MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2016

MCGINNIS MEADOWS MITIGATION SITE
LINCOLN COUNTY, MONTANA



Prepared for:

MONTANA DEPARTMENT OF TRANSPORTATION

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Helena, Montana 59620

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December 2016

MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2016

MCGINNIS MEADOWS MITIGATION SITE
LINCOLN COUNTY, MONTANA
INITIAL CONSTRUCTION: 2009

MDT Project Number STPX-NH 27(17)
Control Number 4143

MFWP: SPA MDT-R1-81-2008
USACE: NWO-2008-03130 MTH

prepared for

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1.0 INTRODUCTION

The McGinnis Meadows 2016 Wetland Mitigation Monitoring Report presents the results of the seventh year of postconstruction monitoring at the McGinnis Meadows wetland mitigation site. This Montana Department of Transportation (MDT) wetland mitigation project is located in Section 33, Township 26 North, Range 28 West, Lincoln County, Montana, as shown in Figure 1-1. The project lies within the boundaries of Watershed #1 – Kootenai River Basin. McGinnis Meadows is located approximately 7 miles south of the US Highway 2 corridor on two parcels that encompass 33 acres of a historic hay field and pasture (Figure A-2, Appendix A). McGinnis Creek is a tributary to the Fisher River that bisects the parcels. Figures A-2 and A-3 (Appendix A) show the monitoring activity locations and mapped site features, respectively. Figure A-4 (Appendix A) delineates the 2016 wetland credit areas. The MDT Mitigation Site Monitoring form, US Army Corps of Engineers (USACE) Wetland Determination Data forms [USACE, 2010], and the 2008 MDT Montana Wetland Assessment Method (MWAM) forms [Berglund and McEldowney, 2008] are included in Appendix B. Representative photographs are included in Appendix C, and the project plan sheet is included in Appendix D.

Wetlands that were developed at this location provide compensatory mitigation for wetland impacts associated with transportation projects in the Missoula District. The McGinnis Meadows site was selected after an extensive search of potential wetland and stream restoration sites by MDT within the Kootenai River Watershed in cooperation with a consortium of conservation districts known as Montana Watersheds Incorporated (MWI). The consortium consisted of the Lincoln, Sanders, and Flathead County Conservation Districts with technical assistance from the US Department of Agriculture (USDA) as well as Natural Resources Conservation Service (NRCS) centers in Bozeman, Kalispell, Libby, and Eureka, Montana. The wetland and stream restoration project was developed to improve the flood storage, stream length, and fisheries habitat of McGinnis Creek and to enhance the overall wildlife, riparian, and wetland habitats that are impacted by past agricultural practices within the McGinnis Creek watershed.

Project goals include restoring/reestablishing approximately 0.8 acre of riparian habitat and 17.3 acres of degraded wetlands, creating 2.9 acres of emergent wetlands, enhancing 1.74 acres of existing emergent wetland and an intermittent drainage, preserving 0.3 acre of existing riparian communities along McGinnis Creek, and protecting 2.2 acres of upland buffer. Section 3.10 of this report presents the project credit ratios approved by the USACE under Permit Number NWO-2008-03130-MTH. MDT also seeks to obtain approximately 8,835 stream credits to restore 2,850 linear feet of McGinnis Creek. The approved performance standards [MDT, 2009] are listed in Section 3.10.

1. **Wetland Characteristics** for all of the restored, created, enhanced, and preserved wetlands within the project limits will meet the parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the 1987 *Corps of Engineers Wetlands Delineation Manual for the Determination of Wetlands* (1987 Wetland Manual) [Environmental Laboratory, 1987] and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (WMVC) (Version 2.0) (2010 Regional Supplement) [USACE, 2010].

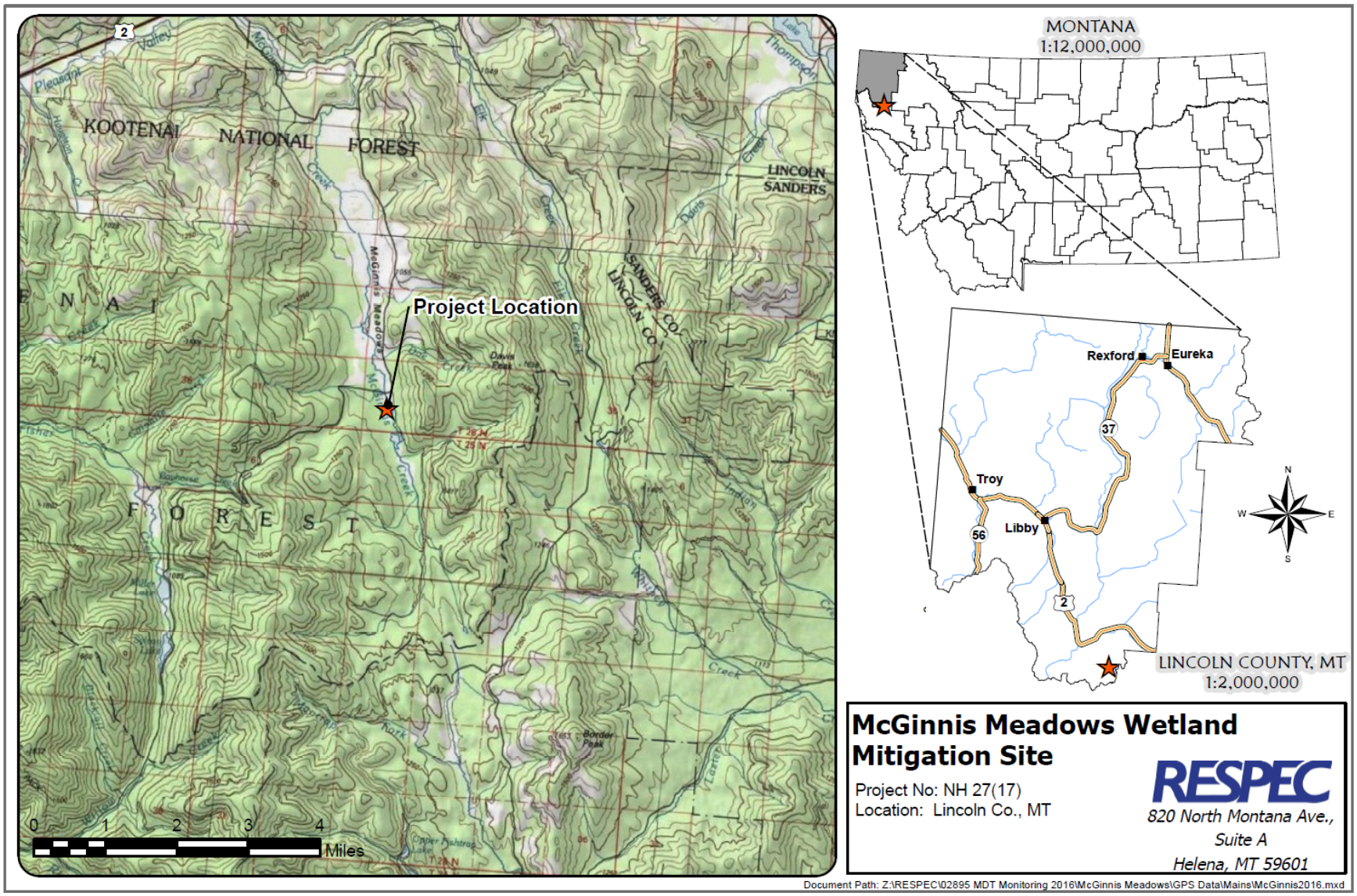


Figure 1-1. Project Location of the McGinnis Meadows Site.

a. **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Wetland Manual and 2010 Regional Supplement. Soil saturation will be present for at least 12.5 percent of the growing season.

b. **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent NRCS definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil profile development will be documented during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per current guidance. Because typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success are achieved.

c. **Hydrophytic Vegetation Success** will be achieved where aerial cover of facultative or wetter species is greater than or equal to 70 percent and state-listed noxious weeds do not exceed 5 percent cover. The following concept of "dominance," as defined in the 1987 Wetland Manual, will be applied during future routine wetland determinations in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines).*"

d. **Woody Plants** and plantings will be considered successful where they exceed 50 percent survival after 5 years. The natural colonization of woody plant species from nearby sources is anticipated once the grazing, haying, and construction activities are removed from the site. The rate and extent of natural woody plant colonization will depend on factors such as habitat availability, beaver activity, seed sources, and other natural selection factors.

2. **Open Water** is intended to be provided by the project during the spring and early summer within excavated depressions. Open water area will be considered creditable under this plan.

3. **McGinnis Creek Channel Restoration Success** will be evaluated in terms of revegetation success.

   a. Revegetation along the new McGinnis Creek channel corridor will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland plant species.

   b. The intent of the stream restoration is to allow the stream to migrate naturally within the floodplain and to give it enough room to move and stabilize itself within the site.

4. **Upland Buffer Success** will be achieved when the noxious weeds do not exceed 5 percent of cover within the buffer areas on site. Any area within the creditable buffer zone that is disturbed by project construction must have at least 50 percent aerial cover of nonweed species by the end of the monitoring period.

5. **Weed Control** will be based on annual monitoring of the site to determine weed species and the degree of infestation within the site. Control measures are based on the monitoring results and will be implemented by MDT to minimize and/or eliminate the intrusion of state-

listed noxious weed species within the site. MDT is currently managing the property to control relic weed problems before wetland construction activities are initiated within the site.

6. **Fencing** on the proposed mitigation site has been installed around the perimeter of the site to protect the integrity of the wetland from disturbance. Fencing that was installed along the perimeter of the site was designed to be wildlife-friendly to allow for wildlife movement into and out of the wetland complex.

2.0 METHODS

The seventh monitoring event was completed on July 27, 2016. Information collected during the field investigation was recorded on the Wetland Mitigation Site Monitoring form and Wetland Determination Data form (Appendix B). Monitoring activity locations were located with a global positioning system (GPS) (Figure A-2, Appendix A). Information collected during the site visit included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data, stream channel cross-sectional surveys, bird- and wildlife-use documentation, photographs, and a nonengineering examination of the infrastructure established within the mitigation project area.

2.1 HYDROLOGY

The presence of hydrological indicators as outlined on the Wetland Determination Data form was assessed at two data points that were established within the project area. The hydrologic indicators were evaluated according to features observed in situ during the site visit. The data were recorded on the Wetland Determination Data forms (Appendix B). Hydrologic assessments allow mitigation goals that address inundation and saturation requirements to be evaluated.

Technical criteria for wetland hydrology guidelines have been established as “permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (12.5 percent of the growing season) during the growing season” [USACE, 2010]. Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered jurisdictional wetlands. The growing season is defined for purposes of this report as the number of days when a 50 percent probability exists that the minimum daily temperature is greater than or equal to 28.5 degrees Fahrenheit [USACE, 2010]. The growing season recorded for the meteorological station at Libby 32 SSE, Montana (245020), which is located approximately 20 miles northwest of the project site, extends from June 13 to September 1 for a total of 81 days. Areas that are defined as wetlands would require 10 contiguous days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria and performance standards.

Groundwater levels were measured in three monitoring wells across the site by US Geological Survey (USGS) staff in 2016. The well locations are shown on Figure A-2 (Appendix A).

2.2 STREAM CHANNEL SURVEY

Three baseline stream cross sections were established and originally surveyed in 2010 at permanent locations marked with bank pins to assess bank stability and lateral migration throughout the monitoring period. The cross-section locations are shown on Figure A-2 (Appendix A). The stream cross sections were resurveyed from 2011 through 2016. The results of the three cross-section surveys over the 6 monitoring years are presented in Section 3.2. Winward's plant stability rating scale [Winward, 2000] was used to assess streambank stability at the three cross sections. Photographs of the cross sections from 2010 through 2016 are provided in Appendix C.

2.3 VEGETATION

The boundaries of general dominant-species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2016 aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (< 1 percent), 1 (1–5 percent), 2 (6–10 percent), 3 (11–20 percent), 4 (21–50 percent), and 5 (> 50 percent) (Appendix B). Community types were named based on the predominant vegetation species that characterized each mapped polygon (Figure A-3, Appendix A).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects that were established in summer 2010 (Figure A-2, Appendix A). Vegetation composition was assessed and recorded along two vegetation belt transects approximately 10 feet wide and 504 feet and 1,000 feet long for Transects 1 and 2 (T-1 and T-2), respectively (Figure A-2, Appendix A). The transect locations were recorded with a resource-grade GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated by using the same cover ranges listed for the community data (Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The *Montana Noxious Weed List* (July 2015), which was prepared by the Montana Department of Agriculture [2015], was used to categorize weeds identified within the site. The location of noxious weeds was noted in the field during the investigation and mapped on the 2016 aerial photographs (Appendix A). The noxious weed species that were identified are color-coded. The locations are denoted with the symbol "**x**", "▲", or "■," which represent 0.0–0.1 acre, 0.1–1.0 acre, or greater than 1.0 acre in extent, respectively. The letters T, L, M, and H represent the cover classes and stand for less than 1 percent, 1–5 percent, 6–25 percent, and 26–100 percent, respectively. The survival of woody species that were planted on the site was recorded during each monitoring event.

2.4 SOIL

Soil information was obtained from the *Web Soil Survey for Lincoln County Area* [USDA, 2016] and in situ soil descriptions. Soil cores were excavated by using a Montana sharpshooter shovel and evaluated according to procedures outlined in the 1987 Wetland Manual and the 2010 Regional Supplement. A description of the soil profile, including hydric soil indicators when present, was recorded on the Wetland Determination Data form for each profile (Appendix B).

2.5 WETLAND DELINEATION

Waters of the US, including special aquatic sites and jurisdictional wetlands, were delineated throughout the project area according to criteria established in the 1987 Wetland Manual and the 2010 Regional Supplement. The technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology that were described in the 2010 Regional Supplement must be satisfied to delineate a representative area as jurisdictional. The name and indicator status of plant species was derived from the 2016 national wetland plant list (NWPL) [Lichvar et al., 2016]. A routine level-2 on-site determination method [Environmental Laboratory, 1987] was used to delineate jurisdictional areas within the project boundaries. The information was recorded onto the Wetland Determination Data forms (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross-referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site (i.e., mudflat). The wetland boundary was surveyed and identified on the 2016 aerial photographs. Wetland areas were calculated using GIS methods.

2.6 WILDLIFE

Observations and other positive indicators of use by mammal, reptile, amphibian, and bird species were recorded on the Wetland Mitigation Site Monitoring forms during each of the site visits. Indirect-use indicators, including tracks, scat, burrows, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list of animals that were observed from 2010 through 2016 was compiled for this report.

2.7 FUNCTIONAL ASSESSMENT

The 2008 MDT MWAM [Berglund and McEldowney, 2008] was used to evaluate functions and values of wetlands delineated on the site from 2010 through 2016. This method provides an objective means of assigning wetlands an overall rating and provides regulators with a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values [Berglund and McEldowney, 2008].

An MDT MWAM form was completed for each of the four assessment areas (AAs) within the McGinnis Meadows site. The AAs include: Creation (excavated cells in the southeast quadrant of the project area plus any wetland that is created outside of the restoration, enhancement, and preservation credit areas), Restoration (reestablishment and rehabilitation area), Enhancement (existing emergent wetland), and Preservation (existing riverine wetlands).

2.8 PHOTOGRAPHIC DOCUMENTATION

Monitoring at photo points provided supplemental information that documented wetland, upland, and transect conditions; site trends; and current land uses that surround the site. Photographs were taken at established photo points throughout the site during the site visit (Appendix C). Photo-point locations were recorded with a resource-grade GPS unit (Figure A-2, Appendix A).

2.9 GLOBAL POSITIONING SYSTEM DATA

Site features and survey points were collected by using a resource-grade (± 1 meter) Trimble R1 GNSS GPS receiver and companion Android tablet during the 2016 monitoring season. The collected data were then transferred to a personal computer, imported into GIS, and projected in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included wetland boundaries, fence boundaries, photo points, transect endpoints, noxious weed infestations, and wetland data points.

2.10 MAINTENANCE NEEDS

Channels, engineered structures, fencing, bird boxes, and other man-made features were examined during the site visit for obvious signs of breaching, damage, or other problems. This examination was cursory and did not constitute an engineering-level structural inspection.

3.0 RESULTS

3.1 HYDROLOGY

Climate data from the Libby 32 SSE, Montana (245020) weather station recorded an average total annual precipitation rate of 24.44 inches from 1949 to 2015 [Western Regional Climate Center, 2016]. Annual precipitation for 2010, 2011, 2012, 2013, 2014, and 2015 was 21.93, 22.64, 27.20, 19.18, 25.75, and 21.26 inches, respectively. In general, the region that surrounds the project area exhibited below-average precipitation before and during the growing season in 2010, 2011, 2013, and 2015 and above-average precipitation in 2012 and 2014. Based on data recorded from the Libby 32 SSE, Montana station for the January through August time period, precipitation totals for this region were 14.94 inches (long-term average), and 11.82 inches in 2016, which is over 3 inches less than the long-term average. Based on field observations of hydrology within the site over the 6-year monitoring period, water levels within the excavated basins appear to be largely influenced by groundwater and stream discharge with moderate influence from direct precipitation. In 2016, the water levels in the wetland cells were lower than in previous years; several cells were only saturated or moist during the site visit. These lower water levels are attributed to the reduced amount of precipitation this area received in 2016.

The McGinnis Creek Watershed is approximately 10.2 square miles in area. The creek bisects the project area. The project site was historically drained, filled, and leveled for agricultural purposes in the early to mid-twentieth century. The McGinnis Creek corridor was channelized during the same timeframe, which substantially altered the natural floodplain of the property. Mitigation activities included constructing a more sinuous McGinnis Creek channel. The hydrologic connection between

the creek and associated floodplain resulted in an elevated local groundwater table along the drainage. The constructed depressions were excavated to a depth that would intercept the peak seasonal groundwater elevation. Overbank flooding events recharge surface water to the depressions that were excavated within the floodplain along McGinnis Creek and throughout the site.

The average depth of surface water in areas of inundation across the site in 2016 was estimated at 1.0 foot with surface water depths ranging from 0.0 to 2.0 feet within the created cells. Approximately 15 percent of the entire site was inundated during the July site investigation, including the aquatic macrophytes/open water community and McGinnis Creek. The average depth at the emergent vegetation and open-water boundary was 1.0 feet.

Groundwater levels were measured by the USGS on July 26, 2016, in three on-site wells located within areas that were originally delineated as wetlands in 2005 and 2006. The measurements and locations are provided in Table 3-1 and Figure A-2 (Appendix A). Groundwater elevations recorded in Wells 1, 2, and 3 during the July 2016 monitoring were the lowest recorded July groundwater depths to date at this site. All of the previous monitoring years recorded higher groundwater depths in July. Overall, the water levels that were documented from 2010 through 2016 indicate that the site has a fluctuating water table that drops well below 1 foot of the ground surface during the latter part of the growing season.

Two data points were sampled in 2016 to help define the wetland and upland boundaries (Figure A-2, Appendix A; Wetland Mitigation Site Monitoring form, Appendix B). DP-1W is located in an area that met the wetland criteria. Primary wetland hydrology indicators at DP-1W included saturation to ground level and oxidized rhizospheres along living roots. The site also had a positive FAC-neutral test. DP-2U did not display any primary or secondary indicators of wetland hydrology.

Table 3-1. Groundwater Depths Measured in Wells 1, 2, and 3 From 2010 Through 2016

Well Number	Groundwater Depth (feet below ground surface)						
	2010	2011	2012	2013	2014	2015	2016
Well 1	1.5	0.7	1.9	2.00	2.00	2.40	4.46
Well 2	3.3	2.4	2.4	3.24	2.5	3.2	3.39
Well 3	3.7	2.8	3.3	4.13	4.6	4.6	5.25

3.2 MCGINNIS CREEK CHANNEL

Surface-water flow rates through the McGinnis Meadows site depend on releases from a reservoir that is located less than 1 mile south of the project site. Two 24-inch equalizing pipes and a lower culvert that serves as a drain through an impoundment control the flow rates from the reservoir. The base of the new McGinnis Creek channel was constructed at a higher elevation than the incised, abandoned channel to facilitate overbank flow from the creek and to raise groundwater elevations across the site. The fisheries habitat was improved by excavating pools in the outside channel bends. The stream banks of McGinnis Creek were minimally disturbed during construction and are currently vegetated primarily with reed canary grass (*Phalaris arundinacea*). Reed canary grass has

a plant stability rating of 9; 1 is the lowest rating and 10 is the highest according to Winward's plant stability rating scale [Winward, 2000]. The existing vegetation on the banks of the restored channel is expected to provide long-term stability and allow minimal lateral stream migration across the site.

The results of the three cross-sectional surveys that were collected over the 6 years of monitoring are presented on Charts 3-1 through 3-3. The results of the cross-sectional surveys indicate that stream adjustments occurred at the permanent monitoring locations between 2012 and 2013. A slight widening of the channel occurred at each of the three surveyed cross sections in 2013. Undercut banks had been observed at Cross Sections 2 and 3 in previous years. The stream widening that was observed in 2013 at Cross Sections 2 and 3 is likely caused by partial collapse of these undercut banks. Placing large trees within the stream likely contributed to the channel widening in these areas. These trees were intended to provide the functions associated with large woody debris, have increased stream velocities, and exert a corresponding increase in erosional forces on the immediately adjacent streambanks.

Since 2013, the surveyed cross sections indicated relatively stable conditions at all three monitoring locations. Movement of the streambed and banks has been minimal and is within the resolution of the measurement methodology. Overall, the banks of McGinnis Creek were well vegetated and exhibited minimal, localized erosion only in the upper reach of the project area in 2016. Photographs of the cross sections from 2010 through 2016 are provided in Appendix C. The photographs illustrate a notable increase in the vegetation cover since construction.

3.3 VEGETATION

Vegetation communities were mapped and named based on the dominant species within a community and the results of the wetland delineation data. A list of the 156 plant species that were identified at the McGinnis Meadows site from 2010 to 2016 is provided in Table 3-2. The communities and associated species are listed on the Wetland Mitigation Site Monitoring form (Appendix B) and mapped on Figure A-3 (Appendix A). The 2016 monitoring event identified 12 vegetation communities including 7 wetland types, 1 open-water community, and 4 upland types (Figure A-3, Appendix A). In general, vegetation communities across the majority of the site (95 percent) have remained stable with just a slight change to a portion of the upland/boundary in an area that displayed increased hydrology and sedge development. Reed canary grass (*Phalaris arundinacea*) appears to be gaining dominance in several vegetation communities. The McGinnis Meadows vegetation communities are discussed in this section.

Upland community Type 1 – *Alopecurus pratensis/Phalaris arundinacea* was identified within 2.27 acres in 2016. The frequency and duration of wetland hydrology in portions of the historic upland area resulted in portions of this upland community converting to a new wetland community type (18 – *Alopecurus pratensis/Carex* spp.) in 2013 and 2014. However, in 2016, the upland community increased by 0.13 acre along the northern boundary, which most likely occurred because of drier-than-average conditions in the region. The upland community occurred along the higher elevations adjacent to wetland communities. This upland community was dominated by facultative and facultative wetland species. Field meadow-foxtail (*Alopecurus pratensis*) dominated the community with lesser amounts of reed canary grass and five secondary species present at 5 percent cover or less (Wetland Mitigation Site Monitoring form, Appendix B).

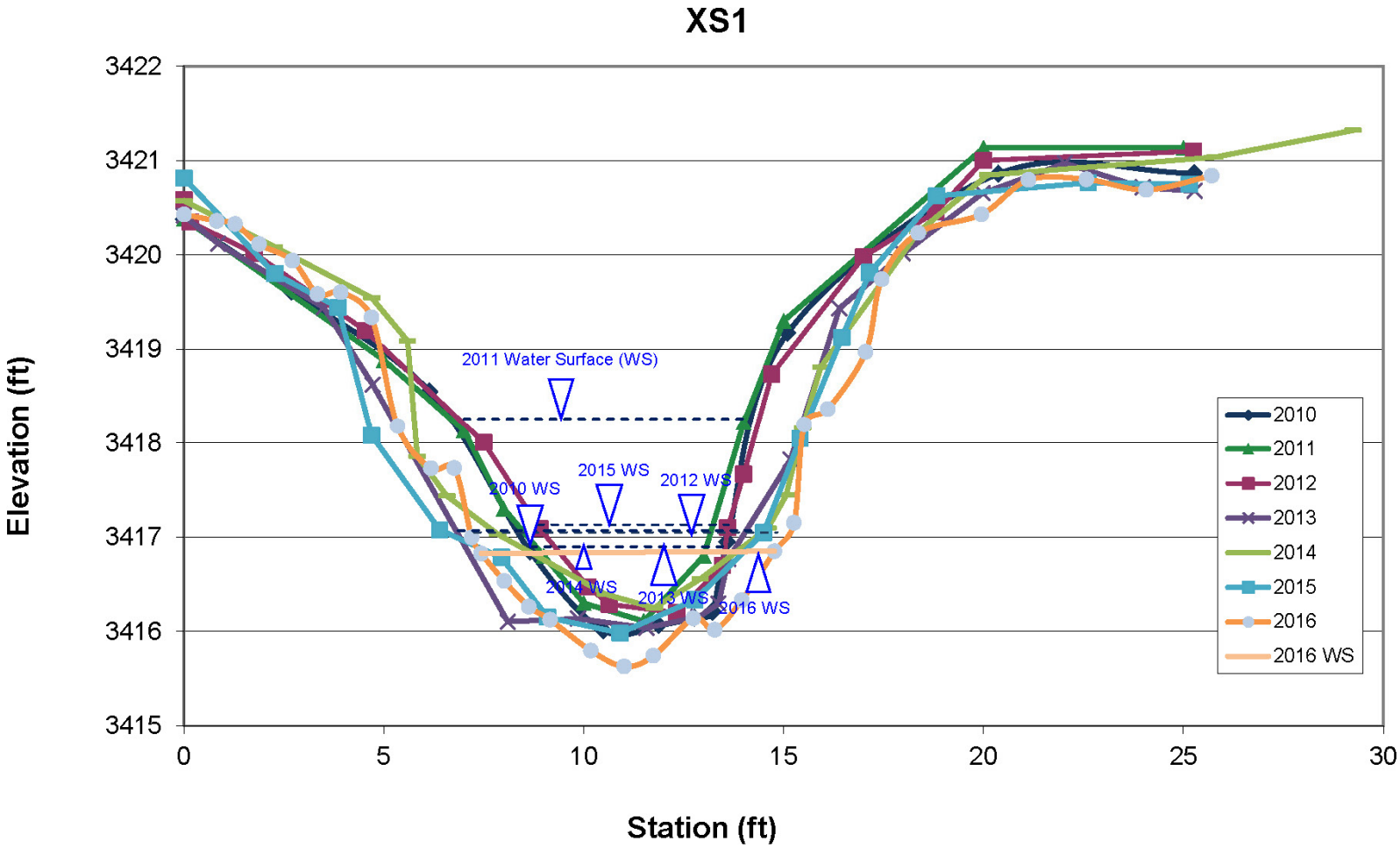


Chart 3-1. McGinnis Creek Stream Cross Section 1.

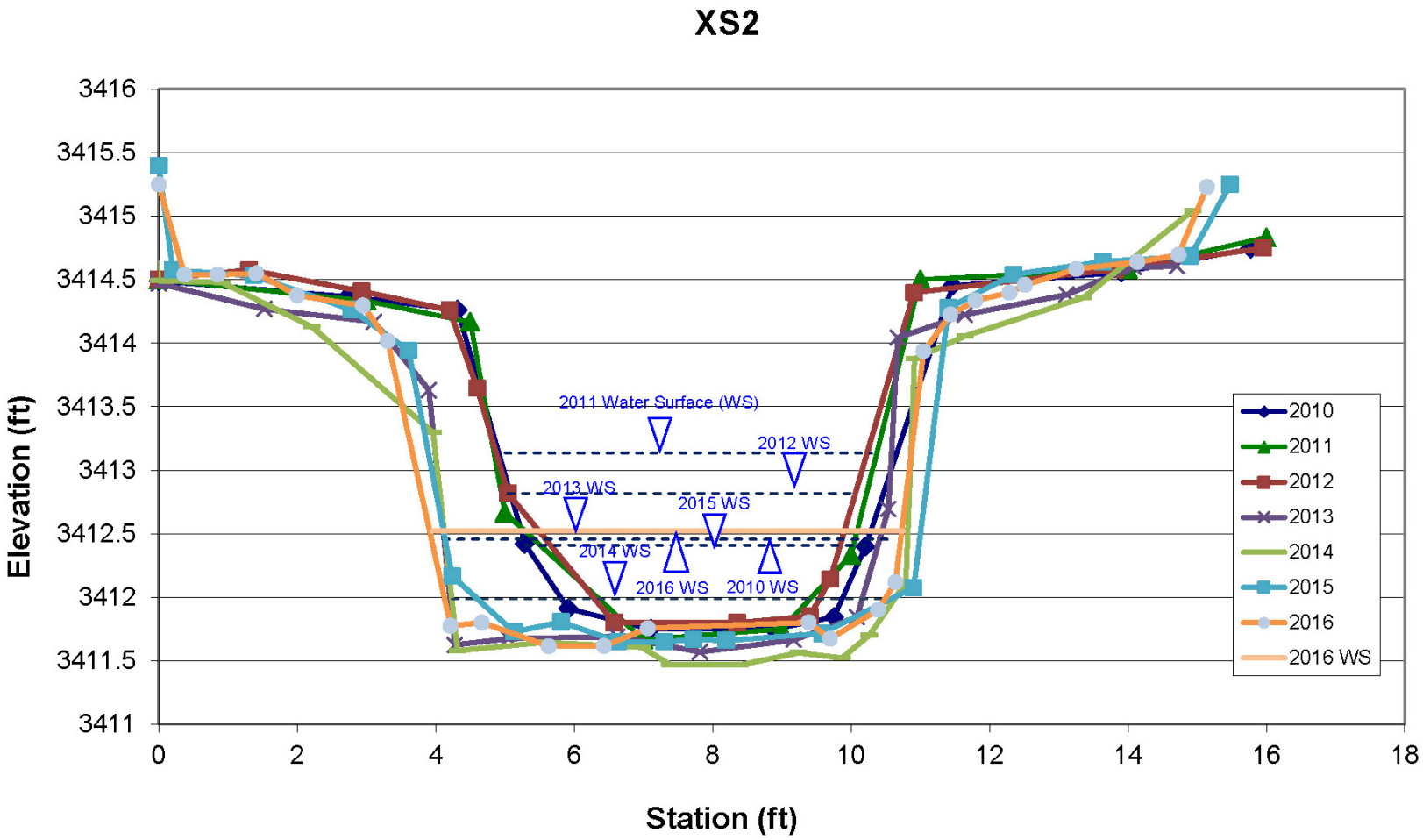


Chart 3-2. McGinnis Creek Stream Cross Section 2.

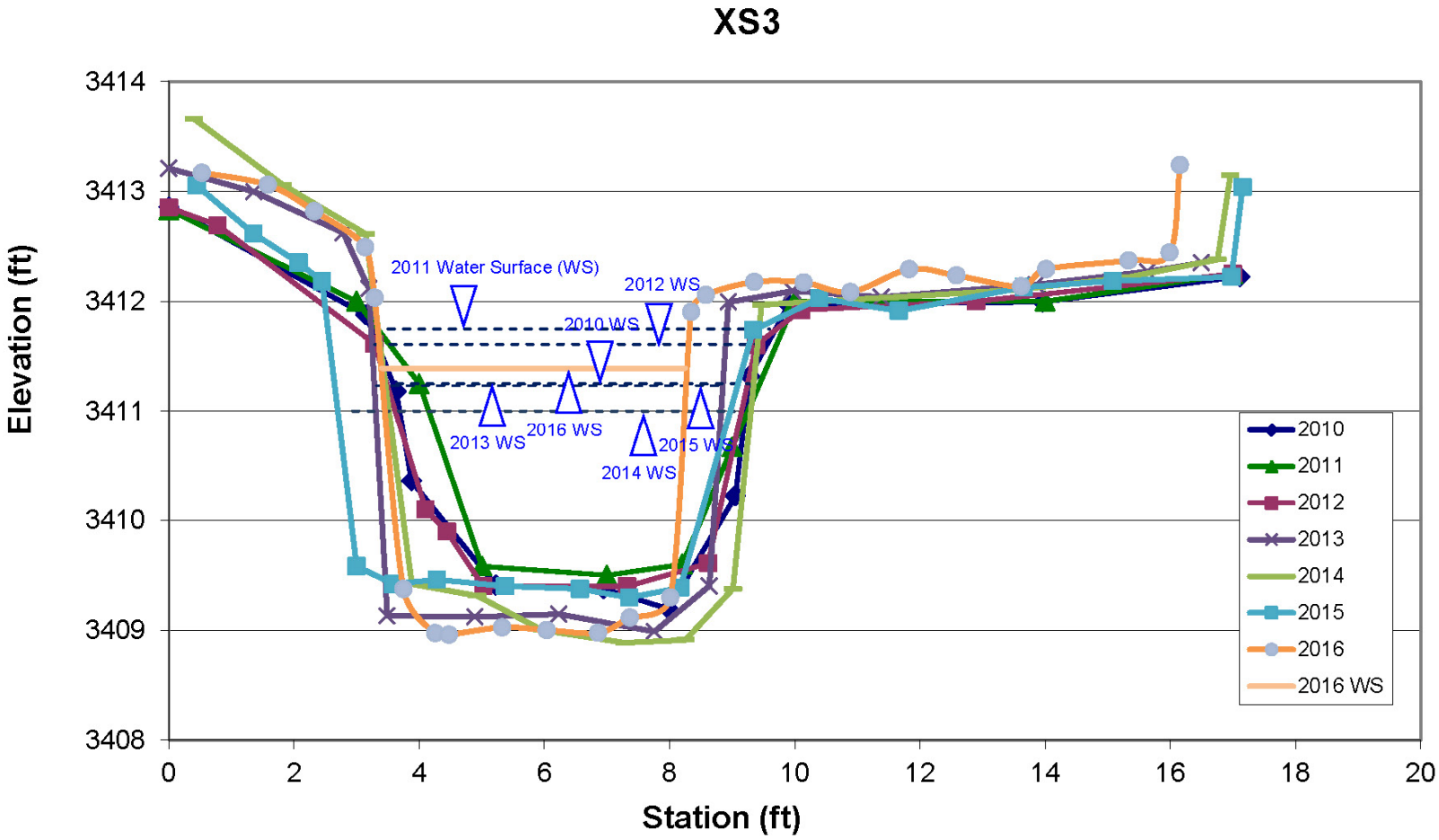


Chart 3-3. McGinnis Creek Stream Cross Section 3.

Table 3-2. Comprehensive List of Plant Species Identified at the McGinnis Meadows Site From 2010 Through 2016 (Page 1 of 4)

Scientific Name	Common Name	WMVC Indicator Status[(a)]
Abies lasiocarpa	Subalpine Fir	FACU
Achillea millefolium	Common Yarrow	FACU
Agrostis gigantea	Black Bent	FAC
Agrostis scabra	Rough Bent	FAC
Agrostis stolonifera	Spreading Bent	FAC
Algae, brown	Algae, brown	NL
Algae, green	Algae, green	NL
Alnus incana	Speckled Alder	FACW
Alnus viridis	Sitka Alder	FACW
Alopecurus aequalis	Short-Awn Meadow-Foxtail	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Amelanchier alnifolia	Saskatoon Service-Berry	FACU
Antennaria parvifolia	Nuttall's Pussytoes	NL
Antennaria rosea	Rosy Pussytoes	NL
Apera interrupta	Dense Silky Bentgrass	NL
Arctostaphylos uva-ursi	Red Bearberry	FACU
Argentina anserina	Silverweed cinquefoil	NL
Arnica chamissonis	Leafy Leopardbane	FACW
Aster sp.	Aster	NL
Beckmannia syzigachne	American Slough Grass	OBL
Berberis repens	Creeping Oregon-grape	NL
Bromus carinatus	California Brome	NL
Bromus inermis	Smooth Brome	FAC
Calamagrostis canadensis	Bluejoint	FACW
Calamagrostis rubescens	Pinegrass	NL
Campanula rotundifolia	Bluebell-of-Scotland	FACU
Capsella bursa-pastoris	Shepherd's-Purse	FACU
Cardamine pensylvanica	Quaker Bittercress	FACW
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex athrostachya	Slender-Beak Sedge	FACW
Carex bebbii	Bebb's Sedge	OBL
Carex microptera	Small-Wing Sedge	FACU
Carex nebrascensis	Nebraska Sedge	OBL
Carex pachystachya	Thick-Head Sedge	FAC
Carex petasata	Liddon Sedge	UPL
Carex praticola	Northern Meadow Sedge	FACW
Carex sp.	Sedge	NL
Carex stipata	Stalk-Grain Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	Lesser Bladder Sedge	OBL
Centaurea stoebe	Spotted Knapweed	NL

Table 3-2. Comprehensive List of Plant Species Identified at the McGinnis Meadows Site From 2010 Through 2016 (Page 2 of 4)

Scientific Name	Common Name	WMVC Indicator Status[(a)]
Cerastium fontanum	Common Mouse-Ear Chickweed	FACU
Ceratophyllum demersum	Coon's-Tail	OBL
Chara sp.	Algae	OBL
Chenopodium album	Lamb's-Quarters	FACU
Cicuta douglasii	Western Water-Hemlock	OBL
Cirsium arvense	Canadian Thistle	FAC
Cirsium vulgare	Bull Thistle	FACU
Comarum palustre	Purple Marshlocks	OBL
Convolvulus arvensis	Field Bindweed	NL
Crataegus douglasii	Black Hawthorn	FAC
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchard Grass	FACU
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	NL
Eleocharis palustris	Common Spike-Rush	OBL
Eleocharis sp.	Spike-Rush	NL
Elymus glaucus	Blue Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FAC
Elymus trachycaulus	Slender Wild Rye	FAC
Epilobium ciliatum	Fringed Willowherb	FACW
Epilobium palustre	Marsh Willowherb	OBL
Equisetum arvense	Field Horsetail	FAC
Equisetum sp.	Horsetail	NL
Erysimum cheiranthoides	Worm-Seed Wallflower	FACU
Fragaria virginiana	Virginia Strawberry	FACU
Galium trifidum	Three-Petal Bedstraw	FACW
Galium triflorum	Fragrant Bedstraw	FACU
Geum macrophyllum	Large-Leaf Avens	FAC
Glyceria borealis	Small Floating Manna Grass	OBL
Glyceria elata	Tall Manna Grass	FACW
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Gnaphalium palustre	Western Marsh Cudweed	FACW
Heracleum maximum	American Cow-Parsnip	FAC
Heracleum sphondylium	Eltrot	FAC
Hordeum brachyantherum	Meadow Barley	FACW
Juncus articulatus	Joint-Leaf Rush	OBL
Juncus balticus	Baltic Rush	FACW
Juncus bufonius	Toad Rush	FACW
Juncus confusus	Colorado Rush	FAC
Juncus effusus	Lamp Rush	FACW

Table 3-2. Comprehensive List of Plant Species Identified at the McGinnis Meadows Site From 2010 Through 2016 (Page 3 of 4)

Scientific Name	Common Name	WMVC Indicator Status[(a)]
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus longistylis	Long-Style Rush	FACW
Juncus nevadensis	Sierran Rush	FACW
Juncus nodosus	Knotted Rush	OBL
Juncus tenuis	Lesser Poverty Rush	FAC
Larix occidentalis	Western Larch	FACU
Lemna minor	Common Duckweed	OBL
Linaria vulgaris	Butter-and-eggs	NL
Linum lewisii	Prairie Flax	NL
Maianthemum stellatum	Starry False Solomon's-Seal	FAC
Medicago lupulina	Black Medick	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL
Montia linearis	Linear-Leaf Candy-Flower	FAC
Myosotis stricta	Small-flowered Forget-me-not	NL
Myriophyllum sp.	Water-Milfoil	NL
Packera pseudaurea	Streambank Groundsel	FACW
Penstemon confertus	Yellow Beardtongue	NL
Persicaria amphibia	Water Smartweed	OBL
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FAC
Picea engelmannii	Engelmann's Spruce	FAC
Pinus contorta	Lodgepole Pine	FAC
Pinus ponderosa	Ponderosa Pine	FACU
Plantago major	Great Plantain	FAC
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Poa sp.	Blue Grass	NL
Polygonum douglasii	Douglas' Knotweed	FACU
Populus tremuloides	Quaking Aspen	FACU
Potentilla gracilis	Graceful Cinquefoil	FAC
Potentilla norvegica	Norwegian Cinquefoil	FAC
Potentilla recta	Sulphur Cinquefoil	NL
Potentilla sp.	Cinquefoil	NL
Prunella vulgaris	Common Selfheal	FACU
Pseudotsuga menziesii	Douglas-Fir	FACU
Puccinellia nuttalliana	Nuttall's Alkali Grass	FACW
Ranunculus aquatilis	White Water-Crowfoot	OBL
Rorippa palustris	Bog Yellowcress	OBL
Rosa woodsii	Woods' Rose	FACU
Rubus idaeus	Common Red Raspberry	FACU

Table 3-2. Comprehensive List of Plant Species Identified at the McGinnis Meadows Site From 2010 Through 2016 (Page 4 of 4)

Scientific Name	Common Name	WMVC Indicator Status[(a)]
Rumex acetosella	Common Sheep Sorrel	FACU
Rumex crispus	Curly Dock	FAC
Salix sp.	Willow	NL
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Senecio hydrophilus	Alkali-Marsh Ragwort	OBL
Silene menziesii	White Catchfly	FAC
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sparganium angustifolium	Narrow-Leaf Burr-Reed	OBL
Sparganium emersum	European Burr-Reed	OBL
Stellaria longifolia	Long-Leaf Starwort	FACW
Symphoricarpos albus	Common Snowberry	FACU
Symphyotrichum laeve	Smooth Blue American-Aster	FACU
Symphyotrichum lanceolatum	White Panicled American-Aster	OBL
Tanacetum vulgare	Common Tansy	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	UPL
Tragopogon dubius	Meadow Goat's-beard	NL
Trifolium aureum	Yellow Clover	NL
Trifolium hybridum	Alsike Clover	FAC
Trifolium repens	White Clover	FAC
Triglochin maritima	Seaside Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Vaccinium caespitosum	Dwarf Blueberry	FAC
Verbascum thapsus	Great Mullein	FACU
Veronica americana	American-Brooklime	OBL
Veronica peregrina	Neckweed	OBL
Veronica scutellata	Grass-Leaf Speedwell	OBL
Veronica serpyllifolia	Thyme-Leaf Speedwell	FAC
Viola adunca	Hook-Spur Violet	FAC
Viola sp.	Violet	NL

(a) 2016 NWPL [Lichvar et al., 2016].
Species that were identified for the first time in 2016 are **bolded.**

Wetland community Type 2 – Aquatic Macrophytes/Open Water has developed on 1.91 acres in the deeper contours of the excavated depressions. The vegetation community has established under persistently inundated growing conditions. Vegetation species within the inundated areas included aquatic macrophytes, green algae, American manna grass (*Glyceria grandis*), reed canary grass, Northwest Territory sedge (*Carex utriculata*), and three other species with less than 1 percent cover each.

Upland Type 4 – *Picea engelmannii/Alopecurus pratensis* represented two small upland forests that are located on 0.86 acre in the southeast corner of the property, which contained a high percent cover of Canada thistle (*Cirsium arvense*). Woody species included Englemann's spruce (*Picea engelmannii*), lodgepole pine *(Pinus contorta*), ponderosa pine (*Pinus ponderosa*), and common snowberry (*Symphoricarpos albus*). Field meadow-foxtail and reed canary grass dominated the understory.

Wetland community Type 5 – *Phalaris arundinacea/Alnus incana* was a 1.64-acre, scrub/shrub, speckled alder (*Alnus incana*) and black hawthorn (*Crataegus douglasii*) community located near the southwest property corner. Reed canary grass dominated the understory. Northwest Territory sedge, American cow-parsnip (*Heracleum maximum*), American wild mint (*Mentha arvensis*), stinging nettle (*Urtica dioica*), and Canada thistle (*Cirsium arvense*) were identified within the community. The Canada thistle appeared to have been sprayed in some locations.

Wetland community Type 6 – *Carex utriculata* is 1.39 acres of an irregularly shaped polygon surrounded by community Type 9 – *Phalaris arundinacea/Carex* spp in the northwest portion of the site and in the east-central area of the site. Northwest Territory sedge was the predominant species. Reed canary grass slightly decreased since the 2015 survey. Nebraska sedge (*Carex nebrascensis*) and American wild mint were also present within this community at less than 1 percent cover.

Wetland community Type 9 – *Phalaris arundinacea/Carex* spp. dominated 15.90 acres within preexisting wetlands throughout the site. A detailed investigation of the community in 2012 characterized the entire area as wetland. Reed canary grass and *Carex* spp. dominated the community with less than 5 percent cover of other species. This community type replaces wetland community Type 7 – *Phalaris arundinacea/alopocurus pratensis* across the site because of the increase in sedge and decrease in reed canary grass and field meadow-foxtail.

Wetland Type 11 – *Alnus incana*/*Carex utriculata* was identified on the 0.51-acre former McGinnis Creek channel that traverses the property north to south. Speckled alder, reed canary grass, Northwest Territory sedge, red-tinge bulrush, and field meadow-foxtail dominated the vegetation. The name of the community has been updated to reflect the increase of Northwest Territory sedge and the decrease of reed canary grass.

Upland community Type 14 – *Alopecurus pratensis*/*Pseudotsuga menziesii* was located within 2.16 acres in the southwest corner of the project site. Douglas-fir (*Pseudotsuga menziesii*), lodgepole pine, and western larch (*Larix occidentalis*) dominated the overstory. Woody species that were present within the understory included common snowberry, speckled alder, and subalpine fir (*Abies lasiocarpa*). Field meadow-foxtail dominated the herbaceous understory, and seven other species were present at less than 5 percent cover.

Upland community Type 16 – *Phalaris arundinacea*/Soil mounds was identified on 0.28 acre that included the mounds that were created to provide woody species habitat throughout the site. The community contained reed canary grass, Canada thistle, and great mullein (*Verbascum thapsus*). None of the woody species planted in these areas survived, which was the result of herbivory by native ungulates.

Wetland community Type 18 – *Alopecurus pratensis*/*Carex* spp. was identified for the first time in 2013 to characterize a 0.16-acre area located near the southeast border of the project. The extent of the community increased by 1.17 acres to 1.33 acres in 2014 and remained unchanged in 2016. A wetland plant community has developed in an area that was previously delineated as upland. The community is dominated by field-meadow foxtail, Bebb's sedge, slender-beak sedge, tufted hair grass, and Colorado rush (*Juncus confusus*).

Wetland community Type 19 – *Carex* spp. characterized 3.75 acres of the excavated depressions that exhibited a slightly drier moisture regime (saturated, not inundated) than the adjacent open water of community Type 2 – Aquatic Macrophytes/Open Water. The community was renamed in 2012 from community Type 13 – *Deschampsia caespitosa*/*Glyceria grandis* and again in 2015 from community Type 17 – *Glyceria grandis*/*Carex* spp. to reflect an increase in the prevalence of sedge species and a decrease in the amount of tufted hair grass and American manna grass. Nebraska sedge, Bebb's sedge (*Carex bebbii*), slender-beak sedge (*Carex arthrostachya*), lesser bladder sedge (*Carex vesicaria*), knotted rush (*Juncus nodosus*), Northwest Territory sedge, speckled alder, Canada thistle, and reed canary grass dominated the diverse community.

Polygon 15 in Figure A-3 (Appendix A) represents 0.75 acre of open water that was identified as waters of the US within the ordinary high water mark (OHWM) of the McGinnis Creek channel.

Table 3-3 and Charts 3-4 and 3-5 summarize the data collected in 2016 for T-1. This transect intersects two excavated wetland basins and four communities, including upland Type 4 – *Picea engelmannii*/*Alopecurus pratensis*, wetland Type 2 – Aquatic Macrophytes/Open Water, wetland Type 9 – *Phalaris arundinacea/Carex* spp., and wetland Type 19 – *Carex* spp. The percent cover of sedge species along the transect has increased annually and replaced dominant communities of tufted hair grass and American manna grass. Open water along the transect has decreased since 2014. Hydrophytic species dominated 94 percent of the transect in 2016. The cover of wetland plants in the constructed depressions continued to increase from 2012 to 2016.

Table 3-3. Data Summary for T-1 From 2010 Through 2016 at the McGinnis Mitigation Site

Monitoring Year	2010	2011	2012	2013	2014	2015	2016
Transect Length (feet)	**504**	**504**	**504**	**504**	**504**	**504**	**504**
Vegetation Community Transitions Along Transect	5	7	5	5	5	5	5
Vegetation Communities Along Transect	2	4	4	4	4	4	4
Hydrophytic Vegetation Communities Along Transect	0	3	3	3	3	3	3
Total Vegetative Species	43	59	41	30	29	29	22
Total Hydrophytic Species	30	37	30	24	24	23	20
Total Upland Species	13	22	11	6	5	6	2
Estimated % Total Vegetative Cover	60	80	95	95	95	95	98
Estimated % Unvegetated	40	20	5	5	5	5	2
% Transect Length Comprising Hydrophytic Vegetation Communities	0.0	91.9	93.7	93.7	93.7	94.0	94.0
% Transect Length Comprising Upland Vegetation Communities	75.4	8.1	6.3	6.3	6.3	6.0	6.0
% Transect Length Comprising Unvegetated Open Water	24.6	0.0	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	29.3	0.0	0.0	0.0	0.0	0.0	0.0

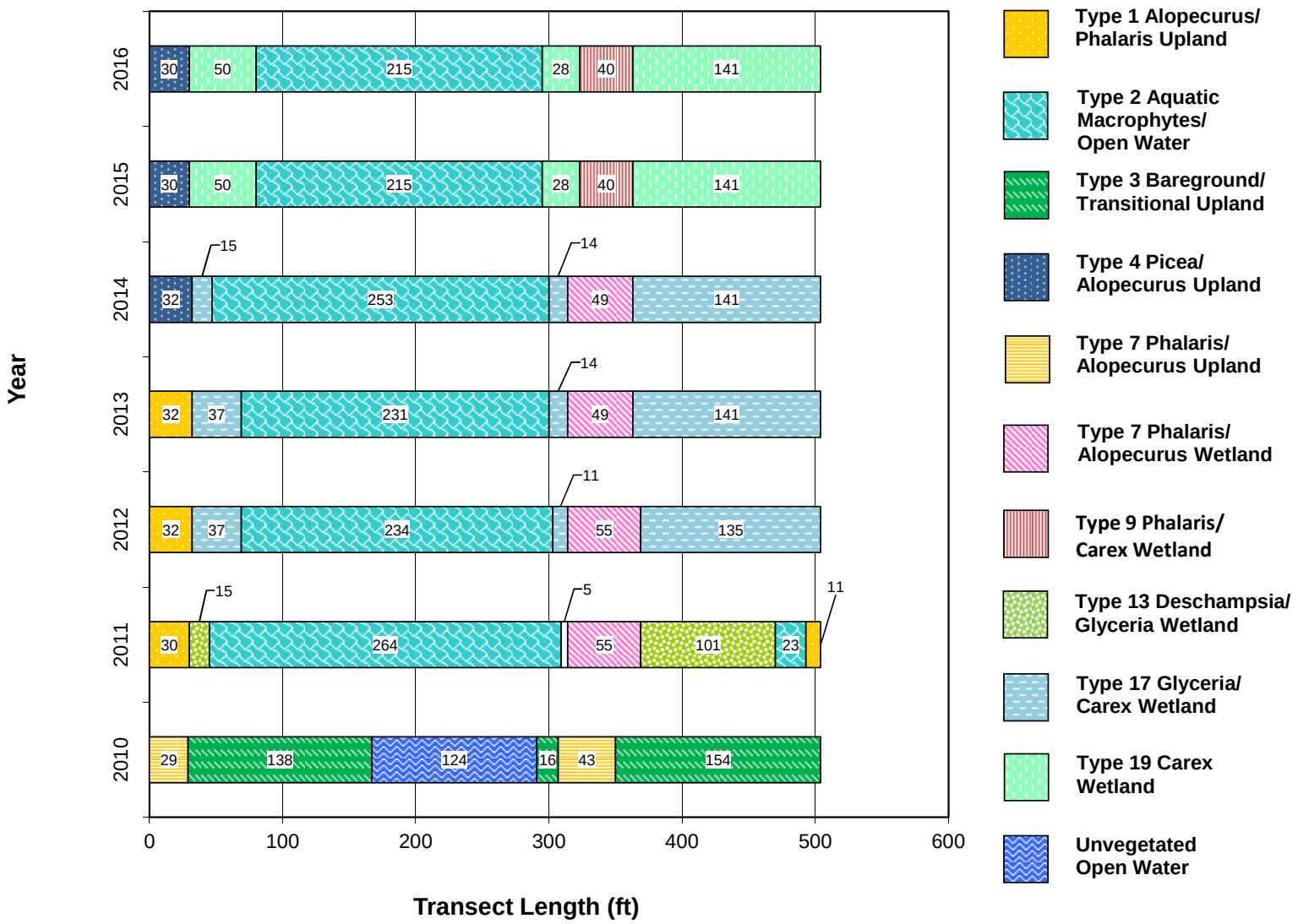


Chart 3-4. Transect Map Showing Community Types on T-1 From 2010 Through 2016 From Start (0 Foot) to Finish (504 Feet).

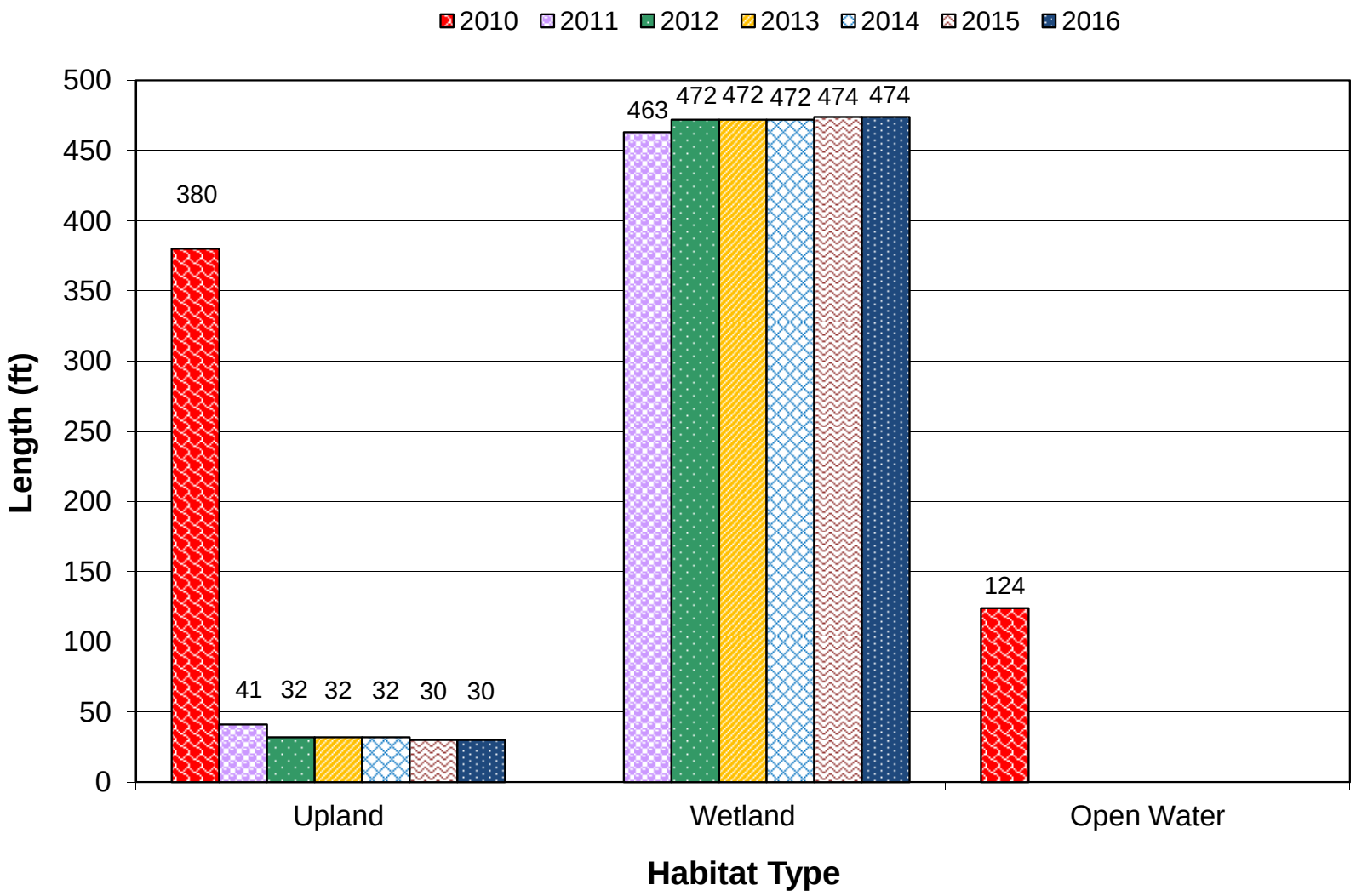


Chart 3-5. Length of Habitat Types Within T-1 From 2010 Through 2016.

T-2 extends north 1,000 feet from the center of the property to the site boundary. Data from this transect is summarized in Table 3-4 and Charts 3-6 and 3-7. The transect crossed the waters of the US that are associated with the constructed McGinnis Creek channel and two wetland communities in 2016: Type 9 – *Phalaris arundinacea/Carex spp.* and Type 19 – *Carex* spp. The 7- and 10-foot intervals of open water shown on Chart 3-6 represent the McGinnis Creek crossings. Hydrophytic vegetation communities accounted for 98.3 percent of this transect from 2012 through 2016.

Canada thistle, ox-eye daisy (*Leucanthemum vulgare*), and houndstongue (*Cynoglossum officinale*) are Priority 2B noxious weeds and were identified at the McGinnis Meadows site. Infestations ranged in size from less than 0.1 acre to a maximum 1.0 acre in size with cover classes that ranged from trace (< 1 percent) to high (25–100 percent cover). Canada thistle has invaded upland areas that were disturbed during construction. Two infestations of gypsy-flower were mapped in the southeast quarter of the site. One infestation of ox-eye daisy was mapped along the northern project boundary. The infestation size was less than 0.1 acre, and the cover class was trace at less than 1 percent.

Survival of containerized woody plants across the site was low in 2010 after the initial planting effort. A majority of the plants were installed on upland islands site-wide. Intensive wildlife browse and trampling severely compromised the survival of the woody plants. Initial survival rates were estimated at less than 10 percent. Additional woody species were planted in spring 2011. A total of 150 alder (*Alnus* sp.), 15 quaking aspen (*Populus tremuloides*), and 15 planted willows were observed alive in 2012. Approximately 125 living alder were observed along the former channel of McGinnis Creek in 2016, which was similar to previous surveys. The survival rate of the planted alder was estimated at 40 percent. The shrubs appeared to be a combination of planted, relic, and recruited alders and were not differentiated during the field survey. The natural recruitment of quaking aspen was noted in the southeast and northeast corners of the site in 2015 and 2016. Approximately 250 live quaking aspen were observed in 2016. No live red-osier dogwoods, willow (*Salix* spp.), or birch (*Betula* sp.) were observed within the planting clusters. The height and density of reed canary grass site-wide obscured the smaller woody saplings and complicated the survival assessment.

Table 3-4. Data Summary for T-2 From 2010 Through 2016 at the McGinnis Meadows Site

Monitoring Year	2010	2011	2012	2013	2014	2015	2016
Transect Length (feet)	1000	1000	1000	1000	1000	1000	1000
Vegetation Community Transitions Along Transect	14	18	12	12	12	14	14
Vegetation Communities Along Transect	4	5	2	2	3	4	4
Hydrophytic Vegetation Communities Along Transect	3	4	2	2	2	3	3
Total Vegetative Species	44	49	22	21	20	21	16
Total Hydrophytic Species	29	38	19	18	17	18	15
Total Upland Species	15	11	3	3	3	3	1
Estimated % Total Vegetative Cover	60	80	95	95	95	95	98
Estimated % Unvegetated	40	20	5	5	5	5	2
% Transect Length Comprising Hydrophytic Vegetation Communities	63.5	91.0	98.3	98.3	98.3	98.3	98.0
% Transect Length Comprising Upland Vegetation Communities	34.6	7.8	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Unvegetated Open Water	1.9	1.2	1.7	1.7	1.7	1.7	2.0
% Transect Length Comprising Mudflat	5.0	0.0	0.0	0.0	0.0	0.0	0.0

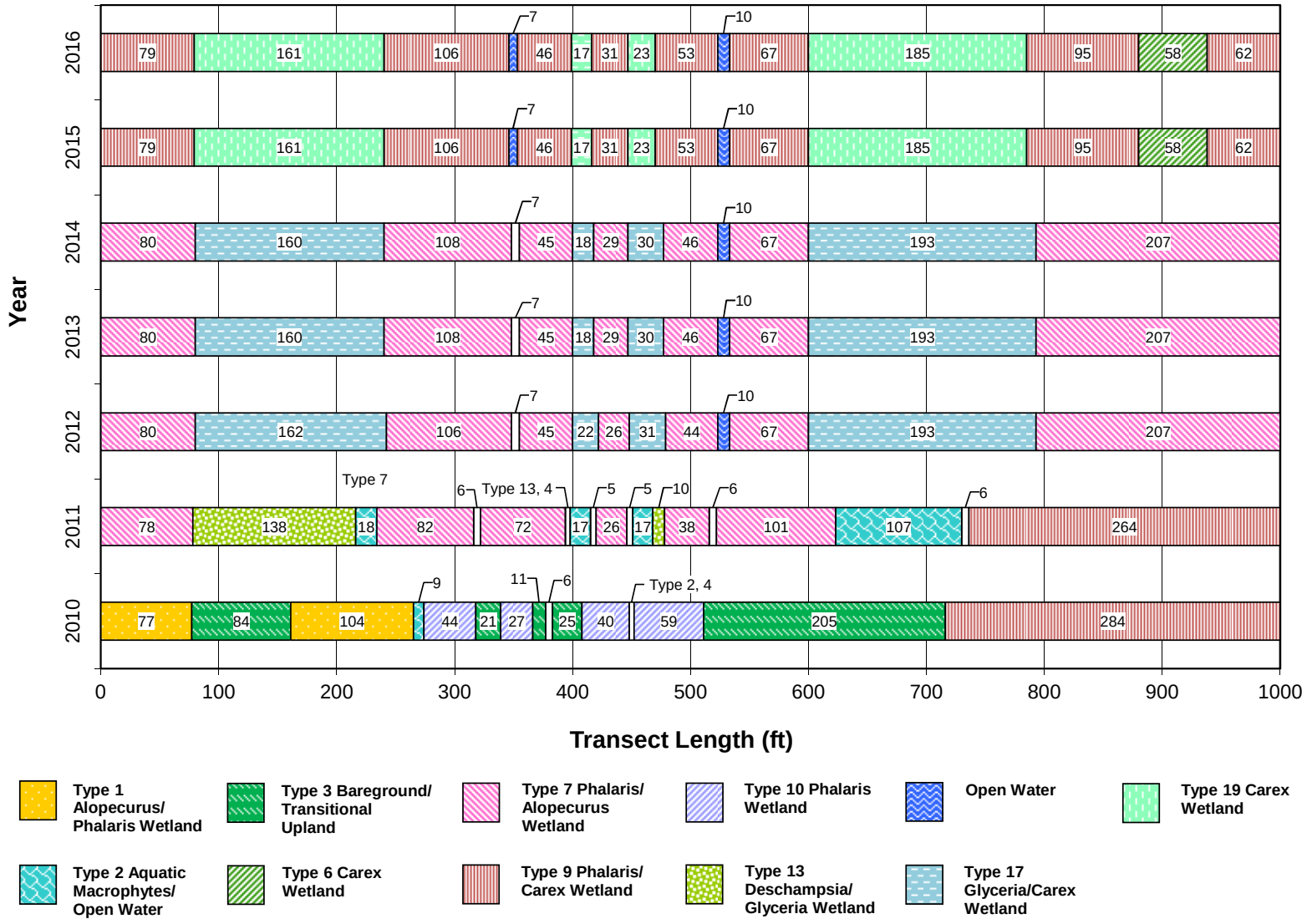


Chart 3-6. Transect Map Showing Community Types on T-2 From 2010 Through 2016 From Start (0 Foot) to Finish (1,000 Feet).

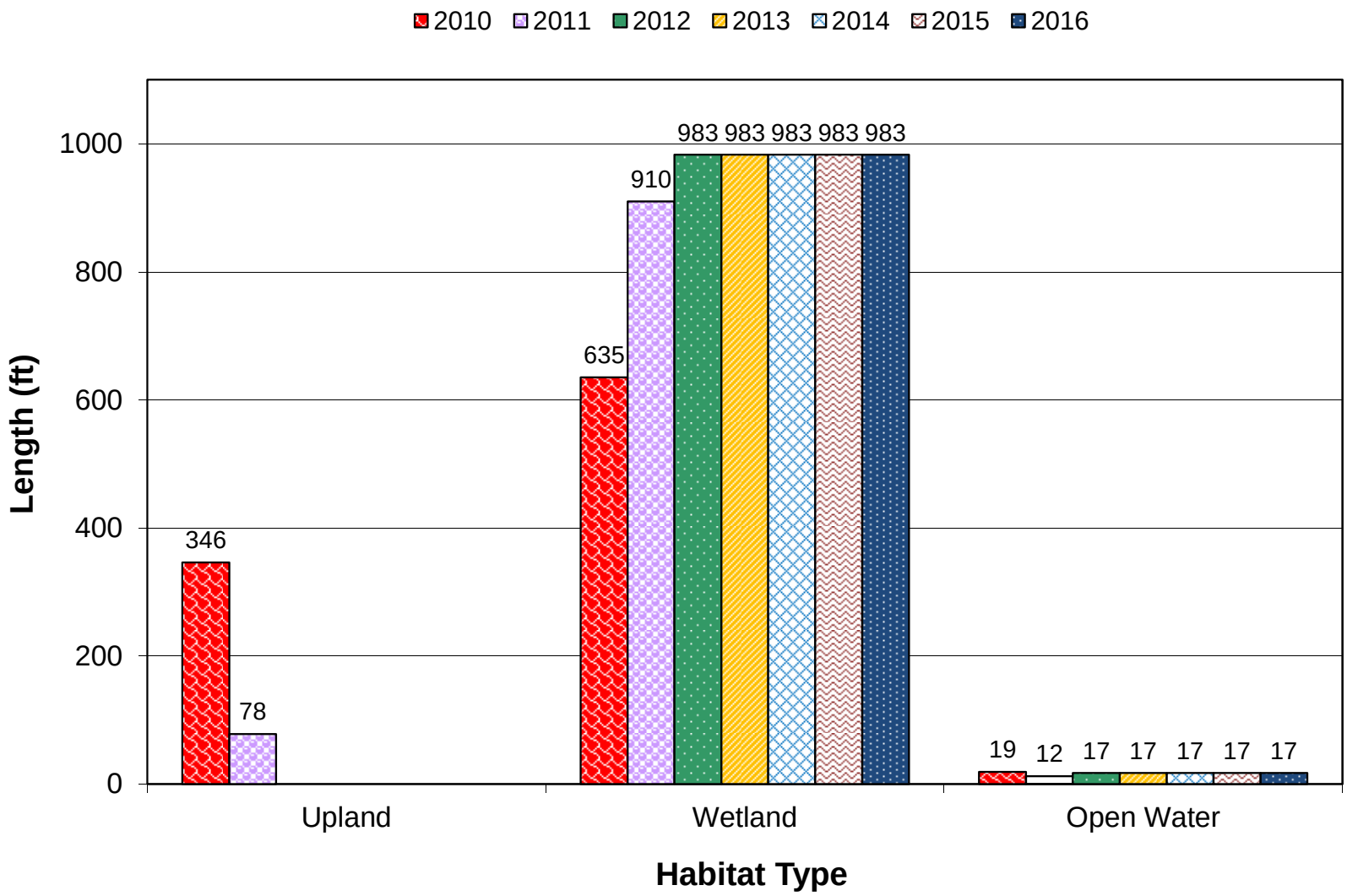


Chart 3-7. Length of Habitat Types Within T-2 From 2010 Through 2016.

3.4 SOIL

The project site is mapped in the *Web Soil Survey for Lincoln County Area* [USDA, 2016] as Fluvents, found on floodplains in mixed alluvium. These soil types are excessively drained, gravelly silt loams that are taxonomically classified as sandy, mixed, frigid Typic Udifluvents that are considered hydric.

Two test pits were profiled throughout the McGinnis Meadows site in 2016. DP-1W is located in wetland community Type 9 – *Phalaris arundinacea/Carex* spp. and met the three wetland criteria. The soil profile at DP-1W contained an upper layer that was 12 inches of dark (10YR 2/1) loam with 5 percent redox concentration (10YR 3/6). The matrix had a lower layer below 12 inches that consists of clay loam textured soil with a depleted matrix (10YR 4/2). The soil at DP-1U was a black (10YR 2/1) silt loam with no hydric indicators. The data point met the wetland criteria for hydrophytic vegetation; however, no indicators of hydric soils or wetland hydrology were observed at the data point. In general, the evaluated soils within the McGinnis Meadows project area confirmed the NRCS mapped series.

3.5 WETLAND DELINEATION

Two sites within the project area were sampled in 2016 to define the vegetation, soil, and hydrology of site wetlands (Figure A-2, Appendix A). The Wetland Determination Data forms are included in Appendix B. The July 27, 2016, delineation identified a total of 26.4 acres of wetland habitat and 0.75 acre of stream habitat within the 32.75-acre project area, as shown in Table 3-5. The wetland acreage remained the same from 2015 to 2016. Wetland habitat on the site included the aquatic bed and emergent wetland community types that have established in the open-water areas of the constructed depressions from 2011 through 2016. The percent cover of vegetation within the depressions continued to increase in 2016. MDT seeks to obtain approximately 8,835 stream credits to restore 2,850 linear feet (0.75 acre) of McGinnis Creek associated with the area below the OHWM of this channel.

Table 3-5. Wetland Acres Delineated From 2010 Through 2016 at the McGinnis Meadows Site

Habitat Type	2010 (acres)	2011 (acres)	2012 (acres)	2013 (acres)	2014 (acres)	2015 (acres)	2016 (acres)
Unvegetated Open Water	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Wetlands	18.22	20.64	25.12	25.38	26.55	26.40	26.40
Total Wetland Habitat	**19.22**	**20.64**	**25.12**	**25.38**	**26.55**	**26.40**	**26.40**
McGinnis Creek – Open Water	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Total Stream Habitat	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**

3.6 WILDLIFE

Table 3-6 is a comprehensive list of animal species observed directly or indirectly from 2010 through 2016 (Wetland Mitigation Site Monitoring form, Appendix B). Five different bird species, eight white-tailed deer (*Odocoileus virginianus*), one mule deer (*Odocoileus hemionus*), one red

Table 3-6. Wildlife Species Observed at the McGinnis Meadows Site From 2010 Through 2016 (Page 1 of 2)

Common Name	Scientific Name
Amphibian	
Columbia Spotted Frog	*Rana luteiventris*
Frog sp.	*Rana* sp.
Western Toad	*Bufo boreas*
Reptile	
Common Gartersnake	*Thamnophis sirtalis*
Bird	
Alder Flycatcher	*Empidonax alnorum*
American Robin	*Turdus migratorius*
American Three-toed Woodpecker	*Picoides dorsalis*
Bald Eagle	*Haliaeetus leucocephalus*
Bank Swallow	*Riparia riparia*
Black-billed Magpie	*Pica hudsonia*
Brewer's Blackbird	**Euphagus cyanocephalus**
Bufflehead	*Bucephala albeola*
Calliope Hummingbird	*Stellula calliope*
Canada Goose	*Branta canadensis*
Cedar Waxwing	***Bombycilla cedrorum***
Common Merganser	*Mergus merganser*
Common Raven	*Corvus corax*
Common Sandpiper	*Actitis hypoleucos*
Eastern Kingbird	*Tyrannus tyrannus*
Evening Grosbeak	*Coccothraustes vespertinus*
Gadwall	*Anas strepera*
Golden Eagle	*Aquila chrysaetos*
Gray Catbird	*Dumetella carolinensis*
Great Blue Heron	*Ardea herodias*
Great Horned Owl	*Bubo virginianus*
Hairy Woodpecker	*Picoides villosus*
Mallard	*Anas platyrhynchos*
Mountain Bluebird	*Sialia currucoides*
Northern Flicker	*Colaptes auratus*
Northern Harrier	*Circus cyaneus*
Red-tailed Hawk	***Buteo jamaicensis***
Red-winged Blackbird	*Agelaius phoeniceus*
Song Sparrow	*Melospiza melodia*
Sora	*Porzana carolina*
Sparrow sp.	
Spotted Sandpiper	*Actitis macularius*
Swallow sp.	
Tree Swallow	***Tachycineta bicolor***

Table 3-6. Wildlife Species Observed at the McGinnis Meadows Site From 2010 Through 2016 (Page 2 of 2)

Common Name	Scientific Name
Bird	
Turkey Vulture	*Cathartes aura*
Unknown Flycatcher	
Western Kingbird	*Tyrannus verticalis*
Western Meadowlark	*Sturnella neglecta*
Western Tanager	*Piranga ludoviciana*
Wilson's Snipe	*Gallinago delicata*
Wood Duck	*Aix sponsa*
Yellow Warbler	*Dendroica petechia*
Mammal	
Coyote	*Canis latrans*
Deer Sp.	*Odocoileus sp.*
Elk or Wapiti	*Cervus canadensis*
Gray Wolf	*Canis lupus*
Meadow Vole	*Microtus pennsylvanicus*
Moose	*Alces americanus*
Mule Deer	***Odocoileus hemionus***
American Red Squirrel	***Tamiasciurus hudsonicus***
Richardson's Ground Squirrel	***Spermophilus richardsonii***
Striped Skunk	*Mephitis mephitis*
White-tailed Deer	***Odocoileus virginianus***
Fish	
Trout sp.	

Species that were identified in 2016 are **bolded.**

squirrel (*Tamiasciurus hudsonicus*), and one ground squirrel (*Spermophilus richardsonii*) were observed on the site in 2016. Several small trout were observed in McGinnis Creek, but crews could not identify to species. The birds seen in 2016 are bolded in Table 3-6. Five bird boxes were installed on the site in fall 2012. The bird boxes were being used by tree swallows (*Tachycineta bicolor*) in 2016.

3.7 FUNCTIONAL ASSESSMENT

Functional assessments were completed on four AAs from 2010 through 2016 using the 2008 MWAM; the results are provided in Table 3-7. The MWAM forms are included in Appendix B. The four AAs were divided into creation (8.6 acres), restoration (reestablishment and rehabilitation; 16.6 acres), enhancement (existing emergent wetland; 0.9 acre), and preservation (existing riverine wetlands; 0.30 acre) (Figure A-4, Appendix A).

Table 3-7. Functions and Values at the McGinnis Meadows Site From 2010 Through 2016 (Page 1 of 4)

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method[(a)]	2010 Creation (excavated cells)	2011 Creation (excavated cells)	2012 Creation (excavated cells)	2013 Creation (excavated cells)	2014 Creation (excavated cells)	2015 Creation (excavated cells)	2016 Creation (excavated cells)
Listed/Proposed Threatened and Endangered (T&E) Species Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
Montana Natural Heritage Program (MTNHP) Species Habitat	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Low (0.3)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc (1.0)	Exc (1.0)	Exc (1.0)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short- and Long-Term Surface-Water Storage	Low (0.3)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Low (0.3)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.1)	Mod (0.4.)	Mod (0.4.)	Mod (0.4.)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	High (0.15)	High (0.20)	High (0.20)	High (0.20)	High (0.20)	High (0.20)
Actual Points/Possible Points	**3.45/9**	**6.65/10**	**6.90/10**	**7.90/10**	**7.90/10**	**7.90/10**	**7.90/10**
% of Possible Score Achieved	**38.3**	**66.5**	**69.0**	**79.0**	**79.0**	**79.0**	**79.0**
Overall Category	**III**	**II**	**II**	**II**	**II**	**II**	**II**
Acreage of Assessed Aquatic Habitats Within Easement (acres)	**0.20**	**6.42**	**6.42**	**6.42**	**6.42**	**8.60**	**8.60**
Functional Units (acreage × actual points)	**0.69**	**42.69**	**44.30**	**50.72**	**50.72**	**67.94**	**67.94**

Table 3-7. Functions and Values at the McGinnis Meadows Site From 2010 Through 2016 (Page 2 of 4)

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method[a]	2010 Restoration (reestablishment and rehabilitation–existing wet meadow)	2011 Restoration (reestablishment and rehabilitation–existing wet meadow)	2012 Restoration (reestablishment and rehabilitation–existing wet meadow)	2013 Restoration (reestablishment and rehabilitation–existing wet meadow)	2014 Restoration (reestablishment and rehabilitation–existing wet meadow)	2015 Restoration (reestablishment and rehabilitation–existing wet meadow)	2016 Restoration (reestablishment and rehabilitation–existing wet meadow)
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)
General Wildlife Habitat	Mod (0.7)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	Mod (0.7)	High (0.8)	High (0.8)	High (0.8)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Flood Attenuation	Mod (0.5)	High (0.8)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Short- and Long-Term Surface-Water Storage	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/ Toxicant Removal	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Sediment/Shoreline Stabilization	Low (0.3)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	High (0.15)	High (0.20)	High (0.20)	High (0.20)	High (0.20)	High (0.20)
Actual Points/Possible Points	**7.25/11**	**8.55/11**	**8.70/11**	**8.80/11**	**9.0/11**	**9.0/11**	**9.0/11**
% of Possible Score Achieved	**65.9**	**77.7**	**79.1**	**80.0**	**81.8**	**81.8**	**81.8**
Overall Category	**III**	**II**	**II**	**II**	**I**	**I**	**I**
Acreage of Assessed Aquatic Habitats Within Easement (acres)	**16.57**	**12.60**	**17.08**	**17.34**	**18.09**	**16.60**	**16.60**
Functional Units (acreage × actual points)	**120.13**	**107.73**	**148.60**	**152.59**	**162.81**	**149.40**	**149.40**

Table 3-7. Functions and Values at the McGinnis Meadows Site From 2010 Through 2016 (Page 3 of 4)

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method[a]	2010 Enhancement (existing emergent wetland)	2011 Enhancement (existing emergent wetland)	2012 Enhancement (existing emergent wetland)	2013 Enhancement (existing emergent wetland)	2014 Enhancement (existing emergent wetland)	2015 Enhancement (existing emergent wetland)	2016 Enhancement (existing emergent wetland)
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Mod (0.5)	Mod (0.5)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	Mod (0.7)	N/A	N/A
Flood Attenuation	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short- and Long-Term Surface-Water Storage	Low (0.3)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Sediment/Shoreline Stabilization	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Production Export/Food Chain Support	Mod (0.4)	Low (0.3)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Groundwater Discharge/Recharge	Mod (0.7)	N/A	N/A	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)
Uniqueness	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	High (0.15)	High (0.20)	High (0.20)	High (0.20)	High (0.20)	High (0.20)
Actual Points/Possible Points	**4.25/9**	**3.25/8**	**4.0/8**	**4.5/9**	**5.2/9**	**4.5/9**	**4.5/9**
% of Possible Score Achieved	**47.2**	**40.6**	**50.0**	**50.0**	**57.8**	**54.0**	**54.0**
Overall Category	**III**	**III**	**III**	**III**	**II**	**II**	**II**
Acreage of Assessed Aquatic Habitats Within Easement (acres)	**1.74**	**1.32**	**1.32**	**1.32**	**1.74**	**0.90**	**0.90**
Functional Units (acreage × actual points)	**7.40**	**4.29**	**5.28**	**5.94**	**9.05**	**4.05**	**4.05**

Table 3-7. Functions and Values at the McGinnis Meadows Site From 2010 Through 2016 (Page 4 of 4)

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method[(a)]	2010 Preservation (Existing riverine wetlands)	2011 Preservation (Existing riverine wetlands)	2012 Preservation (Existing riverine wetlands)	2013 Preservation (Existing riverine wetlands)	2014 Preservation (Existing riverine wetlands)	2015 Preservation (Existing riverine wetlands)	2016 Preservation (Existing riverine wetlands)
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Mod (0.7)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Short- and Long-Term Surface-Water Storage	Mod (0.4)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/ Food Chain Support	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	High (0.15)	High (0.2)	High (0.2)	High (0.2)	High (0.2)	High (0.2)
Actual Points/Possible Points	**6.25/10**	**7.25/10**	**7.50/10**	**7.9/10**	**7.9/10**	**7.9/10**	**7.9/10**
% of Possible Score Achieved	**62.5**	**72.5**	**75**	**79**	**79**	**79**	**79**
Overall Category	**III**	**II**		**II**		**II**	
Acreage of Assessed Aquatic Habitats Within Easement (acres)	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**
Functional Units (acreage × actual points)	**1.88**	**2.18 II**	**2.25**	**2.37 II**	**2.37**	**2.37 II**	**2.37**

(a) Berglund and McEldowney 2008 MDT MWAM.

The original on-site wetlands were impacted historically from grazing, leveling, channel straightening, and hydrological alterations according to the 2005 baseline site evaluation. The wetland conservation easement area has been fenced, and grazing has been excluded. The original baseline evaluation rated the historic waters of the US as Category III wetlands using the 1999 MDT Wetland Assessment Method [Berglund, 1999].

3.8 PHOTOGRAPHIC DOCUMENTATION

Photographs that were taken at photo points 1–7 (PP1 to PP7), transect endpoints, stream cross sections, and wetland determination data points are shown in Appendix C.

3.9 MAINTENANCE NEEDS

Canada thistle, ox-eye daisy, and houndstongue, which are Priority 2B noxious weeds, were identified at the McGinnis Meadows site. Infestations ranged in size from less than 0.1 acre to a maximum 1.0 acre in size with cover classes ranging from trace (< 1 percent) to high (25–100 percent cover). Canada thistle has invaded upland areas that were disturbed during construction. Two infestations of gypsy-flower were mapped in the southeast quarter of the site. One infestation of ox-eye daisy was mapped along the northern project boundary. The infestation size was less than 0.1 acre, and the cover class was trace at less than 1.0 percent. MDT has an ongoing weed-control program for their mitigation sites, which included spraying this site on July 5, 2016.

Five bird boxes were installed on this site in fall 2012 and were used by tree swallows in 2016. All of the bird boxes are in good functioning condition. The mitigation site design relied on excavating shallow depressions to intercept groundwater, increase hydrologic connectivity with McGinnis Creek and the adjacent floodplain, and passively increase the local water table. Consequently, water-control structures were not a part of the design. MDT spent 3 days in 2016 repairing damaged fence sections around the perimeter of the site.

3.10 CURRENT CREDIT SUMMARY

Goals that were established in 2009 for the McGinnis Meadows mitigation project included restoring approximately 0.8 acre of riparian/stream habitat on McGinnis Creek and 17.3 acres of degraded wetlands. Credit was to be awarded for creating 2.9 acres of emergent wetlands and enhancing 1.74 acres of existing emergent wetland and an intermittent drainage. Preserving 0.3 acre of existing riparian communities along the abandoned McGinnis Creek corridor and maintaining 2.2 acres of upland buffer provided additional wetland credits. Table 3-8 details the project credit ratios approved by the USACE and the calculated credit acreages from 2010 through 2016. Total wetland mitigation credits calculated for the McGinnis Meadows site in 2016 were 20.48 credit acres, which is 4.15 acres more than the original estimate for the site.

Table 3-9 provides a summary of the site's performance against approved success criteria. All of the wetlands that were delineated within the site in 2016 satisfied the criteria for wetland hydrology, hydrophytic vegetation, and hydric soils. The cover of wetland plants increased significantly from 60 percent in 2010 to 95 percent from 2012 through 2016. The success criteria that stipulate

Table 3-8. Summary of Wetland Credits at the McGinnis Meadows Site From 2010 Through 2016 (Page 1 of 2)

Proposed Mitigation Activity	Compensatory Mitigation Type	USACE Mitigation Ratios	Proposed Acres	Final Credit Estimate (acres)	2010 Delineated Acreage	2010 Credit (acres)	2011 Delineated Acreage	2011 Credit (acres)	2012 Delineated Acreage	2012 Credit (acres)	2013 Delineated Acreage	2013 Credit (acres)
Creating palustrine emergent depression wetlands through shallow excavation	Creation	1:1	2.90	2.90	0.20	0.20	6.42	6.42	6.42	6.42	6.42	6.42
Restoring/ Reestablishing the McGinnis Creek channel and wetland fringe	Restoration (Reestablishment)	1:1	0.80	0.80	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]
Rehabilitating existing impaired wet meadow wetlands	Restoration (Rehabilitation)	1.5:1	17.30	11.53	16.57	11.05	12.60	8.40	17.08	11.39	17.34	11.56
Enhancing existing emergent wetland upgradient of channel restoration	Enhancement	3:1	1.74	0.58	1.74	0.58	1.32	0.44	1.32	0.44	1.32	0.44
Preserving existing wetlands within abandoned McGinnis Creek reaches	Preservation	4:1	0.30	0.08	0.30	0.08	0.30	0.08	0.30	0.08	0.30	0.08
Maintaining upland buffer averaging 50 feet in length on site perimeter	Upland Buffer	5:1	2.20	0.44	2.20	0.44	2.20	0.44	2.20	0.44	2.20	0.44
Total				**16.33**	**21.01**	**12.34**	**22.84**	**15.78**	**27.32**	**18.77**	**27.58**	**18.94**

Table 3-8. Summary of Wetland Credits at the McGinnis Meadows Site From 2010 Through 2016 (Page 2 of 2)

Proposed Mitigation Activity	Compensatory Mitigation Type	USACE Mitigation Ratios	Proposed Acres	Final Credit Estimate (acres)	2014 Delineated Acreage	2014 Credit (acres)	2015 Delineated Acreage	2015 Credit (acres)	2016 Delineated Acreage	2016 Credit (acres)
Creating palustrine emergent depression wetlands through shallow excavation	Creation	1:1	2.90	2.90	6.42	6.42	8.60	8.60	8.60	8.60
Restoring/Reestablishing the McGinnis Creek channel and wetland fringe	Restoration (Reestablishment)	1:1	0.80	0.80	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]	0.75[(a)]
Rehabilitating existing impaired wet meadow wetlands	Restoration (Rehabilitation)	1.5:1	17.30	11.53	18.09	12.06	16.60	11.07	16.60	11.07
Enhancing existing emergent wetland upgradient of channel restoration	Enhancement	3:1	1.74	0.58	1.74	0.58	0.90	0.30	0.90	0.30
Preserving existing wetlands within abandoned McGinnis Creek reaches	Preservation	4:1	0.30	0.08	0.30	0.08	0.30	0.08	0.30	0.08
Maintaining upland buffer averaging 50 feet in length on site perimeter	Upland Buffer	5:1	2.20	0.44	2.20	0.44	2.20	0.44	2.20	0.44
Total				**16.33**	**28.75**	**19.58**	**28.60**	**20.48**	**28.60**	**20.48**

(a) Stream credit being sought for McGinnis Creek; acreage excluded from total.

Table 3-9. Summary of Performance Standards and Success Criteria Compared to Existing Site Conditions (Page 1 of 2)

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	All of the restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils as outlined in the 1987 Wetland Manual and 2010 Regional Supplement.	Y	Areas that were identified as wetland habitat within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	Areas that were identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of growing season.
Hydric Soil	Hydric soil conditions are present or appear to be forming.	Y	Hydric soil characteristics, including redoximorphic concentrations and depleted matrix, have developed throughout a majority of the constructed wetlands.
	Soil is sufficiently stable to prevent erosion.	Y	Disturbed soil is stable and does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover across the disturbed soils is near 100 percent.
Hydrophytic Vegetation	Success is achieved where aerial cover of facultative or wetter species is greater than or equal to 70 percent.	Y	Areas that were identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC) at greater than 70 percent cover.
	Montana state-listed noxious weeds do not exceed 5 percent cover.	Y	Montana State-listed noxious weed cover within wetland areas of the site is estimated at 2–3 percent.
Woody Plants	Plantings will be considered successful where they exceed 50 percent survival after 5 years.	N	The percentage of living woody vegetation (including natural recruitment of *Alnus* among the former channel) is well below the 50 percent target.
Open Water	Open-water area will be considered creditable under this plan.	Y	Open water appears to be perennial in several of the excavated cells. These areas exhibit vegetation cover generally greater than 20 percent.
McGinnis Creek Channel	Revegetation along the new McGinnis Creek channel corridor will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland plant species.	Y	Vegetation along the constructed McGinnis Creek support robust vegetation with high root-stability indices and predominantly includes reed canarygrass.

Table 3-9. Summary of Performance Standards and Success Criteria Compared to Existing Site Conditions (Page 2 of 2)

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
McGinnis Creek Channel	The intent of the stream restoration is to allow the stream to migrate naturally within the floodplain and to give it enough room to move and stabilize itself within the site.	Y	The stream has plenty of room to migrate within the boundary of the mitigation site.
Upland Buffer	Noxious weeds do not exceed 5 percent cover within upland buffer area.	Y	Noxious weed cover is less than 5 percent within the upland buffer.
	Any area disturbed within creditable buffer zone must have at least 50 percent aerial cover of non-weed species by end of monitoring period.	Y	Disturbed areas are well-vegetated (approximately 100 percent) by non-weed species.
Weed Control	Success will be based on annual monitoring of the site to determine weed species and degree of infestation within the site. Control measures, based on the monitoring results, will be implemented by MDT to minimize and/or eliminate the intrusion of state-listed noxious weed species within the site.	Y	State-listed noxious weed species across the site have been mapped yearly. Maps of weed infestations have been provided to MDT for evaluation, and control measures have been employed.
Fencing	Wildlife-friendly fencing will be installed along the easement boundaries.	Y	Wildlife-friendly fencing has been installed around the easement boundaries. A tree has fallen on the western fence near PP6, and repairs are needed.

70 percent cover of wetland plants was met site-wide in 2012. The cover density continued to increase into 2016. Vegetation cover within the disturbed areas of the upland buffer also exceeded 50 percent by 2012. The cover of state-listed noxious weed species in the site wetlands has remained less than 5 percent, which satisfies the performance standard. MDT continues to monitor and control noxious weeds within this mitigation site. The woody plants installed in 2011 exhibited high mortality immediately after installation with approximately 20 percent survival. The majority of woody plants that initially survived have continued to develop. The success criterion for 50 percent survival of the woody vegetation has not been met. An increase in natural recruitment of quaking aspen and speckled alder was observed in 2016. Supplemental plantings of shrubs/trees could be considered at this site to meet this criterion.

Photographs of the cross sections in Appendix C illustrate the high vegetation cover on the banks of the restored channel. The McGinnis Creek restoration success criterion that pertains to well-vegetated banks with a majority of deep-rooting riparian and wetland plant species has been satisfied. The stream banks of McGinnis Creek were minimally disturbed during construction and are primarily vegetated with reed canary grass.

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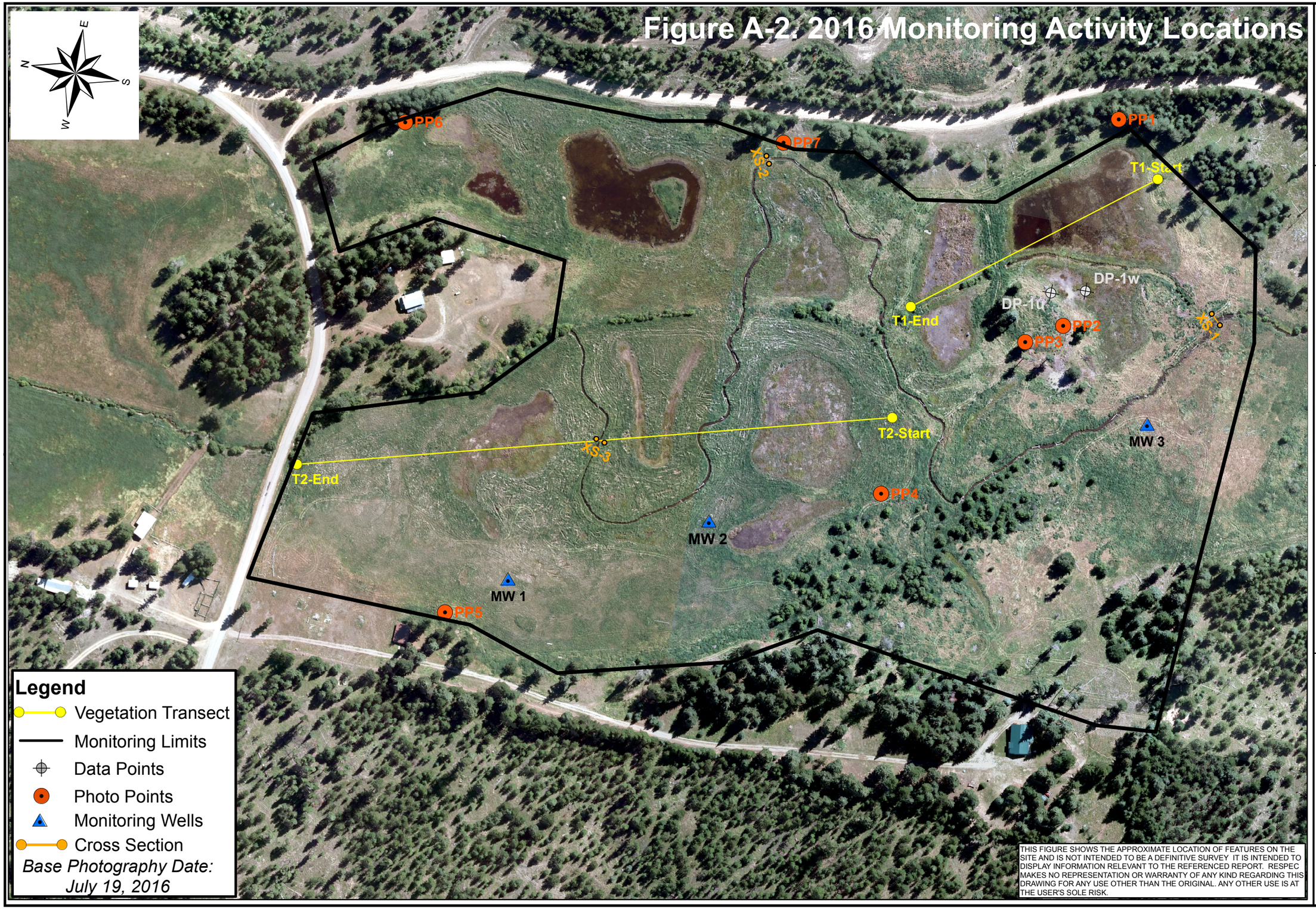
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APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

Figure A-2. 2016 Monitoring Activity Locations



THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

RESPEC
820 North Montana Ave.,
Suite A
Helena, MT 59601

McGinnis Meadows Mitigation Site
2016 Monitoring Activity Locations

0 75 150 300 450 600 750 Feet

Project:	NH 27(17)
Location:	Lincoln Co., Montana
Date:	December 2016
Project Manager:	M. Traxler
Drawn By:	J. Rosenbaum

File: Z:\RESPEC\02895 MDT Monitoring 2016\McGinnis Meadows\GPS Data\Mains\Monitor2016.mxd

Figure A-3. 2016 Mapped Site Features

Project Area	32.8 acres
Total Aquatic Habitat	27.2 acres
McGinnis Creek	0.8 acres
Net Wetland	26.4 acres

Leucanthemum vulgare
Infestation Size

Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (6-25% cover)

- Alopecurus pratensis/Phalaris arundinacea
- Aquatic Macrophytes/Open Water
- Picea engelmannii/Alopecurus pratensis
- Phalaris arundinacea/Alnus incana
- Carex utriculata
- Phalaris arundinacea/Carex spp.
- Alnus incana/Carex utriculata
- Alopecurus pratensis/Pseudotsuga menziesii
- Phalaris arundinacea/Soil Mounds
- Alopecurus pratensis/Carex spp.
- Carex sp./Eleocharis Palustris

Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Communities
- McGinnis Creek

Base Photography Date: July 19, 2016

THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

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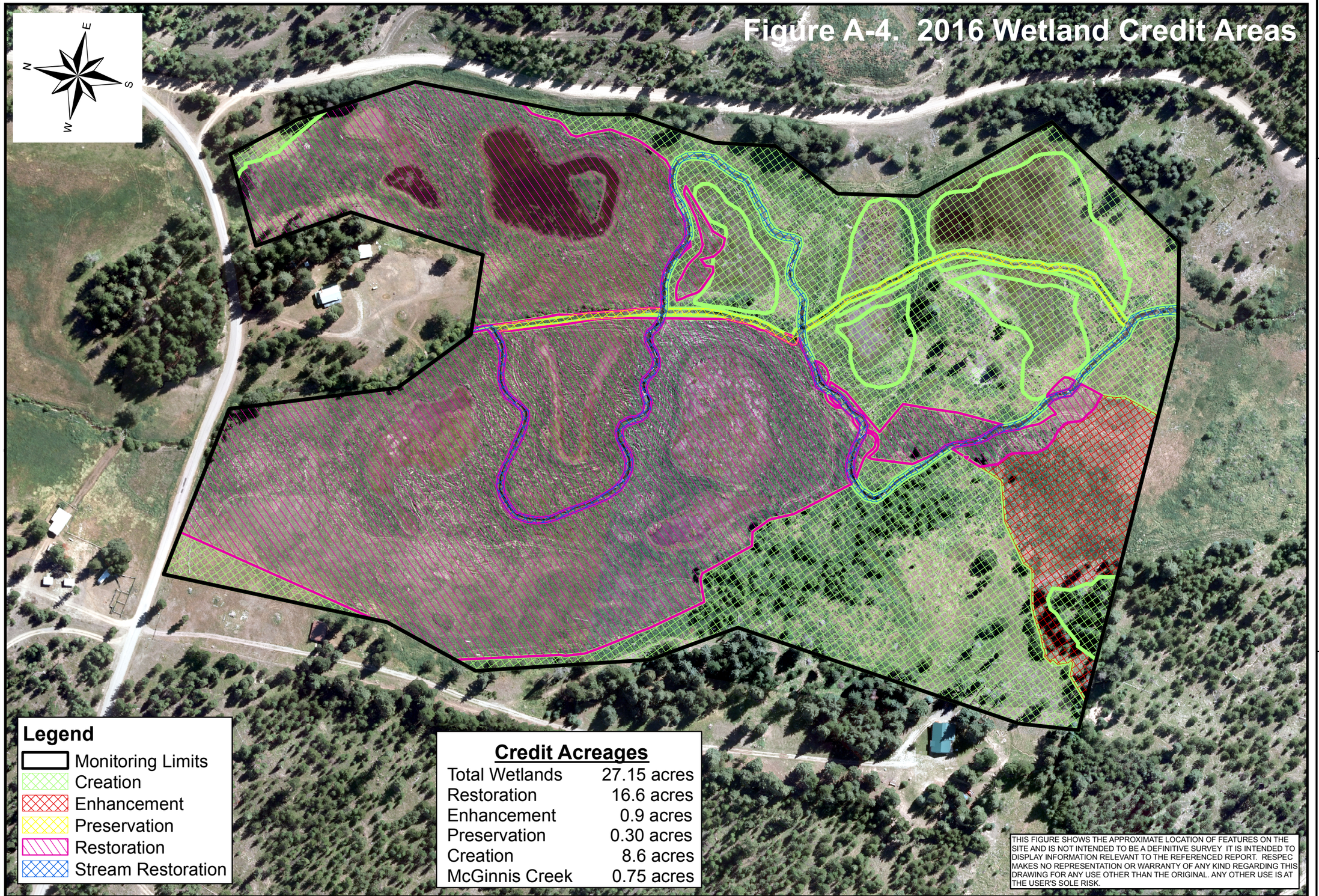
McGinnis Meadows Mitigation Site
2016 Mapped Site Features

0 75 150 300 450 600 750 Feet

Project: NH 27(17)
Location: Lincoln Co., Montana
Date: December 2016
Project Manager: M. Traxler
Drawn By: J. Rosenbaum

File: Z:\RESPEC\02895 MDT Monitoring 2016\McGinnis Meadows\GPS Data\Mairns\Veg2016.mxd

Figure A-4. 2016 Wetland Credit Areas



Legend

- Monitoring Limits
- Creation
- Enhancement
- Preservation
- Restoration
- Stream Restoration

Credit Acreages

Total Wetlands	27.15 acres
Restoration	16.6 acres
Enhancement	0.9 acres
Preservation	0.30 acres
Creation	8.6 acres
McGinnis Creek	0.75 acres

THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

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McGinnis Meadows Mitigation Site
2016 Wetland Credit Areas

0 75 150 300 450 600 750 Feet

Project: NH 27(17)
Location: Lincoln Co., Montana
Date: December 2016
Project Manager: M. Traxler
Drawn By: J. Rosenbaum

File: Z:\RESPEC\02895 MDT Monitoring 2016\McGinnis Meadows\GPS Data\Mains\2016AAs.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **McGinnis Meadows** Project Number: **STPX-NH 27(17)**
Assessment Date: **July 27, 2016** Person(s) conducting the assessment: **G. Howard, T. Traxler**
Location: **7 miles south of US 2** MDT District: **Missoula**
Milepost: **NA**
Legal Description: T **26N** R **28W** Section **33**
Weather Conditions: **sunny, mid 80s** Time of Day: **mid-morning**
Initial Evaluation Date: **July 16, 2010** Monitoring Year: **7** # Visits in Year: **1**
Size of evaluation area: **32.75 acres** Land use surrounding wetland: **Hay production and grazing, rural residential, USFS property (forest), Plum Creek properties (commercial forest).**

HYDROLOGY

Surface Water Source: **McGinnis Creek, precipitation, shallow groundwater.**
Inundation: **Present** Average Depth: **0.5 feet** Range of Depths: **0-2 feet**
Percent of assessment area under inundation: **15%**
Depth at emergent vegetation-open water boundary: **1.0 feet**
If assessment area is not inundated then are the soils saturated within 12 inches of surface: **Yes**
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):
FAC-neutral test, geomorphic position, drainage patterns, hydrogen sulfide odor

Groundwater Monitoring Wells: **Present**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth
MW-1	4.46				
MW-2	3.39				
MW-3	5.25				

Additional Activities Checklist:
☐ Map emergent vegetation-open water boundary on aerial photograph.
☒ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)
☒ Use GPS to survey groundwater monitoring well locations, if present.

COMMENTS / PROBLEMS:
Wells monitored by USGS.

VEGETATION COMMUNITIES

Community Number: **1** Community Title (main spp): **Alopecurus pratensis / Phalaris arundinacea**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	5 = > 50%	Poa pratensis	+ = < 1%
Phalaris arundinacea	2 = 6-10%	Taraxacum officinale	+ = < 1%
Cirsium arvense	1 = 1-5%		
Urtica dioica	1 = 1-5%		
Achillea millefolium	+ = < 1%		

Comments / Problems: _____

Community Number: **2** Community Title (main spp): **Aquatic macrophytes / Open Water**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Carex utriculata	1 = 1-5%
Aquatic macrophytes	4 = 21-50%	Lemna minor	+ = < 1%
Algae, green	2 = 6-10%	Persicaria amphibia	+ = < 1%
Glyceria grandis	2 = 6-10%		
Phalaris arundinacea	2 = 6-10%		
Chara sp.	1 = 1-5%		

Comments / Problems: _____

Community Number: **4** Community Title (main spp): **Picea engelmannii / Alopecurus pratensis**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	5 = > 50%	Symphoricarpos albus	1 = 1-5%
Picea engelmannii	4 = 21-50%	Achillea millefolium	1 = 1-5%
Cirsium arvense	3 = 11-20%	Pinus ponderosa	1 = 1-5%
Phalaris arundinacea	3 = 11-20%		
Pinus contorta	1 = 1-5%		
Poa pratensis	1 = 1-5%		

Comments / Problems: _____

Community Number: **5** Community Title (main spp): **Phalaris arundinacea / Alnus incana**

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	4 = 21-50%	Carex utriculata	1 = 1-5%
Alnus incana	3 = 11-20%	Mentha arvensis	+ = < 1%
Crataegus douglasii	2 = 6-10%	Urtica dioica	+ = < 1%
Algae, green	1 = 1-5%		
Cirsium arvense	1 = 1-5%		
Heracleum maximum	1 = 1-5%		

Comments / Problems: _____

VEGETATION COMMUNITIES (continued)

Community Number: **6** Community Title (main spp): **Carex utriculata /**

Dominant Species	% Cover	Dominant Species	% Cover
Carex utriculata	5 = > 50%		
Phalaris arundinacea	3 = 11-20%		
Carex nebrascensis	+ = < 1%		
Mentha arvensis	+ = < 1%		

Comments / Problems: _____

Community Number: **9** Community Title (main spp): **Phalaris arundinacea / Carex spp.**

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	5 = > 50%		
Carex athrostachya	1 = 1-5%		
Carex utriculata	1 = 1-5%		
Carex nebrascensis	1 = 1-5%		

Comments / Problems: _____

Community Number: **11** Community Title (main spp): **Alnus incana / Carex utriculata**

Dominant Species	% Cover	Dominant Species	% Cover
Alnus incana	4 = 21-50%	Cirsium arvense	+ = < 1%
Carex utriculata	3 = 11-20%		
Phalaris arundinacea	2 = 6-10%		
Alopecurus pratensis	1 = 1-5%		
Scirpus microcarpus	1 = 1-5%		
Carex stipata	+ = < 1%		

Comments / Problems: _____

Community Number: **14** Community Title (main spp): **Alopecurus pratensis / Pseudotsuga menziesii**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	5 = > 50%	Poa pratensis	1 = 1-5%
Pseudotsuga menziesii	4 = 21-50%	Symphoricarpos albus	1 = 1-5%
Larix occidentalis	2 = 6-10%	Achillea millefolium	+ = < 1%
Pinus contorta	2 = 6-10%	Calamagrostis canadensis	+ = < 1%
Alnus incana	1 = 1-5%	Fragaria virginiana	+ = < 1%
Phalaris arundinacea	1 = 1-5%		

Comments / Problems: _____

VEGETATION COMMUNITIES (continued)

Community Number: **15** Community Title (main spp): **Open Water / Macrophytes**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%		
Macrophytes	2 = 6-10%		

Comments / Problems: _____

Community Number: **16** Community Title (main spp): **Phalaris arundinacea / Soil Mounds**

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	5 = > 50%		
Cirsium arvense	1 = 1-5%		
Verbascum thapsus	+ = < 1%		

Comments / Problems: _____

Community Number: **18** Community Title (main spp): **Alopecurus pratensis / Carex spp.**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	5 = > 50%		
Carex bebbii	2 = 6-10%		
Carex athrostachya	2 = 6-10%		
Deschampsia caespitosa	2 = 6-10%		
Juncus confusus	1 = 1-5%		

Comments / Problems: _____

Community Number: **19** Community Title (main spp): **Carex spp. /**

Dominant Species	% Cover	Dominant Species	% Cover
Carex nebrascensis	4 = 21-50%	Juncus confusus	1 = 1-5%
Carex utriculata	4 = 21-50%	Phalaris arundinacea	1 = 1-5%
Juncus nodosus	2 = 6-10%	Alnus incana	1 = 1-5%
Typha latifolia	2 = 6-10%	Carex bebbii	1 = 1-5%
Eleocharis palustris	2 = 6-10%	Cirsium arvense	1 = 1-5%
Carex vesicaria	1 = 1-5%		

Comments / Problems: _____

Additional Activities Checklist:

☒ Record and map vegetative communities on aerial photograph.

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes
Alnus sp.	360	125	Native recruitment along former channel of McGinnis Creek
Betula	100	0	Betula sp.
Cornus stolonifera	100	0	
Populus tremuloides	180	250	Natural recruitment in SE and NE corners of site.
Salix sp.	100	0	

Comments / Problems: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **McGinnis Meadows** Date: **July 27, 2016** Examiner: **G. Howard**
Transect Number: **1** Approximate Transect Length: **504 feet** Compass Direction from Start: **318˚** Note: _____

Transect Interval Length: **30 ft (Station 0-30)**	
Vegetation Community Type: Picea engelmannii / Alopecurus pratensis	
Plant Species	**Cover**
Alopecurus pratensis	5 = > 50%
Cirsium arvense	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Total Vegetative Cover:	95%

Transect Interval Length: **50 ft (Station 30-80)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Eleocharis palustris	5 = > 50%
Carex utriculata	2 = 6-10%
Deschampsia caespitosa	2 = 6-10%
Juncus nodosus	2 = 6-10%
Carex nebrascensis	1 = 1-5%
Populus tremuloides	+ = < 1%
Salix bebbiana	+ = < 1%
Total Vegetative Cover:	98%

Transect Interval Length: **215 ft (Station 80-295)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open Water	5 = > 50%
Ranunculus aquatilis	2 = 6-10%
Chara sp.	2 = 6-10%
Algae, green	2 = 6-10%
Eleocharis palustris	1 = 1-5%
Persicaria amphibia	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **28 ft (Station 295 - 323)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Phalaris arundinacea	4 = 21-50%
Carex utriculata	2 = 6-10%
Juncus nodosus	2 = 6-10%
Scirpus microcarpus	2 = 6-10%
Carex stipata	1 = 1-5%
Mentha arvensis	1 = 1-5%
Eleocharis palustris	+ = < 1%
Total Vegetative Cover:	98%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **McGinnis Meadows** Date: **July 27, 2016** Examiner: **G. Howard**
Transect Number: **1** Approximate Transect Length: **504 feet** Compass Direction from Start: **318˚** Note: _____

Transect Interval Length: **40 ft (Station 323- 363)**	
Vegetation Community Type: Phalaris arundinacea / Alopecurus pratensis	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Alnus incana	1 = 1-5%
Cirsium arvense	1 = 1-5%
Mentha arvensis	+ = < 1%
Poa pratensis	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **141 ft (Station 363-504)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Scirpus microcarpus	4 = 21-50%
Eleocharis palustris	3 = 11-20%
Typha latifolia	2 = 6-10%
Deschampsia caespitosa	1 = 1-5%
Alnus incana	1 = 1-5%
Carex utriculata	1 = 1-5%
Carex bebbii	1 = 1-5%
Carex stipata	1 = 1-5%
Juncus tenius	1 = 1-5%
Calamagrostis canadensis	1 = 1-5%
Total Vegetative Cover:	95%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	

%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	

%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **McGinnis Meadows** Date: **July 27, 2016** Examiner: **G. Howard**
Transect Number: **2** Approximate Transect Length: **1000 feet** Compass Direction from Start: **330˚** Note: _____

Transect Interval Length: **79 ft (Station 0-79)**	
Vegetation Community Type: Phalaris arundinacea / Alopecurus pratensis	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Alopecurus pratensis	2 = 6-10%
Carex athrostachya	1 = 1-5%
Cirsium arvensis	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **161 ft (Station 79-240)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Carex utriculata	4 = 21-50%
Carex nebrascensis	3 = 11-20%
Eleocharis palustris	3 = 11-20%
Alopecurus pratensis	1 = 1-5%
Calamagrostis canadensis	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Typha latifolia	1 = 1-5%
	1 = 1-5%
Total Vegetative Cover:	95%

Transect Interval Length: **106 ft (Station 240-346)**	
Vegetation Community Type: Phalaris arundinacea / Carex	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex utriculata	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **7 ft (Station 346-353)**	
Vegetation Community Type: McGinnis Creek - Open Water	
Plant Species	**Cover**
Channel / Open Water	5 = > 50%
Macrophytes	+ = < 1%
Total Vegetative Cover:	2%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **McGinnis Meadows** Date: **July 27, 2016** Examiner: **G. Howard**
Transect Number: **2** Approximate Transect Length: **1000 feet** Compass Direction from Start: ____° Note: _____

Transect Interval Length: **46 ft (Station 353-399)**	
Vegetation Community Type: Phalaris arundinacea / Carex	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex utriculata	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **17 ft (Station 399-416)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Carex utriculata	5 = > 50%
Eleocharis palustris	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Calamagrostis canadensis	+ = < 1%
Deschampsia caespitosa	+ = < 1%
Total Vegetative Cover:	80%

Transect Interval Length: **31 ft (Station 416-447)**	
Vegetation Community Type: Phalaris arundinacea / Alopecurus pratensis	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Total Vegetative Cover:	100%

Transect Interval Length: **23 ft (Station 447-470)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Carex utriculata	4 = 21-50%
Eleocharis palustris	3 = 11-20%
Glyceria grandis	2 = 6-10%
Sparganium emersum	2 = 6-10%
Phalaris arundinacea	1 = 1-5%
Total Vegetative Cover:	90%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **McGinnis Meadows** Date: **July 27, 2016** Examiner: **G. Howard**
Transect Number: **2** Approximate Transect Length: **1000 feet** Compass Direction from Start: ____ ° Note: _____

Transect Interval Length: **53 ft (Station 470-523)**	
Vegetation Community Type: Phalaris arundinacea / Alopecurus pratensis	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex utriculata	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **10 ft (Station 523-533)**	
Vegetation Community Type: McGinnis Creek - Open Water	
Plant Species	**Cover**
Channel / Open Water	5 = > 50%
Total Vegetative Cover:	100%

Transect Interval Length: **67 ft (Station 533-600)**	
Vegetation Community Type: Phalaris arundinacea / Alopecurus pratensis	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Total Vegetative Cover:	100%

Transect Interval Length: **185 ft (Station 600-785)**	
Vegetation Community Type: Carex sp. / Eleocharis palustris	
Plant Species	**Cover**
Carex vesicaria	4 = 21-50%
Juncus confusus	4 = 21-50%
Juncus nodosus	2 = 6-10%
Phalaris arundinacea	2 = 6-10%
Typha latifolia	2 = 6-10%
Carex utriculata	1 = 1-5%
Total Vegetative Cover:	98%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **McGinnis Meadows** Date: **July 27, 2016** Examiner: **G. Howard**
Transect Number: **2** Approximate Transect Length: **1000 feet** Compass Direction from Start: ____ ° Note: _____

Transect Interval Length: **95 ft (Station 785-880)**	
Vegetation Community Type: Phalaris arundinacea / Carex	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex nebrascensis	1 = 1-5%
Alopecurus pratensis	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **58 ft (Station 880-938)**	
Vegetation Community Type: Carex utriculata	
Plant Species	**Cover**
Carex utriculata	5 = > 50%
Phalaris arundinacea	1 = 1-5%
Total Vegetative Cover:	100%

Transect Interval Length: **62 ft (Station 938-1000)**	
Vegetation Community Type: Phalaris arundinacea / Carex	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex nebrascensis	1 = 1-5%
Alopecurus pratensis	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Cover Estimate		Indicator Class	Source
+ = < 1%	3 = 11-10%	+ = Obligate	P = Planted
1 = 1-5%	4 = 21-50%	- = Facultative/Wet	V = Volunteer
2 = 6-10%	5 = > 50%	0 = Facultative	

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): **100%**

Establish transects perpendicular to the shoreline (or saturated perimeter). The transect should begin in the upland area. Permanently mark this location with a standard metal fencepost. Extend the imaginary transect line towards the center of the wetland, ending at the 3 foot depth (in open water), or at the point where water depths or saturation are maximized. Mark this location with another metal fencepost.

Estimate cover within a 10 foot wide "belt" along the transect length. At a minimum, establish a transect at the windward and leeward sides of the wetland. Remember that the purpose of this sampling is to monitor, not inventory, representative portions of the wetland site.

Comments: _____

PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

- ☐ One photograph for each of the four cardinal directions surrounding the wetland.
- ☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.
- ☐ At least one photograph showing the buffer surrounding the wetland.
- ☐ One photograph from each end of the vegetation transect, showing the transect.

Location	Photograph Frame #	Photograph Description & Lat/Long	Compass Reading (°)
PP-1		Photo Point 1, Photo 1: 47.964584 / -115.2164	250
PP-1		Photo Point 1, Photo 2: 47.964584 / -115.2164	270
PP-1		Photo Point 1, Photo 3: 47.964584 / -115.2164	300
PP-2		Photo Point 2, Photo 1: 47.964512 / -115.217896	85
PP-2		Photo Point 2, Photo 2: 47.964512 / -115.217896	110
PP-2		Photo Point 2, Photo 3: 47.964512 / -115.217896	140
PP-2		Photo Point 2, Photo 4: 47.964512 / -115.217896	180
PP-3		Photo Point 3 (Pano): 47.964561 / -115.218163	300-10
PP-4		Photo Point 4 (Pano): 47.965092 / -115.219429	310-90
PP-5		Photo Point 5 (Pano): 47.966888 / -115.220978	80-180
PP-6		Photo Point 6 (Pano): 47.967838 / -115.217644	180-260
PP-7		Photo Point 7 (Pano): 47.966015 / -115.217171	180-240
T-1 start		Transect 1 start: 47.964188 / -115.216629	320
T-1 end		Transect 1 end: 47.965172 / -115.217987	140
T-2 start		Transect 2 start: 47.964584 / -115.218834	330
T-2 end		Transect 2 end: 47.965222 / -115.219133	150
DP-1W		Wetland soil pit: 47.963731 / -115.219522	
DP-1U		Upland soil pit: 47.963731 / -115.219522	

Comments / Problems: _____

GPS SURVEYING

Using a resource grade GPS survey the items on the checklist below. Collect at least 3 location points set at a 5 second recording rate. Record file numbers for site in designated GPS field notebook.

GPS Checklist:

- ☒ Upland/wetland boundary.
- ☒ 4-6 landmarks that are recognizable on the aerial photograph.
- ☒ Start and End points of vegetation transect(s).
- ☒ Photograph reference points.
- ☒ Groundwater monitoring well locations.
- ☒ Bird nest boxes.

Comments / Problems: _____

WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

- ☒ Delineate wetlands according to the 1987 Army COE manual and regional supplement.
- ☒ Delineate wetland – upland boundary onto aerial photograph.

Comments / Problems: _____

FUNCTIONAL ASSESSMENT

- ☒ Complete and attach full MDT Montana Wetland Assessment Method field forms.

Comments / Problems: _____

MAINTENANCE

Were man-made nesting structure installed at this site? **Yes**
If yes, do they need to be repaired? **No**
If yes, describe the problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? **NA**
If yes, are the structures working properly and in good working order? **NA**
If no, describe the problems below.

Comments / Problems: _____

WILDLIFE

Birds

Were man-made nesting structures installed? **Yes**
If yes, type of structure: **Box** How many? **5**
Are the nesting structures being used? **Yes**
Do the nesting structures need repairs? **No**

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
White-tailed deer	8	☐	☐	☐	
Mule deer	1	☐	☐	☐	
Red Squirrel	1	☐	☐	☐	
Ground squirrel sp.	1	☐	☐	☐	
Trout sp.	200	☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: _____

BIRD SURVEY – FIELD DATA SHEET

Site: **McGinnis Meadows** Date: **7/27/16**
Survey Time: _____ to _____

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Red-tailed Hawk	2	FO	UP				
Sparrow sp.	5	FO	MA UP				
Tree Swallow.	20	FO L N	UP MA				
Cedar Waxwing	1	L	UP				
Brewer's Blackbird	3	FO	UP				

BEHAVIOR CODES
BP = One of a breeding pair
BD = Breeding display
F = Foraging
FO = Flyover
L = Loafing
N = Nesting

HABITAT CODES
AB = Aquatic bed
FO = Forested
I = Island
MA = Marsh
MF = Mud Flat
OW = Open Water
SS = Scrub/Shrub
UP = Upland buffer
WM = Wet meadow
US = Unconsolidated shore

Weather: _____

Notes: _____

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: McGinnis Meadow **City/County:** Lincoln **Sampling Date:** 27-Jul-16

Applicant/Owner: MDT **State:** MT **Sampling Point:** DP-1U

Investigator(s): RESPEC - G. Howard, T. Traxler **Section, Township, Range:** S 33 T 26 N R 28 W

Landform (hillslope, terrace, etc.): Hillslope **Local relief (concave, convex, none):** convex **Slope:** 1.0 % / 0.6 °

Subregion (LRR): LRR E **Lat.:** 47.963731 **Long.:** -115.219522 **Datum:** WGS84

Soil Map Unit Name: Fluvents, floodplains **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present? Yes ○ No ◉	
Wetland Hydrology Present? Yes ○ No ◉	

Remarks:
Sampling point considered within an upland area.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Ft.)			
1. Alopecurus pratensis	95	☑ 90.5%	FAC
2. Cirsium arvense	5	☐ 4.8%	FAC
3.	5	☐ 4.8%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	105	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 1

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.000

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrologic Vegetation
- ☑ 2 - Dominance Test is > 50%
- ☑ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants [1]
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Vegetation considered hydrophytic.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR	2/1	100						Silt Loam	

[1]Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicator present.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: McGinnis Meadow **City/County:** Lincoln **Sampling Date:** 27-Jul-16

Applicant/Owner: MDT **State:** MT **Sampling Point:** DP-1W

Investigator(s): RESPEC - G. Howard, T. Traxler **Section, Township, Range:** S 33 T 26 N R 28 W

Landform (hillslope, terrace, etc.): **Local relief (concave, convex, none):** **Slope:** 1.0 % / 0.6 °

Subregion (LRR): LRR E **Lat.:** 47.963731 **Long.:** -115.219522 **Datum:** WGS84

Soil Map Unit Name: **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○	

Remarks:
Sampling point considered within a wetland area. Wetland dominated by emergent vegetation type. Formerly labeled as SP-1.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Ft.)			
1. Carex utriculata	60	☑ 59.4%	OBL
2. Eleocharis palustris	40	☑ 39.6%	OBL
3. Glyceria striata	1	☐ 1.0%	OBL
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	101	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 2

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	101	x 1 =	101
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	101 (A)		101 (B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrologic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **5 - Wetland Non-Vascular Plants** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Vegetation considered hydrophytic.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR	2/1	95	10YR	3/6	5	C	M	Loam	
12+	10YR	4/2	100						Clay Loam	

[1]Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicators present with redox features above a depleted matrix.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ○	No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspections), if available:

Remarks:

Hydrology indicators present with soils saturated to the ground surface.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: McGinnis Meadows **2. MDT Project #:** NH 27(17) **3. Control #:** 4143

3. Evaluation Date: 7/27/2016 **4. Evaluator(s):** G. Howard, T. Traxler **5. Wetland/Site #(s):** Creation

6. Wetland Location(s): Township 26 N, Range 28 W, Section 33; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: _____

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☒ **Mitigation wetlands; post-construction**
- ☐ **Other** _____

8. Wetland Size (acre): _____ (visually estimated)
8.6 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 8.6 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Depressional	Aquatic Bed	Excavated	Permanent / Perennial	60
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	40

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species lists.

Conditions within AA	Predominant Conditions Adjacent to (within 500 feet of) AA		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is 15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is 30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is 15%.	---	low disturbance	---
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is 30%.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	---	---	---

Comments (types of disturbance, intensity, season, etc.)**:** AA contains several depression area that were excavated within uplands in 2009. Many of these depressions were ponded in 2016 with 0.2 to 1 foot of standing water. The edges were vegetated with emergent plants.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: Surrounding land use is low density residential, moderate road density. Forest Service land and Plum Creek properties (commercial forest).

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

Comments: aquatic bed and emergent

Wetland/Site #(s): Creation

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS OR ANIMALS

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**)	☐ D	☐ S	_____
Secondary habitat (**list species**)	☐ D	☐ S	_____
Incidental habitat (**list species**)	☒ D	☐ S	grizzly bear, Canada lynx
No usable habitat		☐ S	

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	.3L	---	---

Sources for documented use (e.g. observations, records): Site is witin year-round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly according to 2012 monitoring report.

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**)	☐ D	☐ S	
Secondary habitat (**list species**)	☒ D	☐ S	great blue heron (S3), golden eagle (S3)
Incidental habitat (**list species**)	☐ D	☒ S	pileated woodpecker
No usable habitat		☐ S	

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	.6M	---	---	---	---

Sources for documented use (e.g. observations, records): great blue heron observed on site, golden eagle flyover in 2013. MNHP SOC list for Lincoln County.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of Overall Wildlife Use in the AA: Check substantial, moderate, or low based on supporting evidence.

☒ ***Substantial:*** Based on any of the following [check].
- ☒ observations of abundant wildlife #s or high species diversity (during any period)
- ☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interview with local biologist with knowledge of the AA

☐ ***Minimal:*** Based on any of the following [check].
- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interview with local biologist with knowledge of AA

☐ ***Moderate:*** Based on any of the following [check].
- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interview with local biologist with knowledge of the AA

ii. Wildlife Habitat Features: Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see manual for further definitions of these terms].

Structural Diversity (see #13)	☐ **High**								☒ **Moderate**								☐ **Low**			
Class Cover Distribution (all vegetated classes)	☐ **Even**				☐ **Uneven**				☒ **Even**				☐ **Uneven**				☐ **Even**			
Duration of Surface Water in ≥ 10% of AA	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**
☒ **Low Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	E	---	---	---	---	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)** ☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	1E	---	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: AA borders natural forested areas under management by the USFS and Plum Creek.

Wetland/Site #(s): Creation

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check the NA box and proceed to 14E.

Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier].

Type of Fishery: ☐ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point and rating.

Duration of Surface Water in AA	☐ **Permanent / Perennial**						☐ **Seasonal / Intermittent**						☐ **Temporary / Ephemeral**					
Aquatic Hiding / Resting / Escape Cover	☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**	
Thermal Cover: optimal / suboptimal	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**
FWP Tier I fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 or be less than 0.1.

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity, ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

iii. Final Score and Rating: _ **Comments:**

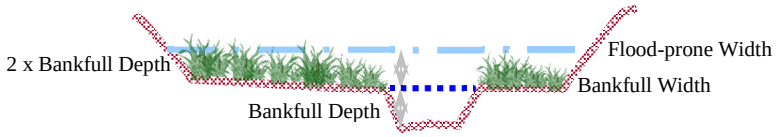
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

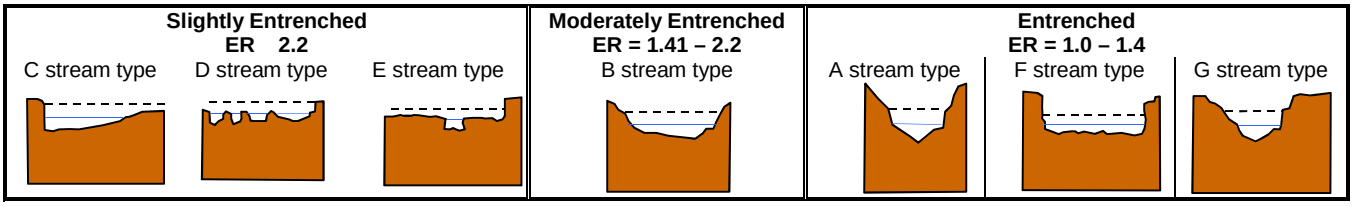
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

18 / 6 = 3

flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☐ 25-75%	☒ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	---	.6M	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

ii. Are 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** Excavated depressions hydrologically connected to periodic overbank flooding along McGinnis Creek.

Wetland/Site #(s): Creation

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual for further definitions of these terms].

Estimated Maximum Acre Feet of Water Contained in Wetlands within the AA that are Subject to Periodic Flooding or Ponding	☒ **>5 acre feet**			☐ **1.1 to 5 acre feet**			☐ **≤1 acre foot**		
Duration of Surface Water at Wetlands within the AA	☒ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	---	---	---	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: Depressions located along the floodplain of McGinnis Creek, assumes 6.42 acres flooded to a minimum of one foot.

14G. SEDIMENT / NUTRIENT / TOXICANT / RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**				**Waterbody is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% Cover of Wetland Vegetation in AA	☒ **≥ 70%**		☐ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of Flooding / Ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1H	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: _____

14H. SEDIMENT / SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of 6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation** ☒ **Permanent / Perennial**	☐ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☒ **≥ 65%**	1H	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: Assumes perennial open water areas subject to wave action. Banks dominated by sedges, reed canarygrass, and meadow foxtail.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)** ☒ **E/H**	☐ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	H	---	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual for further definitions of these terms].

A	☒ **Vegetated Component >5 acres**						☐ **Vegetated Component 1-5 acres**						☐ **Vegetated Component <1 acre**					
B	☒ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**	
C	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
P/P	---	.7M	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Creation

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: Area with 30% plant cover, 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 0.80 ☐ **NO**

iv. Final Score and Rating: .8H **Comments:** AA has closed depressions with no outlet, appear to be perennially saturated.

14J. GROUNDWATER DISCHARGE / RECHARGE
Check the appropriate indicators in i and ii below.

i. Discharge Indicators
- ☐ The AA is a slope wetland.
- ☐ Springs or seeps are known or observed.
- ☐ Vegetation growing during dormant season/drought.
- ☐ Wetland occurs at the toe of a natural slope.
- ☐ Seeps are present at the wetland edge.
- ☐ AA permanently flooded during drought periods.
- ☐ Wetland contains an outlet, but no inlet.
- ☒ Shallow water table and the site is saturated to the surface.
- ☐ Other: _____

ii. Recharge Indicators
- ☐ Permeable substrate present without underlying impeding layer.
- ☐ Wetland contains inlet but no outlet.
- ☐ Stream is a known 'losing' stream. Discharge volume decreases.
- ☐ Other: _____

iii. Rating: Use the information from i and ii above and the table below to select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☒ **P/P**	☐ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	1H	---	---	---
☐ **Insufficient Data/Information**	---			

Comments: _____

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Replacement Potential	**AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland** OR **plant association listed as "S1" by the MTNHP**			**AA does not contain previously cited rare types** AND **structural diversity (#13) is high** OR **contains plant association listed as "S2" by the MTNHP**			**AA does not contain previously cited rare types** OR **associations** AND **structural diversity (#13) is low-moderate**		
Estimated Relative Abundance (#11)	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☒ Common	☐ Abundant
☒ **Low Disturbance** at AA (#12i)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☒ Educational/Scientific Study ☒ Consumptive Recreational ☒ Non-consumptive recreational
☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	**Known**	**Potential**
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Public access, no permission required.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Creation

Function & Value Variables	Rating – Actual Functional Points	Possible Functional Points	Functional Units: Actual Points x Estimated AA Acreage	Indicate the Four Most Prominent Functions with an Asterisk
A. Listed / Proposed T&E Species Habitat	low 0.30	1.00	2.58	
B. MT Natural Heritage Program Species Habitat	mod 0.60	1.00	5.16	
C. General Wildlife Habitat	exc 1.00	1.00	8.6	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	mod 0.60	1.00	5.16	
F. Short and Long Term Surface Water Storage	high 1.00	1.00	8.6	*
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	8.6	*
H. Sediment / Shoreline Stabilization	high 1.00	1.00	8.6	
I. Production Export / Food Chain Support	high 0.80	1.00	6.88	
J. Groundwater Discharge / Recharge	high 1.00	1.00	8.6	*
K. Uniqueness	mod 0.40	1.00	3.44	
L. Recreation / Education Potential (bonus point)	high 0.20		1.72	
Total Points	**7.9**	**10**	**67.94 Total Functional Units**	
Percent of Possible Score 79% (round to nearest whole number)				

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of possible score > 65% (round to nearest whole #).

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if not go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: McGinnis Meadows **2. MDT Project #:** NH 27(17) **3. Control #:** 4143

3. Evaluation Date: 7/27/2016 **4. Evaluator(s):** G. Howard, T. Traxler **5. Wetland/Site #(s):** Enhancement

6. Wetland Location(s): Township 26 N, Range 28 W, Section 33; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: _____

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☒ **Mitigation wetlands; post-construction**
- ☐ **Other** _____

8. Wetland Size (acre): _____ (visually estimated)
0.9 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 0.9 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Depressional	Emergent Wetland		Temporary / Ephemeral	100

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species lists.

Conditions within AA	Predominant Conditions Adjacent to (within 500 feet of) AA		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is 15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is 30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is 15%.	---	low disturbance	---
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is 30%.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	---	---	---

Comments (types of disturbance, intensity, season, etc.)**:** Area includes existing emergent wetland along intermittent drainage.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: Area includes existing emergent wetland. Surrounding land use is residential moderate road density. USFS and Plum Creek properties (commercial forest).

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

Comments: Emergent wetland

Wetland/Site #(s): Enhancement

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS OR ANIMALS

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☐ D ☐ S _____
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☒ D ☐ S grizzly, Canada lynx
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	.3L	---	---

Sources for documented use (e.g. observations, records): site is within year round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly in 2012.

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☐ D ☐ S
Secondary habitat (**list species**) ☒ D ☐ S great blue heron, golden eagle
Incidental habitat (**list species**) ☐ D ☒ S pileated woodpecker
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	.6M	---	---	---	---

Sources for documented use (e.g. observations, records): great blue heron observed on site, golden eagle flyover in 2013. MNHP SOC list for Lincoln County.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of Overall Wildlife Use in the AA: Check substantial, moderate, or low based on supporting evidence.

☒ ***Substantial:*** Based on any of the following [check].
- ☒ observations of abundant wildlife #s or high species diversity (during any period)
- ☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interview with local biologist with knowledge of the AA

☐ ***Minimal:*** Based on any of the following [check].
- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interview with local biologist with knowledge of AA

☐ ***Moderate:*** Based on any of the following [check].
- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interview with local biologist with knowledge of the AA

ii. Wildlife Habitat Features: Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see manual for further definitions of these terms].

Structural Diversity (see #13)	☐ **High**								☒ **Moderate**								☐ **Low**			
Class Cover Distribution (all vegetated classes)	☐ **Even**				☐ **Uneven**				☒ **Even**				☐ **Uneven**				☐ **Even**			
Duration of Surface Water in ≥ 10% of AA	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**
☒ **Low Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	H	---	---	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	---	.9H	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: AA borders natural forested areas under management by both the USFS and Plum Creek Timber company.

Wetland/Site #(s): Enhancement

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check the NA box and proceed to 14E.

Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier].

Type of Fishery: ☒ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point and rating.

Duration of Surface Water in AA	☐ **Permanent / Perennial**						☐ **Seasonal / Intermittent**						☐ **Temporary / Ephemeral**					
Aquatic Hiding / Resting / Escape Cover	☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**	
Thermal Cover: optimal / suboptimal	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**
FWP Tier I fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 or be less than 0.1.

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity, ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

iii. Final Score and Rating: _ **Comments:** Not connected to any fish habitat

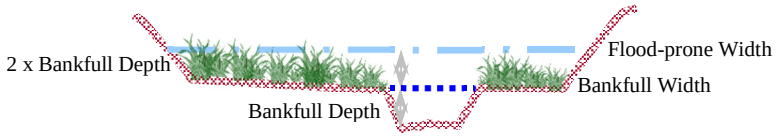
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

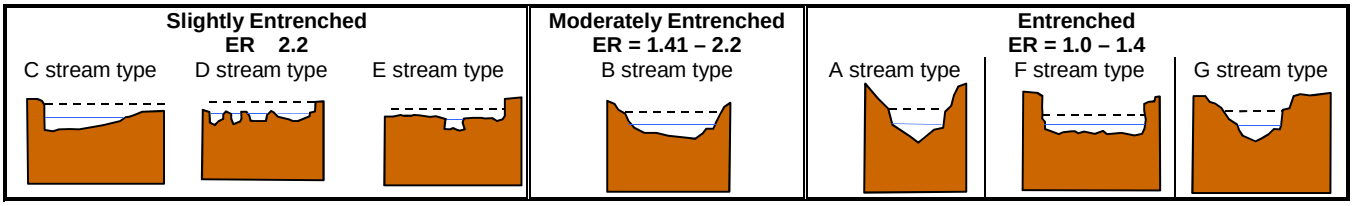
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

18 / 6 = 3

flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☐ 25-75%	☒ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	---	.6M	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

ii. Are 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** AA subject to periodic flooding from McGinnis Creek

Wetland/Site #(s): Enhancement

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual for further definitions of these terms].

Estimated Maximum Acre Feet of Water Contained in Wetlands within the AA that are Subject to Periodic Flooding or Ponding	☐ **>5 acre feet**			☐ **1.1 to 5 acre feet**			☒ **≤1 acre foot**		
Duration of Surface Water at Wetlands within the AA	☐ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☒ **T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	---	---	---	---	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	.1L

Comments: AA is too small to provide much flood storage

14G. SEDIMENT / NUTRIENT / TOXICANT / RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**				**Waterbody is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% Cover of Wetland Vegetation in AA	☒ **≥ 70%**		☐ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of Flooding / Ponding in AA	☐ **Yes**	☒ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	---	.8H	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: Well vegetated with sedges, no outlet

14H. SEDIMENT / SHORELINE STABILIZATION ☒ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of 6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☐ **Permanent / Perennial**	☐ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☐ **≥ 65%**	---	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: No wave action due to small size of AA

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ **E/H**	☐ **M**	☐ **L**
☐ **E/H**	---	---	---
☒ **M**	H	---	---
☐ **L**	---	---	---
☐ **NA**	---	---	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual for further definitions of these terms].

A	☐ **Vegetated Component >5 acres**						☒ **Vegetated Component 1-5 acres**						☐ **Vegetated Component <1 acre**					
B	☐ **High**		☐ **Moderate**		☐ **Low**		☒ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**	
C	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
P/P	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	.4M	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Enhancement

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: Area with 30% plant cover, 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 0.50 ☐ **NO**

iv. Final Score and Rating: .5M **Comments:** _____

14J. GROUNDWATER DISCHARGE / RECHARGE
Check the appropriate indicators in i and ii below.

i. Discharge Indicators
- ☐ The AA is a slope wetland.
- ☐ Springs or seeps are known or observed.
- ☐ Vegetation growing during dormant season/drought.
- ☐ Wetland occurs at the toe of a natural slope.
- ☐ Seeps are present at the wetland edge.
- ☐ AA permanently flooded during drought periods.
- ☐ Wetland contains an outlet, but no inlet.
- ☐ Shallow water table and the site is saturated to the surface.
- ☐ Other: _____

ii. Recharge Indicators
- ☐ Permeable substrate present without underlying impeding layer.
- ☐ Wetland contains inlet but no outlet.
- ☐ Stream is a known 'losing' stream. Discharge volume decreases.
- ☐ Other: _____

iii. Rating: Use the information from i and ii above and the table below to select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☐ P/P	☐ S/I	☐ T	☒ None
☒ **Groundwater Discharge or Recharge**	---	---	---	.1L
☐ **Insufficient Data/Information**	---			

Comments: AA has ephemeral drainage in spring

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland OR plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types AND structural diversity (#13) is high OR contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types OR associations AND structural diversity (#13) is low-moderate		
Estimated Relative Abundance (#11)	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☒ Common	☐ Abundant
☒ **Low Disturbance** at AA (#12i)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☒ Educational/Scientific Study ☒ Consumptive Recreational ☒ Non-consumptive recreational
☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Public access, no permission required.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Enhancement

Function & Value Variables	Rating – Actual Functional Points	Possible Functional Points	Functional Units: Actual Points x Estimated AA Acreage	Indicate the Four Most Prominent Functions with an Asterisk
A. Listed / Proposed T&E Species Habitat	low 0.30	1.00	0.27	
B. MT Natural Heritage Program Species Habitat	mod 0.60	1.00	0.54	
C. General Wildlife Habitat	high 0.90	1.00	8.6	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	mod 0.60	1.00	0.54	
F. Short and Long Term Surface Water Storage	low 0.10	1.00	0.09	*
G. Sediment / Nutrient / Toxicant Removal	high 0.80	1.00	0.72	*
H. Sediment / Shoreline Stabilization	NA	---	0	
I. Production Export / Food Chain Support	mod 0.50	1.00	0.45	
J. Groundwater Discharge / Recharge	low 0.10	1.00	0.09	*
K. Uniqueness	mod 0.40	1.00	0.36	
L. Recreation / Education Potential (bonus point)	high 0.20		0.18	
Total Points	**4.5**	**9**	**4.05 Total Functional Units**	
Percent of Possible Score 54% (round to nearest whole number)				

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if not go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: McGinnis Meadows **2. MDT Project #:** NH 27(17) **3. Control #:** 4143

3. Evaluation Date: 7/27/2016 **4. Evaluator(s):** G. Howard, T. Traxler **5. Wetland/Site #(s):** Preservation

6. Wetland Location(s): Township 26 N, Range 28 W, Section 33; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: _____

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☒ **Mitigation wetlands; post-construction**
- ☐ **Other** _____

8. Wetland Size (acre): _____ (visually estimated)
0.3 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 0.3 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Riverine	Scrub-Shrub Wetland	Impounded	Permanent / Perennial	50
Riverine	Emergent Wetland	Impounded	Permanent / Perennial	50

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species lists.

Conditions within AA	Predominant Conditions Adjacent to (within 500 feet of) AA		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is 15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is 30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is 15%.	---	low disturbance	---
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is 30%.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	---	---	---

Comments (types of disturbance, intensity, season, etc.)**:** No disturbance within AA

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: Area includes former channel of McGinnis Creek that was abandoned when McGinnis Creek was restored. Former channel runs north-south through the property. Surrounding habitat includes undisturbed upland and other assessment areas.

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	mod	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

Comments: Emergent and scrub-shrub

Wetland/Site #(s): Preservation

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS OR ANIMALS

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☐ D ☐ S _____
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☒ D ☐ S grizzly, Canada lynx
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	.3L	---	---

Sources for documented use (e.g. observations, records): USFWS database, site within year-round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly according to 2012 monitoring report.

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☐ D ☐ S
Secondary habitat (**list species**) ☒ D ☐ S great blue heron, golden eagle
Incidental habitat (**list species**) ☐ D ☒ S pileated woodpecker
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	.6M	---	---	---	---

Sources for documented use (e.g. observations, records): great blue heron observed on site, golden eagle flyover in 2013. MNHP SOC list for Lincoln County.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of Overall Wildlife Use in the AA: Check substantial, moderate, or low based on supporting evidence.

☒ ***Substantial:*** Based on any of the following [check].
- ☒ observations of abundant wildlife #s or high species diversity (during any period)
- ☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interview with local biologist with knowledge of the AA

☐ ***Minimal:*** Based on any of the following [check].
- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interview with local biologist with knowledge of AA

☐ ***Moderate:*** Based on any of the following [check].
- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interview with local biologist with knowledge of the AA

ii. Wildlife Habitat Features: Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see manual for further definitions of these terms].

Structural Diversity (see #13)	☐ **High**								☒ **Moderate**								☐ **Low**			
Class Cover Distribution (all vegetated classes)	☐ **Even**				☐ **Uneven**				☒ **Even**				☐ **Uneven**				☐ **Even**			
Duration of Surface Water in ≥ 10% of AA	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**
☒ **Low Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	E	---	---	---	---	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)** ☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	1E	---	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: Area borders natural forested areas under management by USFS and Plum Creek.

Wetland/Site #(s): Preservation

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check the NA box and proceed to 14E.

Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier].

Type of Fishery: ☐ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point and rating.

Duration of Surface Water in AA	☐ **Permanent / Perennial**						☐ **Seasonal / Intermittent**						☐ **Temporary / Ephemeral**					
Aquatic Hiding / Resting / Escape Cover	☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**	
Thermal Cover: optimal / suboptimal	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**
FWP Tier I fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 or be less than 0.1.

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity, ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

iii. Final Score and Rating: _ **Comments:** _____

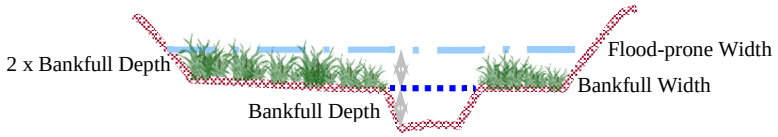
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

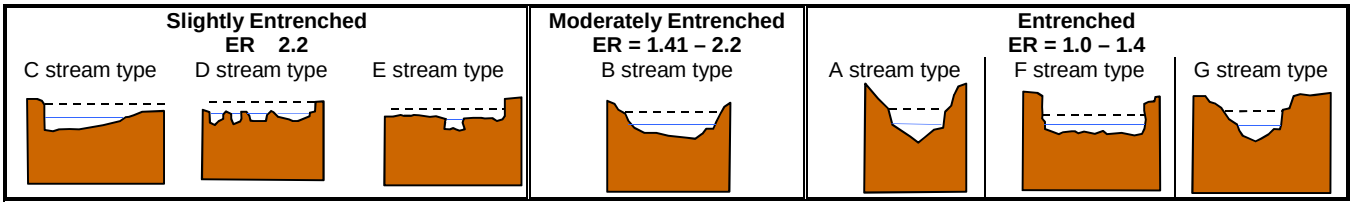
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

18 / 6 = 3

flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☒ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	.9H	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

ii. Are 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** AA subject to periodic flooding from McGinnis Creek

Wetland/Site #(s): Preservation

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual for further definitions of these terms].

Estimated Maximum Acre Feet of Water Contained in Wetlands within the AA that are Subject to Periodic Flooding or Ponding	☐ **>5 acre feet**			☒ **1.1 to 5 acre feet**			☐ **≤1 acre foot**		
Duration of Surface Water at Wetlands within the AA	☐ **P/P**	☐ **S/I**	☐ **T/E**	☒ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	---	---	---	.8H	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: AA includes former channel of McGinnis Creek with potential to store several feet of surface water.

14G. SEDIMENT / NUTRIENT / TOXICANT / RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**				**Waterbody is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% Cover of Wetland Vegetation in AA	☒ **≥ 70%**		☐ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of Flooding / Ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1H	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: Well vegetated with restricted outlet (ditch plugs)

14H. SEDIMENT / SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of 6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☒ **Permanent / Perennial**	☐ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☒ **≥ 65%**	1H	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: Shoreline dominated by reed canarygrass, meadow foxtail, and sedges.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ **E/H**	☐ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	H	---	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual for further definitions of these terms].

A	☐ **Vegetated Component >5 acres**						☐ **Vegetated Component 1-5 acres**						☒ **Vegetated Component <1 acre**					
B	☐ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**		☒ **High**		☐ **Moderate**		☐ **Low**	
C	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
P/P	---	---	---	---	---	---	---	---	---	---	---	---	---	.6M	---	---	---	---
S/I	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Preservation

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: Area with 30% plant cover, 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 0.70 ☐ **NO**

iv. Final Score and Rating: .7M **Comments:** AA is small, no surface outlet, well vegetated buffer.

14J. GROUNDWATER DISCHARGE / RECHARGE
Check the appropriate indicators in i and ii below.

i. Discharge Indicators
- ☐ The AA is a slope wetland.
- ☐ Springs or seeps are known or observed.
- ☐ Vegetation growing during dormant season/drought.
- ☒ Wetland occurs at the toe of a natural slope.
- ☐ Seeps are present at the wetland edge.
- ☒ AA permanently flooded during drought periods.
- ☐ Wetland contains an outlet, but no inlet.
- ☒ Shallow water table and the site is saturated to the surface.
- ☐ Other: _____

ii. Recharge Indicators
- ☐ Permeable substrate present without underlying impeding layer.
- ☐ Wetland contains inlet but no outlet.
- ☐ Stream is a known 'losing' stream. Discharge volume decreases.
- ☐ Other: _____

iii. Rating: Use the information from i and ii above and the table below to select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☒ **P/P**	☐ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	1H	---	---	---
☐ **Insufficient Data/Information**	---			

Comments: Shallow water table contributes surface water to former channel of McGinnis Creek.

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Replacement Potential	**AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland** OR **plant association listed as "S1" by the MTNHP**			**AA does not contain previously cited rare types** AND **structural diversity (#13) is high** OR **contains plant association listed as "S2" by the MTNHP**			**AA does not contain previously cited rare types** OR **associations** AND **structural diversity (#13) is low-moderate**		
Estimated Relative Abundance (#11)	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☒ Common	☐ Abundant
☒ **Low Disturbance** at AA (#12i)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☒ Educational/Scientific Study ☒ Consumptive Recreational ☒ Non-consumptive recreational
☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	**Known**	**Potential**
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Public access, no permission required. Signs of hunting observed during 2015 site visit.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Preservation

Function & Value Variables	Rating – Actual Functional Points	Possible Functional Points	Functional Units: Actual Points x Estimated AA Acreage	Indicate the Four Most Prominent Functions with an Asterisk
A. Listed / Proposed T&E Species Habitat	low 0.30	1.00	0.09	
B. MT Natural Heritage Program Species Habitat	mod 0.60	1.00	0.18	
C. General Wildlife Habitat	exc 1.00	1.00	0.3	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	high 0.90	1.00	0.27	
F. Short and Long Term Surface Water Storage	high 0.80	1.00	0.24	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	0.3	*
H. Sediment / Shoreline Stabilization	high 1.00	1.00	0.3	*
I. Production Export / Food Chain Support	mod 0.70	1.00	0.21	
J. Groundwater Discharge / Recharge	high 1.00	1.00	0.3	*
K. Uniqueness	mod 0.40	1.00	0.12	
L. Recreation / Education Potential (bonus point)	high 0.20		0.06	
Total Points	**7.9**	**10**	**2.37 Total Functional Units**	
Percent of Possible Score 79% (round to nearest whole number)				

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if not go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: McGinnis Meadows **2. MDT Project #:** NH 27(17) **3. Control #:** 4143

3. Evaluation Date: 7/27/2016 **4. Evaluator(s):** G. Howard, T. Traxler **5. Wetland/Site #(s):** Restoration

6. Wetland Location(s): Township 26 N, Range 28 W, Section 33; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: _____

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☒ **Mitigation wetlands; post-construction**
- ☐ **Other** _____

8. Wetland Size (acre): _____ (visually estimated)
16.6 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 16.6 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Riverine	Emergent Wetland		Permanent / Perennial	5
Depressional	Emergent Wetland		Permanent / Perennial	90
Depressional	Scrub-Shrub Wetland		Permanent / Perennial	5

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species lists.

Conditions within AA	Predominant Conditions Adjacent to (within 500 feet of) AA		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is 15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is 30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is 15%.	---	low disturbance	---
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is 30%.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	---	---	---

Comments (types of disturbance, intensity, season, etc.)**:** No disturbance within AA

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: AA includes previously delineated wetlands within conservation easement boundary. Adjacent land use includes low density residential, roads, USFS land, and Plum Creek Timber property.

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	mod	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

Comments: emergent and scrub-shrub

Wetland/Site #(s): Restoration

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS OR ANIMALS

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☐ D ☐ S _____
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☒ D ☐ S grizzly bear, Canada lynx
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	.3L	---	---

Sources for documented use (e.g. observations, records): USFWS database, site within year-round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly according to 2012 monitoring report.

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☒ D ☐ S Westslope cutthroat trout, Columbia river red-band trout (S1)
Secondary habitat (**list species**) ☒ D ☐ S great blue heron, golden eagle
Incidental habitat (**list species**) ☐ D ☒ S pileated woodpecker
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	1H	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	---	---	---	---	---

Sources for documented use (e.g. observations, records): MFWP surveyed, MNHP list for Lincoln County

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of Overall Wildlife Use in the AA: Check substantial, moderate, or low based on supporting evidence.

☒ ***Substantial:*** Based on any of the following [check].
- ☒ observations of abundant wildlife #s or high species diversity (during any period)
- ☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interview with local biologist with knowledge of the AA

☐ ***Minimal:*** Based on any of the following [check].
- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interview with local biologist with knowledge of AA

☐ ***Moderate:*** Based on any of the following [check].
- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interview with local biologist with knowledge of the AA

ii. Wildlife Habitat Features: Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see manual for further definitions of these terms].

Structural Diversity (see #13)	☐ **High**								☒ **Moderate**								☐ **Low**			
Class Cover Distribution (all vegetated classes)	☐ **Even**				☐ **Uneven**				☐ **Even**				☒ **Uneven**				☐ **Even**			
Duration of Surface Water in ≥ 10% of AA	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**
☒ **Low Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	E	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	1E	---	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: Area borders natural forested areas under management by USFS and Plum Creek.

Wetland/Site #(s): Restoration

14D. GENERAL FISH HABITAT ☐ **NA** (proceed to 14E)

If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check the NA box and proceed to 14E.

Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier].

Type of Fishery: ☒ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point and rating.

Duration of Surface Water in AA	☒ **Permanent / Perennial**						☐ **Seasonal / Intermittent**						☐ **Temporary / Ephemeral**					
Aquatic Hiding / Resting / Escape Cover	☐ **Optimal**		☒ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**	
Thermal Cover: optimal / suboptimal	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**
FWP Tier I fish species	---	---	.8H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: MFWP

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 or be less than 0.1.

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity, ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* ☒ **YES**, reduce score in **i** by 0.1 = 0.70 or ☐ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

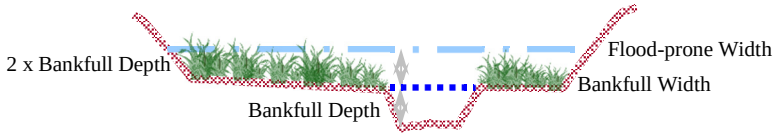
iii. Final Score and Rating: .7M **Comments:** Perched culvert at Bayhorse Pass Road on northern boundary of the site prevents fish passage at certain times of year.

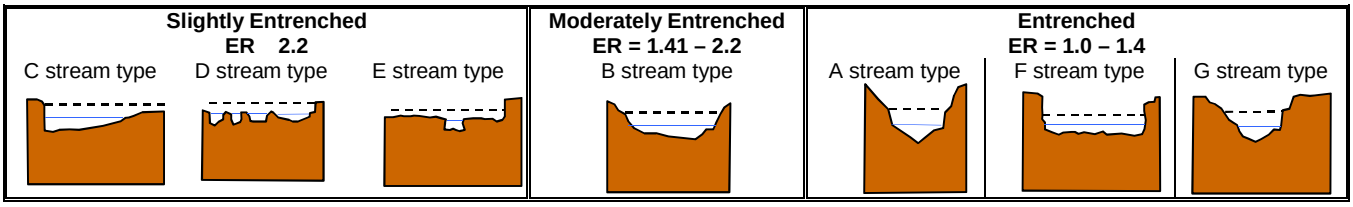
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

18 / 6 = 3
flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☐ 25-75%	☒ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	---	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	.5M	---	---	---	---	---	---

ii. Are 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☒ YES ☐ NO **Comments:** Residence located north of AA, elevated above floodplain and not subject to flooding. Road and culvert located directly downstream.

Wetland/Site #(s): Restoration

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual for further definitions of these terms].

Estimated Maximum Acre Feet of Water Contained in Wetlands within the AA that are Subject to Periodic Flooding or Ponding	☒ **>5 acre feet**			☐ **1.1 to 5 acre feet**			☐ **≤1 acre foot**		
Duration of Surface Water at Wetlands within the AA	☒ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	---	---	---	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: Greater than 5 acre feet capacity across 18.09 acre wetland.

14G. SEDIMENT / NUTRIENT / TOXICANT / RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**				**Waterbody is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% Cover of Wetland Vegetation in AA	☒ **≥ 70%**		☐ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of Flooding / Ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	---	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	.9H	---	---	---	---	---	---	---

Comments: Area receives surface runoff during precipitation events.

14H. SEDIMENT / SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of 6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☒ **Permanent / Perennial**	☐ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☒ **≥ 65%**	1H	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: Open water areas are subject to wave action, streambank is subject to erosion. The streambank is well vegetated (reed canarygrass, meadow foxtail) and open water areas have >65% vetetation cover.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ **E/H**	☐ **M**	☐ **L**
☒ **E/H**	H	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☐ **NA**	---	---	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual for further definitions of these terms].

A	☒ **Vegetated Component >5 acres**						☐ **Vegetated Component 1-5 acres**						☐ **Vegetated Component <1 acre**					
B	☒ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**	
C	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
P/P	1H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Restoration

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: Area with 30% plant cover, 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 1.00 ☐ **NO**

iv. Final Score and Rating: 1H **Comments:** AA is well vegetated with high biological activity.

14J. GROUNDWATER DISCHARGE / RECHARGE
Check the appropriate indicators in i and ii below.

i. Discharge Indicators
- ☐ The AA is a slope wetland.
- ☐ Springs or seeps are known or observed.
- ☒ Vegetation growing during dormant season/drought.
- ☒ Wetland occurs at the toe of a natural slope.
- ☐ Seeps are present at the wetland edge.
- ☐ AA permanently flooded during drought periods.
- ☐ Wetland contains an outlet, but no inlet.
- ☐ Shallow water table and the site is saturated to the surface.
- ☐ Other: _____

ii. Recharge Indicators
- ☐ Permeable substrate present without underlying impeding layer.
- ☐ Wetland contains inlet but no outlet.
- ☐ Stream is a known 'losing' stream. Discharge volume decreases.
- ☐ Other: _____

iii. Rating: Use the information from i and ii above and the table below to select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☒ **P/P**	☐ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	1H	---	---	---
☐ **Insufficient Data/Information**	---			

Comments: _____

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Replacement Potential	**AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland** OR **plant association listed as "S1" by the MTNHP**			**AA does not contain previously cited rare types** AND **structural diversity (#13) is high** OR **contains plant association listed as "S2" by the MTNHP**			**AA does not contain previously cited rare types** OR **associations** AND **structural diversity (#13) is low-moderate**		
Estimated Relative Abundance (#11)	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☒ Common	☐ Abundant
☒ **Low Disturbance** at AA (#12i)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☒ Educational/Scientific Study ☒ Consumptive Recreational ☒ Non-consumptive recreational
☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Public access, no permission required. Signs of hunting observed during 2015 site visit.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Restoration

Function & Value Variables	Rating – Actual Functional Points	Possible Functional Points	Functional Units: Actual Points x Estimated AA Acreage	Indicate the Four Most Prominent Functions with an Asterisk
A. Listed / Proposed T&E Species Habitat	low 0.30	1.00	4.98	
B. MT Natural Heritage Program Species Habitat	high 1.00	1.00	16.6	
C. General Wildlife Habitat	exc 1.00	1.00	16.6	
D. General Fish Habitat	mod 0.70	1.00	11.62	
E. Flood Attenuation	mod 0.50	1.00	8.3	
F. Short and Long Term Surface Water Storage	high 1.00	1.00	16.6	*
G. Sediment / Nutrient / Toxicant Removal	high 0.90	1.00	14.94	*
H. Sediment / Shoreline Stabilization	high 1.00	1.00	16.6	
I. Production Export / Food Chain Support	high 1.00	1.00	16.6	*
J. Groundwater Discharge / Recharge	high 1.00	1.00	16.6	*
K. Uniqueness	mod 0.40	1.00	6.64	
L. Recreation / Education Potential (bonus point)	high 0.20		3.32	
Total Points	**9**	**11**	**149.4 Total Functional Units**	
Percent of Possible Score 82% (round to nearest whole number)				

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☒ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☒ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if not go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☒ **I** ☐ **II** ☐ **III** ☐ **IV**

APPENDIX C
PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

McGinnis Meadows: Photo Point Photos



Photo Point: 1 Location: SE Corner of Site
Bearing: 250 Degrees Year: 2010



Photo Point: 1 Location: SE Corner of Site
Bearing: 250 Degrees Year: 2012



Photo Point: 1 Location: SE Corner of Site
Bearing: 250 Degrees Year: 2013



Photo Point: 1 Location: SE Corner of Site
Bearing: 250 Degrees Year: 2014



Photo Point: 1 Location: SE Corner of Site
Bearing: 250 Degrees Year: 2015



Photo Point: 1 Location: SE Corner of Site
Bearing: 250 Degrees Year: 2016

McGinnis Meadows: Photo Point Photos



Photo Point: 1 Location: SE Corner of Site
Bearing: 270 Degrees Year: 2010



Photo Point: 1 Location: SE Corner of Site
Bearing: 270 Degrees Year: 2012



Photo Point: 1 Location: SE Corner of Site
Bearing: 270 Degrees Year: 2013



Photo Point: 1 Location: SE Corner of Site
Bearing: 270 Degrees Year: 2014



Photo Point: 1 Location: SE Corner of Site
Bearing: 270 Degrees Year: 2015



Photo Point: 1 Location: SE Corner of Site
Bearing: 270 Degrees Year: 2016

McGinnis Meadows: Photo Point Photos



Photo Point: 1 Location: SE Corner of Site
Bearing: 300 Degrees Year: 2010



Photo Point: 1 Location: SE Corner of Site
Bearing: 300 Degrees Year: 2012



Photo Point: 1 Location: SE Corner of Site
Bearing: 300 Degrees Year: 2013



Photo Point: 1 Location: SE Corner of Site
Bearing: 300 Degrees Year: 2014



Photo Point: 1 Location: SE Corner of Site
Bearing: 300 Degrees Year: 2015



Photo Point: 1 Location: SE Corner of Site
Bearing: 300 Degrees Year: 2016

McGinnis Meadows: Photo Point Photos



Photo Point: 2 Location: South-Central Part of Site
Bearing: 85 Degrees Year: 2010



Photo Point: 2 Location: South-Central Part of Site
Bearing: 85 Degrees Year: 2012



Photo Point: 2 Location: South-Central Part of Site
Bearing: 85 Degrees Year: 2013



Photo Point: 2 Location: South-Central Part of Site
Bearing: 85 Degrees Year: 2014



Photo Point: 2 Location: South-Central Part of Site
Bearing: 85 Degrees Year: 2015



Photo Point: 2 Location: South-Central Part of Site
Bearing: 85 Degrees Year: 2016

McGinnis Meadows: Photo Point Photos



Photo Point: 2 Location: South-Central Part of Site
Bearing: 110 Degrees Year: 2010



Photo Point: 2 Location: South-Central Part of Site
Bearing: 110 Degrees Year: 2012



Photo Point: 2 Location: South-Central Part of Site
Bearing: 110 Degrees Year: 2013



Photo Point: 2 Location: South-Central Part of Site
Bearing: 110 Degrees Year: 2014



Photo Point: 2 Location: South-Central Part of Site
Bearing: 110 Degrees Year: 2015



Photo Point: 2 Location: South-Central Part of Site
Bearing: 110 Degrees Year: 2016

McGinnis Meadows: Photo Point Photos



Photo Point: 2 Location: South-Central Part of Site
Bearing: 140 Degrees Year: 2010



Photo Point: 2 Location: South-Central Part of Site
Bearing: 140 Degrees Year: 2012



Photo Point: 2 Location: South-Central Part of Site
Bearing: 140 Degrees Year: 2013



Photo Point: 2 Location: South-Central Part of Site
Bearing: 140 Degrees Year: 2014



Photo Point: 2 Location: South-Central Part of Site
Bearing: 140 Degrees Year: 2015



Photo Point: 2 Location: South-Central Part of Site
Bearing: 140 Degrees Year: 2016

McGinnis Meadows: Photo Point Photos



Photo Point: 2 Location: South-Central Part of Site
Bearing: 180 Degrees Year: 2010



Photo Point: 2 Location: South-Central Part of Site
Bearing: 180 Degrees Year: 2012



Photo Point: 2 Location: South-Central Part of Site
Bearing: 180 Degrees Year: 2013



Photo Point: 2 Location: South-Central Part of Site
Bearing: 180 Degrees Year: 2014



Photo Point: 2 Location: South-Central Part of Site
Bearing: 180 Degrees Year: 2015



Photo Point: 2 Location: South-Central Part of Site
Bearing: 180 Degrees Year: 2016



Photo Point 3; Location: South-Central part of site; Bearing 200 degrees; Year 2010



Photo Point 3; Location: South-Central part of site; Bearing 200 degrees; Year 2012



Photo Point 3; Location: South-Central part of site; Bearing 200 degrees; Year 2014



Photo Point 3; Location: South-Central part of site; Bearing 200 degrees; Year 2016



Photo Point 4; Location: Center of site; Bearing 200 degrees; Year 2010



Photo Point 4; Location: Center of site; Bearing 200 degrees; Year 2012



Photo Point 4; Location: Center of site; Bearing 200 degrees; Year 2014



Photo Point 4; Location: Center of site; Bearing 200 degrees; Year 2016



Photo Point 5; Location: NW Corner; Bearing 130 degrees; Year 2010



Photo Point 5; Location: NW Corner; Bearing 130 degrees; Year 2012



Photo Point 5; Location: NW Corner; Bearing 130 degrees; Year 2014



Photo Point 5; Location: NW Corner; Bearing 130 degrees; Year 2016



Photo Point 6; Location: NE Corner of site; Bearing 220 degrees; Year 2010



Photo Point 6; Location: NE Corner of site; Bearing 220 degrees; Year 2012



Photo Point 6; Location: NE Corner of site; Bearing 220 degrees; Year 2014



Photo Point 6; Location: NE Corner of site; Bearing 220 degrees; Year 2016



Photo Point 7; Location: East Side of Property; Bearing 210 degrees; Year 2010



Photo Point 7; Location: East Side of Property; Bearing 210 degrees; Year 2012



Photo Point 7; Location: East Side of Property; Bearing 210 degrees; Year 2014



Photo Point 7; Location: East Side of Property; Bearing 210 degrees; Year 2016

McGinnis Meadows: Transect Photos



Transect 1: Start Location: T-1
Bearing 330 degrees Year 2010



Transect 1: Start Location: T-1
Bearing 330 degrees Year 2012



Transect 1: Start Location: T-1
Bearing 330 degrees Year 2013



Transect 1: Start Location: T-1
Bearing 330 degrees Year 2014



Transect 1: Start Location: T-1
Bearing 330 degrees Year 2015



Transect 1: Start Location: T-1
Bearing 330 degrees Year 2016

McGinnis Meadows: Transect Photos



Transect 1: End Location: T-1
Bearing 150 degrees Year 2010



Transect 1: End Location: T-1
Bearing 150 degrees Year 2012



Transect 1: End Location: T-1
Bearing 150 degrees Year 2013



Transect 1: End Location: T-1
Bearing 150 degrees Year 2014



Transect 1: End Location: T-1
Bearing 150 degrees Year 2015



Transect 1: End Location: T-1
Bearing 150 degrees Year 2016

McGinnis Meadows: Transect Photos



Transect 2: Start Location: T-2
Bearing: 0 degrees Year 2010



Transect 2: Start Location: T-2
Bearing: 0 degrees Year 2012



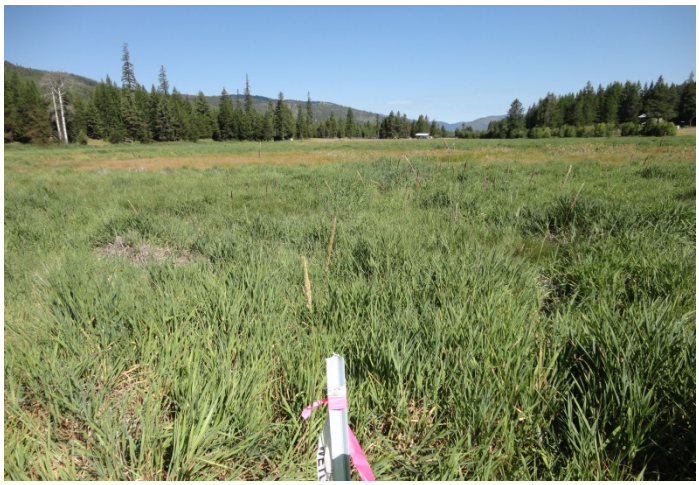
Transect 2: Start Location: T-2
Bearing: 0 degrees Year 2013



Transect 2: Start Location: T-2
Bearing: 0 degrees Year 2014



Transect 2: Start Location: T-2
Bearing: 0 degrees Year 2015



Transect 2: Start Location: T-2
Bearing: 0 degrees Year 2016

McGinnis Meadows: Transect Photos



Transect 2: End Location: T-2
Bearing 180 degrees Year 2010



Transect 2: End Location: T-2
Bearing 180 degrees Year 2012



Transect 2: End Location: T-2
Bearing 180 degrees Year 2013



Transect 2: End Location: T-2
Bearing 180 degrees Year 2014



Transect 2: End Location: T-2
Bearing 180 degrees Year 2015



Transect 2: End Location: T-2
Bearing 180 degrees Year 2016

McGinnis Meadows: Cross-Section Photos



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 275 Degrees Year: 2010



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 275 Degrees Year: 2012



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 275 Degrees Year: 2013



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 275 Degrees Year: 2014



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 275 Degrees Year: 2015



Cross Section: 1 Location: XS-1 Downstream
Bearing: 275 Degrees Year: 2016

McGinnis Meadows: Cross-Section Photos



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 290 Degrees Year: 2010



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 290 Degrees Year: 2012



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 290 Degrees Year: 2013



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 290 Degrees Year: 2014



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 290 Degrees Year: 2015



Cross-Section: 1 Location: XS-1 Downstream
Bearing: 290 Degrees Year: 2016



Cross-Section 1; Location: XS-1 Upstream; Bearing 110 degrees; Year 2010



Cross-Section 1; Location: XS-1 Upstream; Bearing 110 degrees; Year 2012



Cross-Section 1; Location: XS-1 Upstream; Bearing 110 degrees; Year 2014



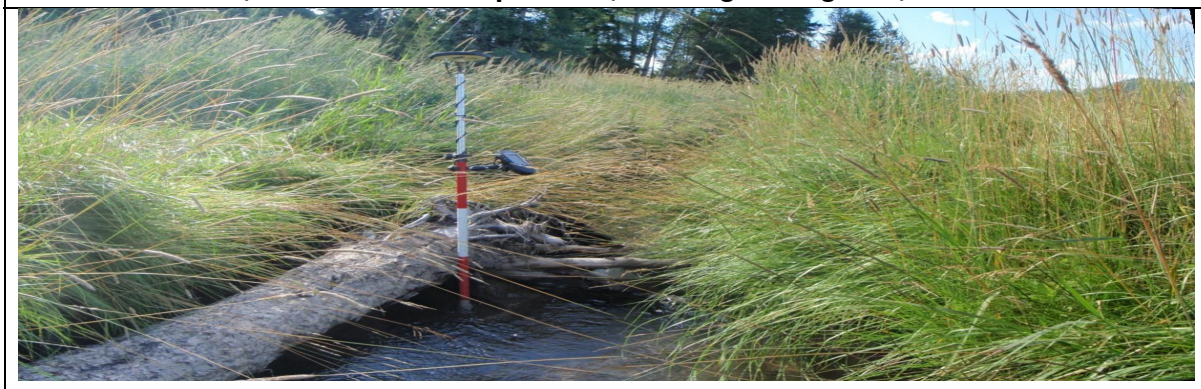
Cross-Section 1; Location: XS-1 Upstream; Bearing 110 degrees; Year 2016



Cross-Section 2; Location: XS-2 Upstream; Bearing 70 degrees; Year 2010



Cross-Section 2; Location: XS-2 Upstream; Bearing 70 degrees; Year 2012



Cross-Section 2; Location: XS-2 Upstream; Bearing 70 degrees; Year 2014



Cross-Section 2; Location: XS-2 Upstream; Bearing 70 degrees; Year 2016



Cross-Section 2; Location: XS-2 Downstream; Bearing 350 degrees; Year 2010



Cross-Section 2; Location: XS-2 Downstream; Bearing 350 degrees; Year 2012



Cross-Section 2; Location: XS-2 Downstream; Bearing 350 degrees; Year 2014



Cross-Section 2; Location: XS-2 Downstream; Bearing 350 degrees; Year 2016



Cross-Section 3; Location: XS-3 Upstream; Bearing 260 degrees; Year 2010



Cross-Section 3; Location: XS-3 Upstream; Bearing 260 degrees; Year 2012



Cross-Section 3; Location: XS-3 Upstream; Bearing 260 degrees; Year 2014



Cross-Section 3; Location: XS-3 Upstream; Bearing 260 degrees; Year 2016



Cross-Section 3; Location: XS-3 Downstream; Bearing 90 degrees; Year 2010



Cross-Section 3; Location: XS-3 Downstream; Bearing 90 degrees; Year 2012



Cross-Section 3; Location: XS-3 Downstream; Bearing 90 degrees; Year 2014



Cross-Section 3; Location: XS-3 Downstream; Bearing 90 degrees; Year 2016

McGinnis Meadows: Data Point Photos



Data Point: DP-1U Location: SE part of site
Year 2016



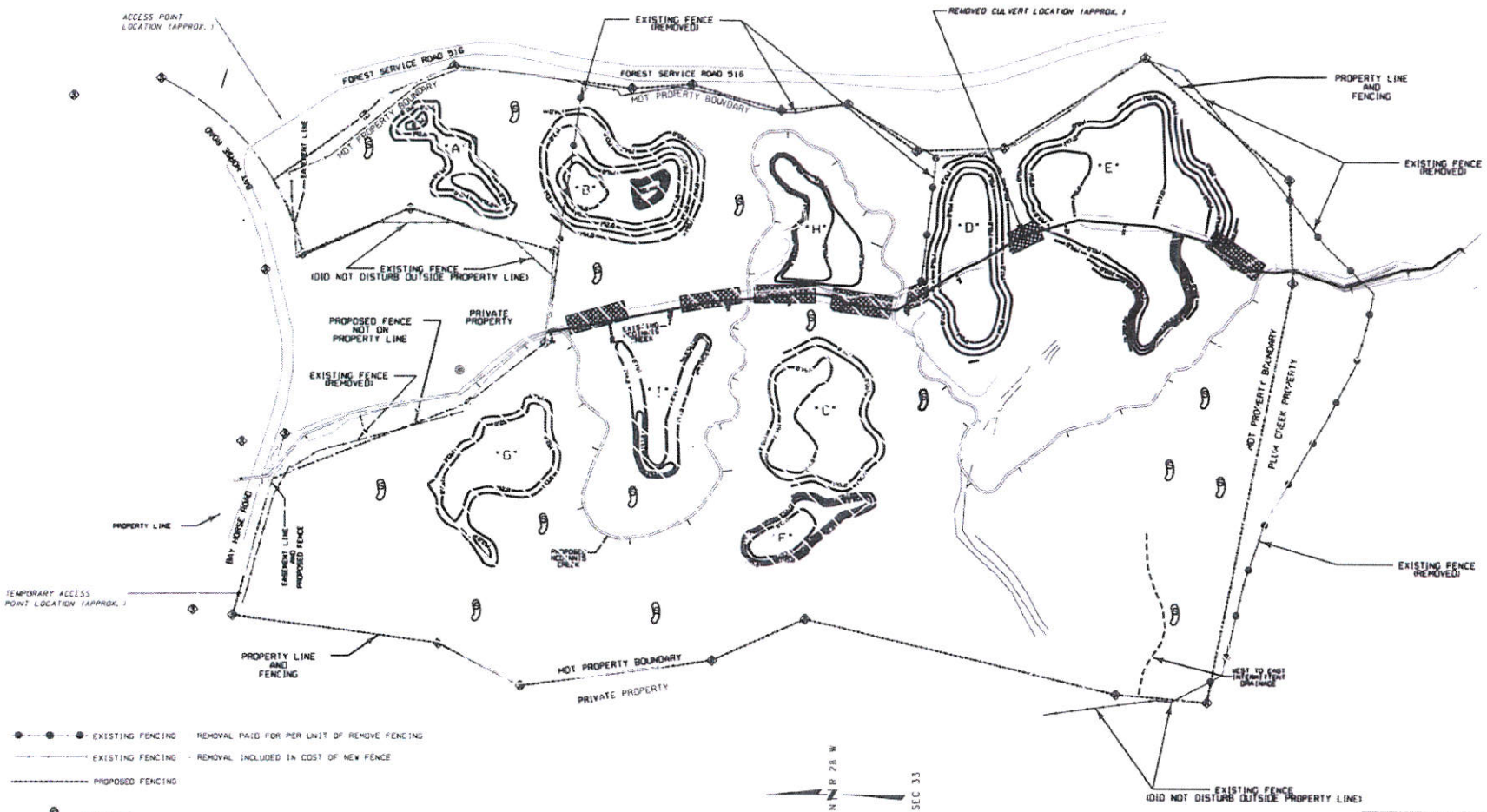
Data Point: DP-1W Location: SE part of site
Year 2016

APPENDIX D
PROJECT PLAN SHEETS

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

AS-BUILTS DATE SENSITIVE - FOR INFORMATION ONLY

05.14.2010
Highways & Engineering Division



SITE PLAN
for
McGINNIS CREEK
WETLAND MITIGATION

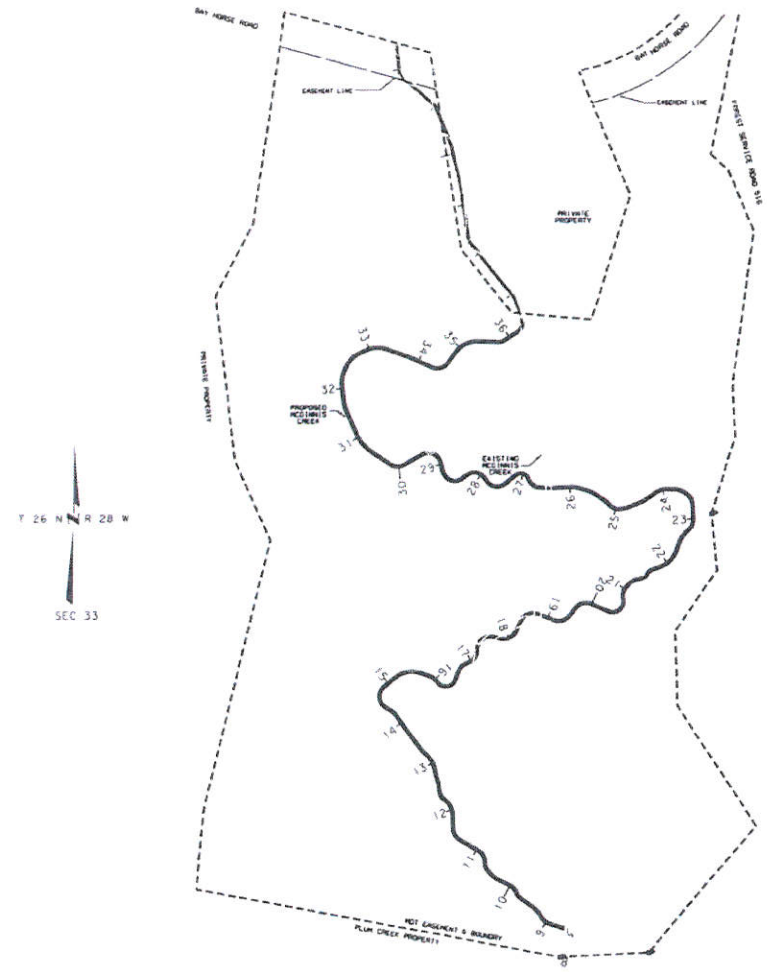
NO SCALE

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\4143\dist02\eq.dgn	DESIGNED BY: MARK FRENCH	10/25/2008	WETLAND MITIGATION		McGINNIS MEADOWS - WETLAND MITIGATION		NH 23 (17)
2		5/14/2010	REVIEWED BY:						
1		10:36:59 AM	CHECKED BY:		LINCOLN COUNTY		UPN 4143		SHEET 5 OF 21

D-2

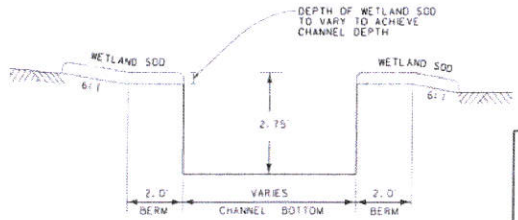
AS-BUILTS DATE SENSITIVE - FOR INFORMATION ONLY

05/14/2010
Highways & Engineering Division



PROPOSED CURVE/STREAM ℄ LAYOUT DATA

P.I. STATION	POINT OF INTERSECTION (P.I.) COORDINATES X	Y	POINT OF CURVATURE (P.C.) COORDINATES X	Y	POINT OF TANGENCY (P.T.) COORDINATES X	Y	RADIUS OF CURVE (FT.)
6+85.88 P.O.T.	1876.1720	670.1733	BEGINNING OF PROPOSED MCGINNIS STREAM				
8+53.65	1877.3428	718.6812	1876.9184	699.9216	1859.9635	724.4198	25.000
9+01.96	1876.4710	734.6678	1874.3349	732.2117	1821.6846	741.3118	25.000
9+53.87	1887.5188	758.4708	1815.8621	751.9234	1816.2492	765.1168	200.000
9+73.16	1874.9788	783.9788	1808.1294	780.2588	1872.2152	789.7827	25.000
9+92.56	1866.4588	803.7088	1878.2457	793.8013	1856.8575	830.5282	25.000
10+31.45	1838.8063	818.8534	1834.8857	816.9288	1821.7139	832.8371	25.000
10+58.86	1818.8188	839.4482	1817.9829	832.1377	1818.8359	844.6288	25.000
10+92.89	1818.8751	864.2788	1818.8365	849.8526	1838.4824	871.6286	25.000
11+38.26	1851.8652	898.8183	1861.6853	882.7346	1849.3653	918.9285	25.000
11+96.11	1847.4988	946.1988	1842.3495	940.9161	1845.4826	951.8789	25.000
12+12.81	1841.8988	961.7982	1843.5873	955.7827	1835.9196	965.8893	25.000
12+36.06	1823.5988	976.3582	1830.5221	972.1872	1821.2162	986.7582	25.000
12+59.53	1819.1283	1000.8480	1814.8761	998.2961	1818.6289	1002.7878	25.000
13+01.48	1824.4588	1043.1788	1818.8442	1021.1426	1799.6929	1051.7729	40.000
13+33.12	1786.7488	1064.4888	1792.8279	1059.3219	1782.3627	1078.3486	100.000
13+82.86	1767.3088	1103.5788	1758.0824	1102.6396	1756.6195	1124.5172	100.000
14+26.26	1736.8972	1138.8498	1736.1481	1134.4144	1721.8147	1141.3154	25.000
14+79.21	1685.6888	1156.3088	1716.6962	1141.8882	1713.8938	1168.8473	25.000
15+45.85	1756.5312	1222.8243	1734.9689	1205.6419	1782.9697	1213.7593	50.000
15+95.84	1807.4788	1285.8788	1821.4898	1287.1723	1811.7382	1282.4113	25.000
16+42.45	1839.5968	1164.8243	1817.2117	1194.4114	1850.0122	1201.1365	20.000
16+77.84	1862.8633	1226.9472	1856.2454	1216.2868	1870.6688	1231.1166	25.000
17+26.74	1890.1684	1238.7485	1875.5691	1233.8369	1891.3824	1264.3674	25.000
17+55.68	1894.0835	1266.8758	1891.8408	1268.6185	1922.1522	1282.6885	25.000
18+05.67	1957.2898	1274.9262	1932.8488	1279.2165	1965.8228	1292.9128	25.000
18+65.57	1985.8225	1334.6445	1978.7283	1313.7863	1987.2818	1326.4367	25.000
19+32.78	1856.6442	1387.6187	1839.6841	1314.4618	1861.8895	1323.2611	25.000
19+83.87	1804.8605	1351.9241	1874.2442	1337.4243	1888.3141	1349.7986	25.000
20+72.68	1777.3586	1316.8788	1142.8648	1331.3154	1778.3161	1353.4998	20.000
20+93.14	1767.4188	1364.6388	1769.7672	1356.3574	1770.8119	1377.8818	25.000
21+22.83	1788.1988	1391.5188	1782.3564	1385.0868	1796.7486	1392.9388	25.000
21+47.27	1812.9362	1390.6388	1803.4428	1394.2556	1817.6662	1404.8483	20.000
21+61.94	1822.7408	1385.6388	1817.9255	1404.5841	1826.2122	1411.4848	15.000
22+07.68	1864.6388	1424.5888	1841.1962	1416.5686	1872.5328	1447.9462	50.000
22+58.99	1882.1188	1476.3688	1878.2136	1464.8021	1898.8924	1484.8266	50.002
22+90.28	1884.9188	1496.3488	1896.5978	1498.1268	1884.1905	1509.8649	25.000
23+34.62	1882.8788	1544.3488	1880.5385	1536.8818	1897.5922	1552.3222	25.000
23+61.73	1895.6788	1566.2588	1891.1814	1558.8711	1906.4784	1580.8881	40.004
24+04.60	1848.2588	1567.7488	1854.6928	1567.2665	1828.8538	1598.8873	40.000
24+41.95	1889.8488	1544.1388	1921.6472	1563.2948	1895.8643	1578.8188	100.000
24+74.89	1879.5988	1532.6388	1882.3437	1533.6769	1876.7324	1593.9132	50.000
25+21.97	1852.5488	1525.8588	1866.4418	1529.3345	1842.5887	1536.8647	25.000
25+34.78	1834.7588	1543.4788	1836.5313	1540.1427	1838.3828	1545.9154	50.000
25+69.89	1886.8288	1562.8988	1912.9896	1558.3858	1897.9393	1564.6634	50.000
25+95.26	1871.2388	1571.8788	1874.9886	1578.8515	1866.9439	1571.5684	25.000
26+37.51	1828.6288	1568.7488	1832.3624	1569.8161	1824.8823	1589.8258	50.000
26+71.45	1814.7788	1571.3288	1808.9338	1578.2488	1788.4471	1594.2481	25.000
27+27.78	1827.4917	1606.1598	1985.9169	1589.1381	1867.8838	1607.9685	15.000
27+69.48	1821.7197	1559.5563	1943.7496	1578.8188	1806.5275	1569.9995	25.000
28+12.74	1888.4426	1613.8967	1904.5436	1587.1914	1866.2021	1592.2235	25.000
28+79.18	1831.3954	1559.5363	1863.4315	1589.6231	1821.9122	1602.4561	25.000
29+37.48	1811.2155	1650.8435	1819.6016	1617.4328	1781.6328	1633.6532	25.000
30+04.54	1794.2454	1686.1886	1747.7851	1661.9086	1791.3935	1614.7798	25.000
30+25.58	1664.4366	1652.5983	1689.3569	1636.8587	1652.6961	1680.1136	100.000
31+66.48	1636.8228	1728.5664	1634.3746	1722.1154	1631.1586	1735.5258	50.000
32+28.25	1625.3388	1782.8188	1629.8336	1768.4851	1638.8844	1794.5688	50.002
32+62.87	1642.6188	1821.6988	1639.8508	1824.3347	1653.7867	1825.6885	50.000
33+15.23	1691.5888	1844.5288	1679.8178	1835.6582	1718.8756	1837.6655	50.000
33+65.87	1759.3588	1838.4588	1755.3734	1821.8624	1763.1935	1818.7878	100.000
34+48.54	1817.2188	1794.2288	1798.7822	1802.5740	1829.2219	1812.5814	25.002
35+15.89	1862.9939	1853.5664	1845.2885	1832.2706	1882.4298	1852.5581	50.002
35+63.45	1932.7402	1858.6382	1924.9425	1821.1372	1934.3195	1855.8158	25.000
36+37.27	1978.5888	1879.5082	1961.1789	1868.9173	1971.8173	1899.1588	25.000
36+51.14 P.O.T.	1971.8173	1899.1588	END OF PROPOSED MCGINNIS STREAM				



TYPICAL X-SECTION OF PROPOSED STREAM CHANNEL

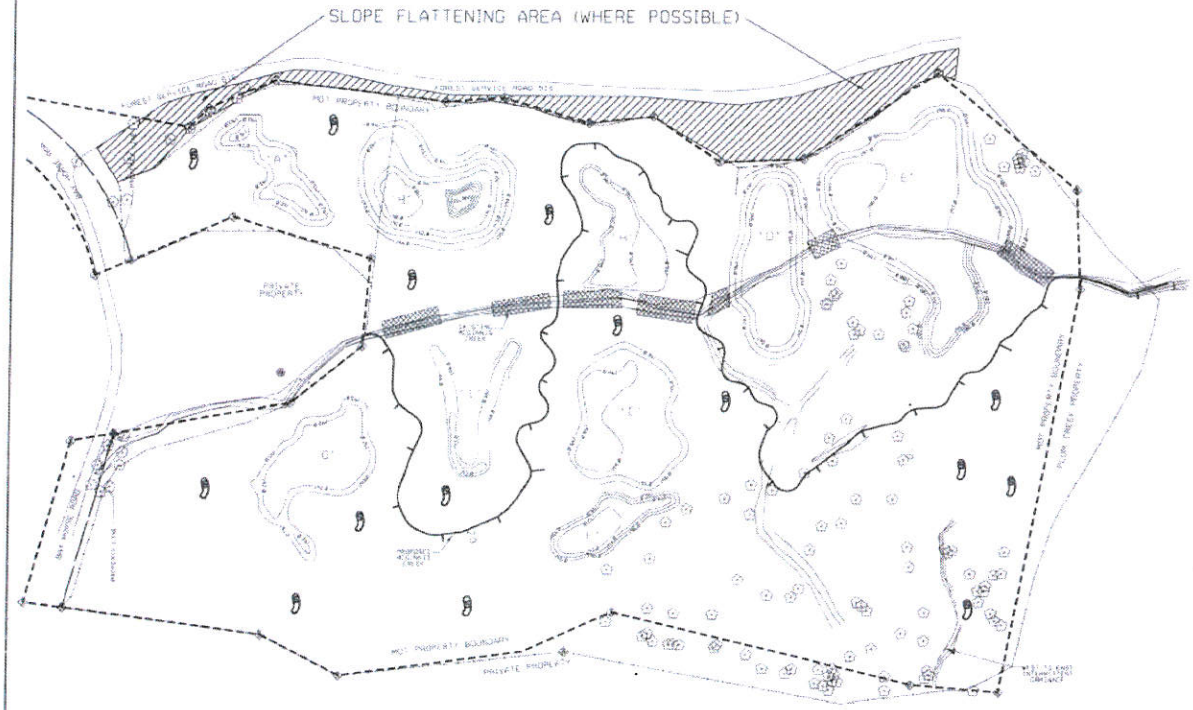
PROPOSED CHANNEL for McGINNIS CREEK

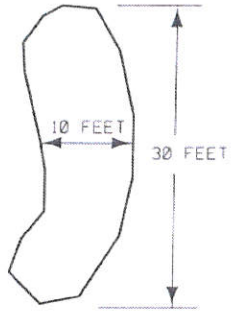
ALIGNMENT COORDINATE TABLE

3	MDT Serving you with pride	MONTANA DEPARTMENT OF TRANSPORTATION	c:\eigen\143\dsgn\800\wb.dgn	DESIGNED BY: MARK FRENCH	10/25/2009	WETLAND MITIGATION	McGINNIS MEADOWS - WETLAND MITIGATION	NH 23 1(17)
2			5/14/2010	REVIEWED BY:				
1			10:37:03 AM	CHECKED BY:		LINCOLN COUNTY	UPN 4143	SHEET 7 OF 21
			CPS - U485					

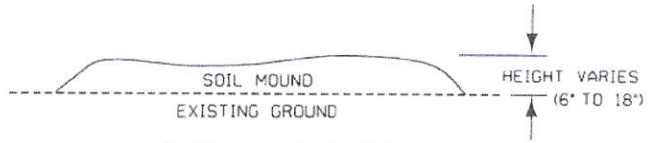
AS-BUILTS DATE SENSITIVE - FOR INFORMATION ONLY

05.14.2010 Highways & Engineering Division



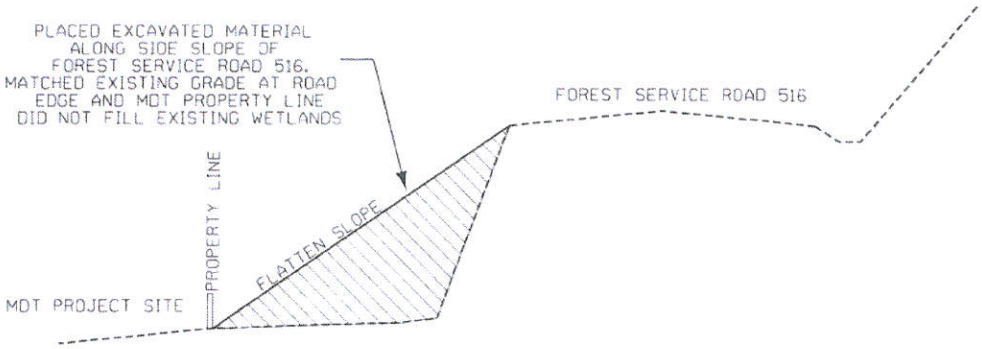


PLAN VIEW OF SOIL MOUNDS



X-SECT OF SOIL MOUNDS

PRECISE LOCATIONS AND HEIGHT OF SOIL MOUNDS WAS MARKED IN THE FIELD BY MDT STAFF BOTANIST



X-SECT OF FOREST SERVICE ROAD 516

DETAIL
SOIL MOUNDS
(1 OF 1)

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\41\Sheet06.dgn	DESIGNED BY:	R. SAYARDS	02/06/09	WETLAND MITIGATION	McGINNIS MEADOWS - WETLAND MITIGATION		NH 27 (17)
2		5/14/2010	REVIEWED BY:						
1		10:37:40 AM GMT-0600	CHECKED BY:			LINCOLN COUNTY		UPN 4143	SHEET 17 OF 21

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