation and wildlife species and habitats through the impairment of water quality due to erosion.* Preferred Alternative Environmental Narrative: *The proposed project will protect water delivery within the Farmers Canal system and reduced sediment loading to the downstream Gallatin River.*
10. Unique, Endangered, Fragile, or Limited Environmental Resources, Including Endangered Species (example: plants, fish or wildlife)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *A search was performed for the proposed project area to obtain information on species of concern within the project area. The search indicated that, within the project township, there are no plant species of concern and but the area may possibly contain habitat for the Canada Lynx, Grizzly Bear, Monarch Butterfly, Bald Eagle and the Olive-sided Flycatcher.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact unique, endangered, fragile, or limited environmental resources. A review of the Sage Grouse Core Area Website showing that the project location is outside of the EO area.*
11. Unique Natural Features (example: geologic features)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The construction area contains no unique natural features that will be impacted by the proposed project.* Preferred Alternative Environmental Narrative: *There are no unique natural features within the project area that will be impacted by the proposed improvements.*

12. Access to, and Quality of, Recreational and Wilderness Activities, Public Lands and Waterways, and Public Open Space		
☐ No Impact ☒ Beneficial ☐ Adverse	☐ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition allows for the uncontrolled waste of irrigation water through the structure which results in significant erosion and sediment loading downstream.* Preferred Alternative Environmental Narrative: *The proposed project will reduce downstream sediment loading and improve supplemental flows within the Gallatin River during normal irrigation seasons which will indirectly benefit recreational opportunities such as fishing, boating, floating, hiking, paddling, etc.*
Human Environment		
Impact Code	**Impact Type**	**Resource**
1. Visual Quality – Coherence, Diversity, Compatibility of Use and Scale, Aesthetics		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition for visual quality is an irrigation structure.* Preferred Alternative Environmental Narrative: *The proposed project will have no impact on visual quality.*
2. Nuisances (example: glare, fumes)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *There are no nuisances in the project area.* Preferred Alternative Environmental Narrative: *The proposed improvements will not create a nuisance.*
3. Noise – Suitable Separation Between Housing and Other Noise Sensitive Activities and Major Noise Sources (example: aircraft, highways and railroads.)		
☐ No Impact ☐ Beneficial ☒ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition does not emit major noise sources, only water flowing over the irrigation structure.* Preferred Alternative Environmental Narrative: *Noise will only be created during the short-term construction period. Noise will be limited to approximately 6 months during construction.* *Severity: Noise will be consistent with typical construction noise, which is anticipated to be a low impact as the project is located in a very remote location with no nearby structures or dwellings.* *Duration: Noise will be limited to six months.* *Extent: Noise will be localized to just the project area and the immediate surroundings.* *Frequency: During construction, the noise will be recurring. Once complete, noise will not be an issue.* *Wherever possible, the contractor will minimize noise and steps will be taken to reduce noise impacts to the surrounding area.*

4. Historic Properties, Cultural, and Archaeological Resources***(Please see end of Environmental Checklist for details if Cultural Survey has not been performed per SHPO Section 106)*		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *There are no historic properties, cultural, or archaeological resources that have been identified within the project area.* Preferred Alternative Environmental Narrative: *There have been no historical properties, cultural, or archaeological resources that have been identified in the area. Should any resources be encountered during construction, the Farmers Canal will take the proper steps to eliminate impacts to these resources.*
5. Changes in Demographic (Population) Characteristics (example: quantity, distribution, density)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no impact on demographic characteristics in the area.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact the demographic characteristics of the area.*
6. General Housing Conditions – Quality, Quantity, Affordability		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no impact on general housing conditions.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect general housing conditions.*
7. Businesses or Residents (example: loss of, displacement, or relocation)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no impact on local businesses or residents.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect local businesses or residents through loss, displacement, or relocation.*
8. Public Health and Safety		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition is unsafe for Farmers Canal personnel as they must enter the structure in over water without safety gear or railing to operate the existing gate structure.* Preferred Alternative Environmental Narrative: *Implementation of the proposed project would provide a safe environment for operation of the structure.*
9. Local Employment – Quantity or Distribution of Employment, Economic Impact		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on local employment.* Preferred Alternative Environmental Narrative: *The proposed project may benefit local shops, gas stations, trucking companies, suppliers, etc. The project will also maximize crop production for the users of the system, resulting in maximized agricultural revenue for the Farmers Canal and its users.*

10. Income Patterns – Economic Impact		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on income patterns.* Preferred Alternative Environmental Narrative: *The proposed improvements will positively impact local income patterns through increased crop production and increased crop revenues.*
11. Local and State Tax Base and Revenues		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on local and state tax base and revenues.* Preferred Alternative Environmental Narrative: *The proposed improvements will positively affect the local tax base and revenues by adding more revenue through increased crop production.*
12. Community and Government Services and Facilities (example: educational facilities; health and medical services and facilities; police; emergency medical services; and parks, playgrounds and open space)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on community and government services and facilities.* Preferred Alternative Environmental Narrative: *The proposed improvements will not affect the community and government services and facilities.*
13. Commercial and Industrial Facilities – Production and Activity, Growth or Decline		
☐ No Impact ☒ Beneficial ☐ Adverse	☐ Direct ☒ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on commercial and industrial facilities.* Preferred Alternative Environmental Narrative: *During construction, the project could potentially benefit local shops, gas stations, trucking companies, suppliers, etc. indirectly. Increased sales at local businesses may be a result of the construction project.*
14. Social Structures and Mores (example: standards of social conduct/social conventions)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on social structures and mores.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on social structures and mores.*
15. Land Use Compatibility (example: growth, land use change, development activity, adjacent land uses and potential conflicts)		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on land use compatibility.* Preferred Alternative Environmental Narrative: *The proposed improvements will preserve the water supply to water users on the Farmers Canal delivery system. The proposed project will allow the Farmers Canal to efficiently deliver irrigation water to their users therefore maximizing crop production and agricultural development in the area.*

16. Energy Resources – Consumption and Conservation		
☐ No Impact ☒ Beneficial ☐ Adverse	☒ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on energy resources.* Preferred Alternative Environmental Narrative: *The proposed project will have no effect on energy resources.*
17. Solid Waste Management		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on solid waste management.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on solid waste management in the area.*
18. Wastewater Treatment – Sewage System		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on wastewater treatment.* Preferred Alternative Environmental Narrative: *The proposed project will have no impact on wastewater treatment in the area.*
19. Storm Water – Surface Drainage		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on storm water.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact storm water or surface drainage.*
20. Community Water Supply		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on community water supply.* Preferred Alternative Environmental Narrative: *The proposed improvements will not impact community water supply.*
21. Fire Protection – Hazards		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on fire protection.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on fire protection for the area.*
22. Cultural Facilities, Cultural Uniqueness and Diversity		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on cultural facilities, cultural uniqueness and diversity.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on cultural facilities, cultural uniqueness, or diversity.*

23. Transportation Networks and Traffic Flow Conflicts (example: rail; auto including local traffic; airport runway clear zones – avoidance of incompatible land use in airport runway clear zones)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on transportation networks and traffic flow conflicts.* Preferred Alternative Environmental Narrative: *The proposed improvements will have no impact on transportation networks and will not create traffic flow conflicts.*
24. Consistency with Local Ordinances, Resolutions, or Plans (example: conformance with local comprehensive plans, zoning, or capital improvement plans.)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on consistency with local ordinances, resolutions, or plans.* Preferred Alternative Environmental Narrative: *The proposed project will comply with all local ordinances, resolutions, and plans in design and construction.*
25. Private Property Rights (example: a regulatory action or project activity that reduces, minimizes, or eliminates the use of private property.)		
☒ No Impact ☐ Beneficial ☐ Adverse	☐ Direct ☐ Indirect ☐ Cumulative	Current Conditions: *The current condition has no effect on private property rights.* Preferred Alternative Environmental Narrative: *The proposed improvements will not result in regulatory action on private property rights.*

Additional Information

****If no cultural survey has been performed, or is not expected to be needed, applicant must agree to the following statement:**

☒ I hereby agree that, to my knowledge, there are no cultural or paleontological materials in the proposed project site. If previously unknown cultural or paleontological materials are identified during project related activities, the DNRC grant manager will be notified, and all work will cease until a professional assessment of such resources can be made.

List all sources of information used to complete the Environmental Checklist. Sources may include studies, plans, documents, or the individuals, organizations, or agencies contacted for assistance. For individuals, groups, or agencies, please include a contact person and phone number. List any scoping documents or meetings and/or public meetings during project development.

WWC Engineering

Farmers Canal Company

Montana Natural Heritage Program website; http://mtnhp.org/

DNRC Sage Grouse Habitat Conservation Program, https://sagegrouse.mt.gov/

National Wetlands Inventory website, www.fws.gov/nwi/

NRCS Web Soil Survey https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Bing Aerial Photography

FEMA Map Service Center

Google Earth

Below is a list of electronic resources available for data gathering to aid in the development of the Environmental Checklist:

Abandoned Mines (DEQ): https://deq.mt.gov/Land/abandonedmines/bluebook

Agricultural Statistics (USDA): http://www.usda.gov/wps/portal/usda/usdahome?navid=DATA_STATISTICS

Air Quality

- Nonattainment Areas: http://deq.mt.gov/Air/airquality/planning/airnonattainmentstatus
- Citizens' Guide: http://deq.mt.gov/Air/airmonitoring/citguide

Army Corps of Engineers: http://www.usace.army.mil/Home.aspx

Bureau of Business and Economic Research, UM: http://www.bber.umt.edu/

Cadastral (for property ownership info): http://svc.mt.gov/msl/mtcadastral

Census Information, MT Dept. of Commerce: http://ceic.mt.gov

Conservation Districts, MT: http://macdnet.org/

Cultural Records

- Montana Historical Society: http://mhs.mt.gov/shpo/culturalrecords.asp

DEQ data search tools: http://svc.mt.gov/deq/dst/#/home

- Including Clean Water Act Info Center, Hazardous Waste Handlers, Petroleum Release Fund Claims, Unpermitted Releases, Underground Storage Tanks, Source Water Protection

EPA Enforcement and Compliance History Online http://echo.epa.gov/

Farmland Classification: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Fish (Also See Wildlife)

- Montana Fisheries Information System: http://fwp.mt.gov/fishing/mFish/
- Aquatic Invasive Species: http://fwp.mt.gov/fishAndWildlife/species/ais/speciesId/default.html

Floodplain Maps, FEMA: https://msc.fema.gov/portal

Geographic Information, Natural Resources Information System: http://nris.mt.gov/gis

Geologic Information - http://www.mbmg.mtech.edu/information/geologicmap.asp

Maps of Montana for species observations, land cover, wetland and riparian areas, land management: http://mtnhp.org/Tracker/NHTMap.aspx; http://mtnhp.org/mapviewer/?t=6

Montana Department of Transportation Environmental Manual: http://www.mdt.mt.gov/publications/docs/manuals/env/preface.pdf

Montana Board of Oil and Gas Conservation Information System: http://bogc.dnrc.mt.gov/webApps/DataMiner/

Plants

- Plant database, USDA Natural Resources Conservation Service: http://plants.usda.gov/java
- Plant Species, MT Field Guide: http://fieldguide.mt.gov/default.aspx
- Plant Species of Concern: http://mtnhp.org/SpeciesOfConcern/Default.aspx?AorP=p
- Threatened and endangered plants, USDA: http://plants.usda.gov/threat.html

Soils

- USDA Natural Resource Conservation Service database: https://websoilsurvey.nrcs.usda.gov/app/
- Montana soil and water conservation districts: http://swcdmi.org/

State Historic Preservation Office: http://mhs.mt.gov/Shpo

Tourism, UM – Institute of Tourism & Recreation Research: http://www.itrr.umt.edu

Tribal Resources:

- Blackfeet Tribal Environmental Permits: http://www.blackfeetenvironmental.com
- CSKT Natural Resources Department: http://nrd.csktribes.org/
- Montana Office of Indian Affairs: http://tribalnations.mt.gov/
- Tribal Historic Preservation Officer List http://nathpo.org/wp/thpos/find-a-thpo/ Vehicle Traffic Count (MDT): http://www.mdt.mt.gov/publications/datastats/traffic.shtml

Water

- Stream Record Extension Facilitator, USGS: http://pubs.usgs.gov/of/2008/1362/cd_links/WebPart.htm
- Streamstats basin characteristics, USGS: http://water.usgs.gov/osw/streamstats/
- Water Resources Division, DNRC: http://dnrc.mt.gov/divisions/water
- Water Rights Bureau, DNRC: http://dnrc.mt.gov/divisions/water/water-rights
- Water Right Query System, DNRC: http://nris.mt.gov/dnrc/waterrights/default.aspx Wetlands database, USFWS: http://www.fws.gov/wetlands/Data/mapper.html

Wild and Scenic Rivers: http://www.rivers.gov/montana.php

Wildlife

- Animal Species, MT Field Guide: http://fieldguide.mt.gov/default.aspx
- Animal Species of Concern: http://mtnhp.org/SpeciesOfConcern/Default.aspx?AorP=a
- Aquatic Invasive Species: http://fwp.mt.gov/fishAndWildlife/species/ais/speciesId/default.html
- Critical Habitat Mapper, USFWS: http://ecos.fws.gov/crithab/
- Crucial Areas Planning System/Habitat Assessment Tool: http://fwp.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html
- FWP Contact Map: http://fwp.mt.gov/gis/maps/contactUs/ (includes biologist responsibility areas)
- Maps and GIS Data, FWP: http://fwp.mt.gov/doingBusiness/reference/maps/
- Sage grouse management, FWP: http://fwp.mt.gov/fishAndWildlife/management/sageGrouse/
- Sage grouse habitat conservation program, DNRC: http://sagegrouse.mt.gov/
- Sage grouse habitat map: https://sagegrouse.mt.gov/ProgramMap