MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Big Hole Grazing Association
Beaverhead County, Montana



Prepared for:

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MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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MDT Project Number STPX-0001(45)
Control Number 4668

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December 2010

CCI Project No: MDT.004

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1. INTRODUCTION

The Big Hole Grazing Association (BHGA) Wetland Mitigation 2010 Monitoring Report documents the third year of monitoring at the Big Hole mitigation site. The BHGA wetland mitigation project was constructed in fall 2007 by the Montana Department of Transportation (MDT). The purpose of the project was to restore approximately 45 acres of wetland habitat within a 96-acre easement area owned by the BHGA (PBS&J 2009). The project provided a wetland mitigation reserve in Watershed # 6 – Upper Missouri River Basin. This mitigation site is being utilized by MDT as a mitigation reserve for a number of transportation projects within the Butte District.

The mitigation site is located approximately seven miles southwest of Wisdom and approximately four miles west of Secondary Route 278 (Figure 1). The property is situated in the northwest quarter of Section 2, Township 4 South and Range 16 West in Beaverhead County. Figures 2 and 3 (Appendix A) show the mapped site features and monitoring activity locations, respectively. Appendix B contains the Mitigation Monitoring Forms, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the MDT Functional Assessment Forms. Appendix C contains relevant photographs and Appendix D includes the project plan sheet.

Prior to project initiation, the BHGA used the project area for grazing and haying operations. The site was historically drained through a system of constructed ditches. The project area exhibits a naturally high groundwater table. Additional water sources include springs located on the hillside north of the site and Rock Creek, a perennial tributary to the Big Hole River that flows through the south portion of the easement area.

The primary drainage ditch that flowed northwest to southeast through the easement area was completely filled and reclaimed with the goal of restoring the natural hydrology and wetlands within the easement area. A secondary ditch that flows north to south across the west half of the site was breached in three locations to reduce drainage and to restore the wetland hydrology by raising groundwater levels. A project plan sheet is provided in Appendix D.

The MDT delineated approximately 31 acres of degraded and relic emergent and scrub/shrub wetland across the 96-acre easement area prior to project implementation (PBS&J 2009). The long-term goal of the project was to restore the natural hydrology to wetlands within the easement area. The MDT intended to generate 45.8 acres of US Army Corp of Engineers (USACE) credit for the restoration of 42.3 acres of wetland credited at a 1:1 ratio and preservation of 14.0 acres credited at a 4:1 ratio (3.5 acres of credit). This site was developed prior to the development of performance standards. The credit ratio will be awarded acre to acre.

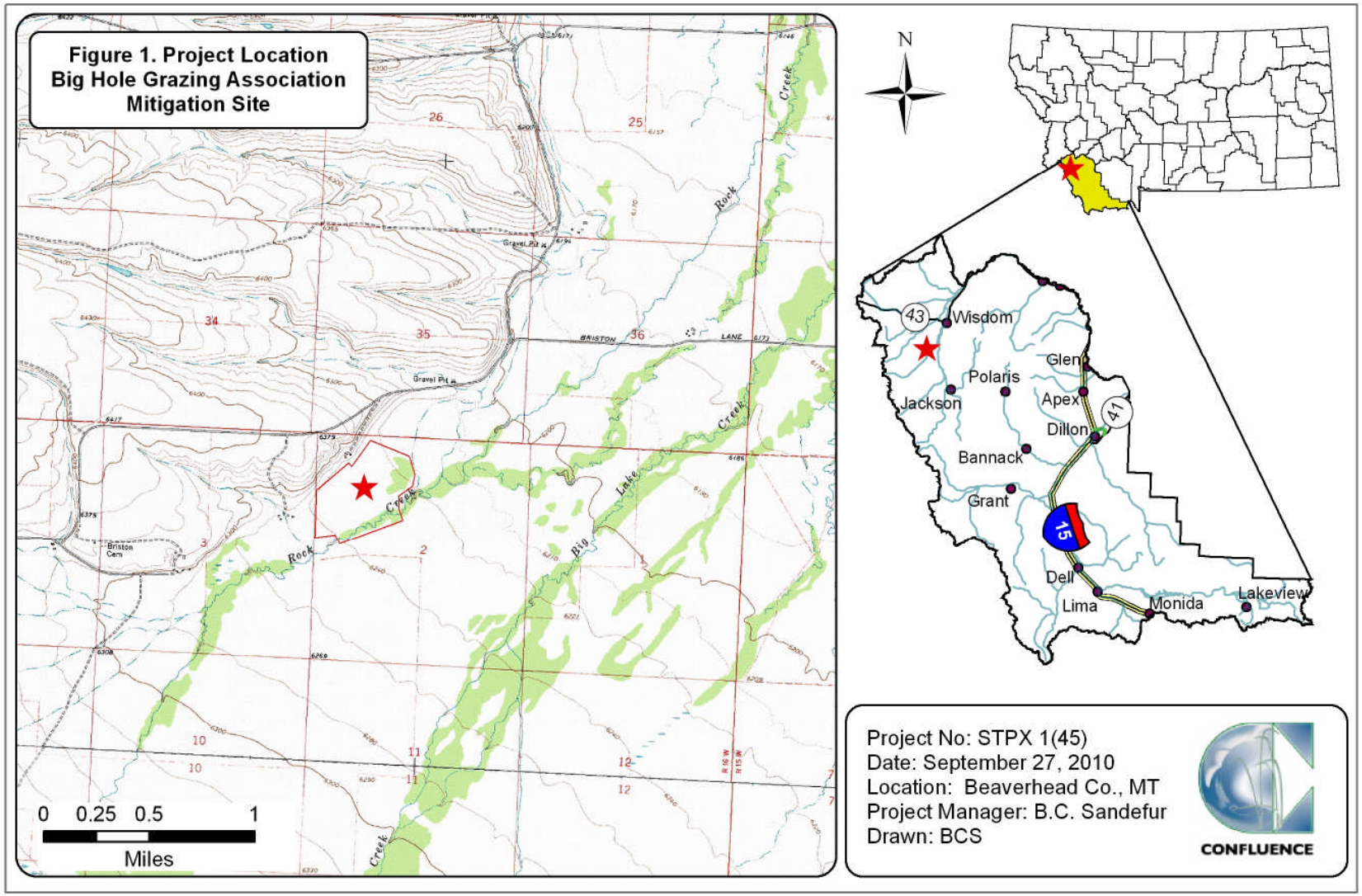


Figure 1. Project location Big Hole Grazing Association Mitigation Site.

2. METHODS

The site was visited on August 17 and 19, 2010. Information contained on the Wetland Mitigation Site Monitoring Form and the USACE Routine Wetland Determination Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix A). Monitoring activity sites were located using a global positioning system (GPS) (Figure 2 Appendix A). Information collected included the following: wetland delineation; vegetation community mapping; vegetation transect monitoring; soils data collection; hydrology data collection; bird and wildlife use documentation; photographs; and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

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 (usually 14 days or more or 12.5 percent) during the growing season" (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987).

Hydrological indicators as outlined on the USACE Wetland Determination Form were documented at four data points (BH-1 through BH-4) established within the project area (Figure 2, Appendix A). Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on electronic field data sheets (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

Eight groundwater monitoring wells at the site were routinely monitored by the US Geological Service (USGS) until 2009. The USGS discontinued monitoring of the wells in 2009 at the request of MDT and the monitoring wells were not measured during the 2009 site visit (PBS&J 2009). Groundwater depths in wells MW-1 through MW-8 were measured during the 2010 investigation (Section 3.1). Soil pits excavated during the wetland delineation were also used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded electronically on the delineation data form (Appendix B).

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on an aerial photograph. The base photography was taken on July 15, 2010. Percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (<1), 1 (1-5 percent), 2 (6-

10 percent), 3 (11-20 percent), 4 (21-50 percent), and 5 (>50 percent) (Appendix B**).**

Temporal changes in vegetation were evaluated through annual assessments of a static belt transect (Figure 2, Appendix A). Vegetation composition was assessed and recorded along one vegetation belt transect approximately 10 feet wide and 1,247 feet long (Figure 2, Appendix A). Transect locations were recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. Percent cover of each vegetation species within the "belt" was estimated using the same values and cover ranges listed for the community polygon data on the aerial photograph (Appendix A.) Photographs were taken at the endpoints of the transect during the monitoring event (Page C-8, Appendix C).

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "+", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1.0 acre, or greater than 1.0 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively, as listed on Figure 3 (Appendix A).

Woody species were planted in clusters across the site in May 2008. The location of each cluster was recorded in the field with a GPS and examined for plant survival in 2010.

2.3. Soil

Soil information was obtained from the Soil Survey for *Beaverhead County Area Soil Survey* (USDA 2010) and in situ soil descriptions. Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the USACE 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987). A description of the soil profile, including hydric indicators when present, was recorded on the USACE Wetland Determination Form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and other special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 USACE delineation manual. In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 Onsite Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the USACE wetland determination data form (Appendix B).

The USACE determined that the 1987 Wetland Manual should continue to be used at MDT mitigation sites where baseline wetland conditions had been established prior to 2008. Consequently, the use of the 2010 Interim Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010) was not required.

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 identified on the aerial photograph. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, 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 for the entire site was compiled.

2.6. Functional Assessment

The 1999 MDT Montana Wetland Assessment Method (Berglund 1999) was employed to complete functional assessments of the site in 2001. The 2008 MDT Montana Wetland Assessment Method (Berglund and McEldowney 2008) was used to evaluate functions and values on the site in 2009 and 2010. This method provides an objective means of assigning wetlands an overall rating and provides regulators 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. The 2008 revision refines ratings for some wetland functions, land management, and fish and wildlife habitat.

Field data for this assessment were collected during the site visit. A Functional Assessment Form was completed for each wetland or group of wetlands (Assessment Areas). The forms are located in Appendix B.

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland

buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points and transect end points throughout the mitigation site during the site visit (Pages C-2 through C-9, Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

Channels, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination that did not constitute an engineering-level structural inspection. The Big Hole Grazing Association mitigation site is sourced by groundwater and does not encompass any manmade diversions, water level control structures, or other structures that might need periodic maintenance.

3. RESULTS

3.1. Hydrology

The growing season recorded for the meteorological station at Wisdom, Montana (249067) extends from July 1 through August 18 for a total of 48 days (USDA 2010). Areas defined as wetlands would require at least 6 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

The Wisdom station recorded an average total annual precipitation rate of 11.93 inches from January 1923 to April 2010. Annual precipitation was 12.75 inches in 2009. Precipitation data recorded for January through June in 2009 and 2010 were 7.78 and 8.62 inches, respectively.

Eight groundwater monitoring wells installed in 2001 were monitored annually by the USGS through 2008 (PBS&J 2009). One of the primary goals of the project was to raise groundwater levels across the easement area by plugging two main drainage ditches across the site. Groundwater levels following site construction in 2007 were notably higher than those measured in 2008. Water levels in 2009 were above the ground surface at wells MW-6, MW-7, and MW-8 based on visual observation. Saturation and inundation levels in several wet meadows indicated that groundwater levels were comparable from 2008 to 2009.

Groundwater levels were measured with a Solinst water level meter in 2010 (Table 1). The levels in wells MW-1, and M-4 through MW-8 were less than one foot below the ground surface (bgs), meeting the saturation requirement for wetland hydrology. Depths in MW-7 and MW-8 were within 0.1 foot of the ground surface. Well locations are shown on Figure 2 (Appendix A).

Table 1. Groundwater depths measured in wells MW-1 through MW-8.

Well Number	Water Surface Depth (feet)
MW-1	0.9
MW-2	1.4
MW-3	1.4
MW-4	0.4
MW-5	0.4
MW-6	0.6
MW-7	0.1
MW-8	0.1

Surface water depths on the site ranged from 0 to 3 feet with an average depth site wide of 0.5 foot. Approximately 50 percent of the site was inundated. Three data points, BH-1, BH-3, and BH-4, were located within wetlands (Figure 2, Appendix A). Data point BH-1 was located in the north end of the site and data points BH-3 and BH-4 were located west of the transect. Hydrological indicators at BH-1 and BH-3 were a water table within 10 inches bgs and saturation at 2 inches bgs. Saturation was present in BH-4 at 10 inches bgs.

3.2. Vegetation

The 76 plant species identified at the mitigation site from 2008 to 2010 are listed in Table 2. Vegetation community types were identified based on topography, hydrology, plant composition, and dominance. There were six vegetation communities identified in 2010, one upland community and five wetland communities (Figure 3, Appendix A; Monitoring Forms, Appendix B).

The 2010 communities were Type 1 – *Poa pratensis/Phleum pratense* Upland, Type 3 – *Carex* species (spp.) Wetland, Type 4 – *Salix* spp./ *Carex* spp. Wetland, Type 5 – *Juncus spp./Agrostis alba* Wetland, Type 6 – *Carex* spp./*Alopecurus pratensis* Wetland, and Type 7 – *Carex* spp./*Juncus* spp. Wetland. The community types generally correlated to those identified in 2009. The northwest corner of the project contained a sedge-dominated fen (community 3) that had never been impacted by historic ditching activities (PBS&J 2009). The northeast side of the easement area had been dominated by willow communities that transitioned to upland and wet meadow habitat after years of dewatering and grazing (PBS&J 2009). In 2009 and 2010 the area began to show evidence of

reverting to historical conditions with the restoration of site hydrology (Community 6, Figure 3, Appendix A).

Table 2. Vegetation species observed from 2008 to 2010 at the Big Hole Grazing Association Wetland Mitigation Site.

Scientific Names	Common Names	Region 9 Indicator Status[1]
Achillea millefolium	yarrow,common	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Agrostis stolonifera	**bentgrass,spreading**	FAC+
Alnus incana	alder,speckled	FACW
Alopecurus pratensis	foxtail,meadow	FACW
Aster hesperius	aster,Siskiyou	OBL
Beckmannia syzigachne	sloughgrass, American	OBL
Betula pumila	birch,bog	OBL
Bromus inermis	smooth brome	NL
Calamagrostis canadensis	reedgrass,blue-joint	FACW+
Calamagrostis scopulorum	small-reedgrass,ditch	NI
Carex aquatilis	sedge,water	OBL
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex rostrata (utriculata)*	beaked sedge	OBL
Castilleja miniata	**indian-paintbrush,scarlet**	FAC
Centaurea maculosa	**spotted knapweed**	NL
Cirseum scariosum	**thistle, meadow**	NL
Cirsium arvense	thistle,creeping	FACU+
Cornus stolonifera	dogwood,red-osier	FACW
Crataegus douglasii	**hawthorn, Douglas'**	FAC
Crepis capillaris	**hawk's-beard,smooth**	NL
Deschampsia cespitosa	hairgrass,tufted	FACW
Eleocharis palustris	spikerush,creeping	OBL
Eleocharis pauciflora	spikerush,few-flower	OBL
Epilobium ciliatum	willow-herb,hairy	FACW-
Equisetum arvense	horsetail,field	FAC
Eriophorum gracile	**cotton-grass,slender**	OBL
Geum aleppicum	avens,yellow	FACW-
Geum macrophyllum	**avens,large-leaf**	FACW+
Glyceria elata	grass,tall manna	FACW+
Glyceria striata	**grass,fowl manna**	OBL
Glycyrrhiza lepidota	licorice,American	FAC+
Gnaphalium palustre	cudweed,Western marsh	FAC+
Hippuris vulgaris	mare's-tail,common	OBL
Hordeum brachyantherum	barley,meadow	FACW
Hordeum jubatum	barley,fox-tail	FAC+
Iris missouriensis	**iris, Rocky Mountain**	FACW+

[1]Region 9 (Northwest) (Reed 1988).
New species identified in 2010 are in **bold** type.
*Commonly accepted name not included in the 1988 list.

Table 3 (Continued). Vegetation species observed from 2008 to 2010 at the Big Hole Grazing Association Wetland Mitigation Site.

Scientific Names	Common Names	Region 9 Indicator Status[1]
Juncus balticus	rush,Baltic	OBL
Juncus longistylis	rush,long-style	FACW
Juncus tenuis	**rush,slender**	FAC
Juncus torreyi	**rush,Torrey's**	FACW
Kochia scoparia	summer-cypress,Mexican	FAC
Lemna minor	duckweed,lesser	OBL
Lupinus wyethii	**lupine, Wyeth's**	NL
Mentha arvensis	mint,field	FAC
Mimulus guttatus	monkey-flower,common large	OBL
Myosotis scorpioides	forget-me-not,true	FACW
Myriophyllum hippuroides	**water-milfoil,western**	OBL
Phleum pratense	timothy	FACU
Poa juncifolia	bluegrass,alkali	FACU+
Poa pratensis	bluegrass,Kentucky	FACU+
Polemonium acutiflorum	**jacob's-ladder,sticky tall**	NI
Polygonum amphibium	smartweed,water	OBL
Potentilla fruticosa	**cinquefoil,shrubby**	FAC-
Potentilla glandulosa	cinquefoil,gland	FAC-
Potentilla gracilis	cinquefoil,northwest	FAC
Rosa woodsii	rose,woods	FACU
Rumex crispus	dock,curly	FACW
Salix bebbiana	willow,Bebb	FACW
Salix exigua	willow,sandbar	OBL
Salix lemmonii	willow,Lemmon's	FACW+
Scirpus acutus	bulrush,hard-stem	OBL
Senecio sphaerocephalus	groundsel,ball-head	FACW
Sisyrinchium angustifolium	blue-eye-grass,pointed	FACW-
Sonchus arvensis	**sowthistle,field**	FACU+
Sparganium emersum	**burreed,narrow-leaf**	OBL
Stellaria longifolia	**starwort,long-leaf**	FACW
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Trifolium pratense	clover,red	FACU
Trifolium repens	**clover,white**	FACU+
Triglochin maritimum	**arrow-grass,seaside**	OBL
Triglochin palustre	arrow-grass,marsh	OBL
Typha latifolia	cattail,broad-leaf	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are show in **bold** type.

Vegetation community Type 1 – *Poa pratensis/Phleum pratense* upland was identified at the south boundary and in isolated islands located in the center of the site. The community was dominated by herbaceous species that included (in descending order of abundance) Kentucky bluegrass (*Poa pratensis*), common timothy (*Phleum pratense*), Baltic rush (*Juncus balticus*), meadow foxtail

(*Alopecurus pratensis*), and Rocky Mountain iris (*Iris missouriensis*). The community type was named mixed grass upland in 2009.

Community Type 3 – *Carex* species (spp.) wetland extended across the northwest quarter and center of the site. The community contained predominantly beaked sedge, water sedge, and field clustered sedge with 1 to 5 percent of cover each contributed by Baltic rush, ball-head groundsel (*Senecio spaerocephalus*), and large leaf avens (*Geum macrophyllum*).

Community Type 4 – *Salix* spp./ *Carex* spp. wetland was dominated primarily by woody species including sandbar willow (*Salix exigua*), Bebb willow (*Salix bebbiana*), and Lemmon's willow (*Salix lemmonii*). Beaked sedge and water sedge dominated the herbaceous species. The community was identified in the Rock Creek riparian corridor and in isolated clusters in the east half and southwest corner of the project area. The community was identified as *Salix* in 2009.

The dominant species in wetland community Type 5 – *Juncus spp./Agrostis alba* were Baltic rush, redtop (*Agrostis alba*), creeping bentgrass (*Agrostis stolonifera*), beaked sedge, meadow foxtail, creeping spikerush (*Eleocharis palustris*), and slender rush. The community formed in drier moisture regimes in the northeast corner and center of the site. The community was identified as a wet meadow (mixed herbaceous) in 2009.

Community Type 6 – *Carex* spp./*Alopecurus pratensis* wetland characterized by Nebraska sedge (*Carex nebrascensis*), water sedge (*Carex aquatilis*), beaked sedge (*Carex utriculata*), meadow foxtail, and Baltic rush encompassed a majority of the east half of the site. The community was named emergent marsh, scrub/shrub mix in 2009.

Community Type 7 – *Carex* spp./*Juncus* spp.wetland covered a large area in the west half of the site and smaller areas located in the north and south portions of the project area. Beaked sedge, field clustered sedge (*Carex praegracilis*), water sedge slender rush (*Juncus tenuis*), Torrey's rush (*Juncus torreyi*), redtop, and 18 other species (1 to 5 percent of cover) dominated the community. This community was categorized as part of upland community type1 in 2009.

Overall plant composition was identified on the 1,247-foot vegetation transect during the 2010 monitoring event. Transect data were summarized in Table 4 and Charts 1 and 2 and on the monitoring form (Appendix B). The transect was established south to north through the center of the mitigation area, beginning at MW-3 and ending at MW-6 (Figure 2, Appendix A).

The transect intercepted communities 1 – *Poa pratensis*/*Phleum pratensis*, community 3 – *Carex* spp., community 5 – *Juncus* spp./*Agrostis alba,* and community 7 – *Carex* spp./*Juncus* spp. Hydrophytic species dominated 65.8

percent of the transect in 2010, an increase of 10.8 percent from 2009. The transect end points in 2009 and 2010 are shown on page C-9 of Appendix C.

Table 4. Data summary for Transect 1 from 2008 to 2010.

Monitoring Year	2008	2009	2010
Transect Length (feet)	**1247**	**1247**	**1247**
Vegetation Community Transitions along Transect	**7**	**7**	**7**
Vegetation Communities along Transect	**3**	**3**	**4**
Hydrophytic Vegetation Communities along Transect	**2**	**2**	**3**
Total Vegetative Species	**22**	**22**	**31**
Total Hydrophytic Species	**13**	**14**	**26**
Total Upland Species	**9**	**8**	**5**
Estimated % Total Vegetative Cover	**75**	**80**	**90**
% Transect Length Comprising Hydrophytic Vegetation Communities	**45**	**55**	**65.8**
% Transect Length Comprising Upland Vegetation Communities	**55**	**45**	**34.2**
% Transect Length Comprising Unvegetated Open Water	**0**	**0**	**0.0**
% Transect Length Comprising Bare Substrate	**0**	**0**	**0.0**

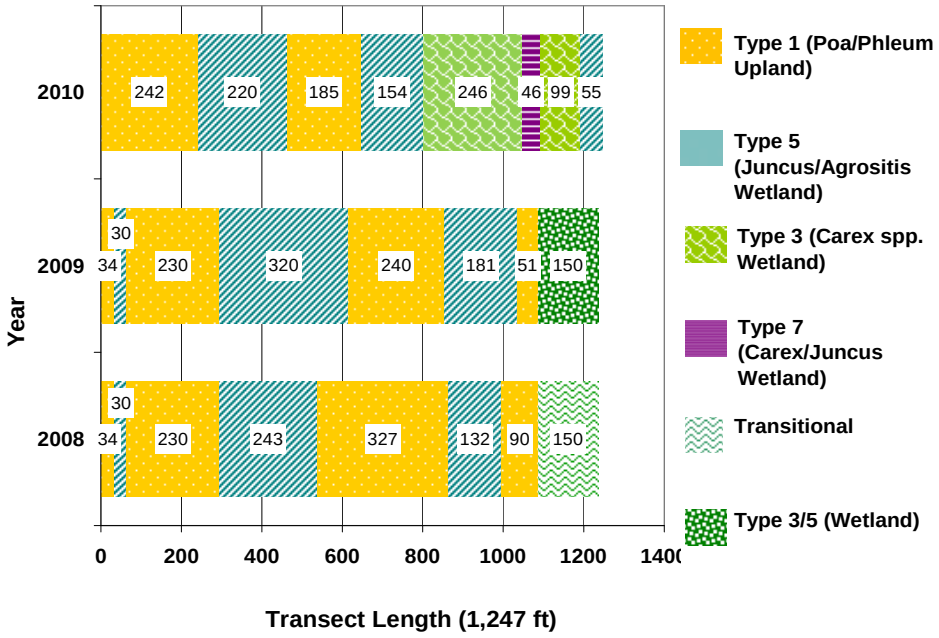


Chart 1. Transect map showing community types on Transect 1 from start (0 feet) to end (1,247 feet) identified in 2008 to 2010.

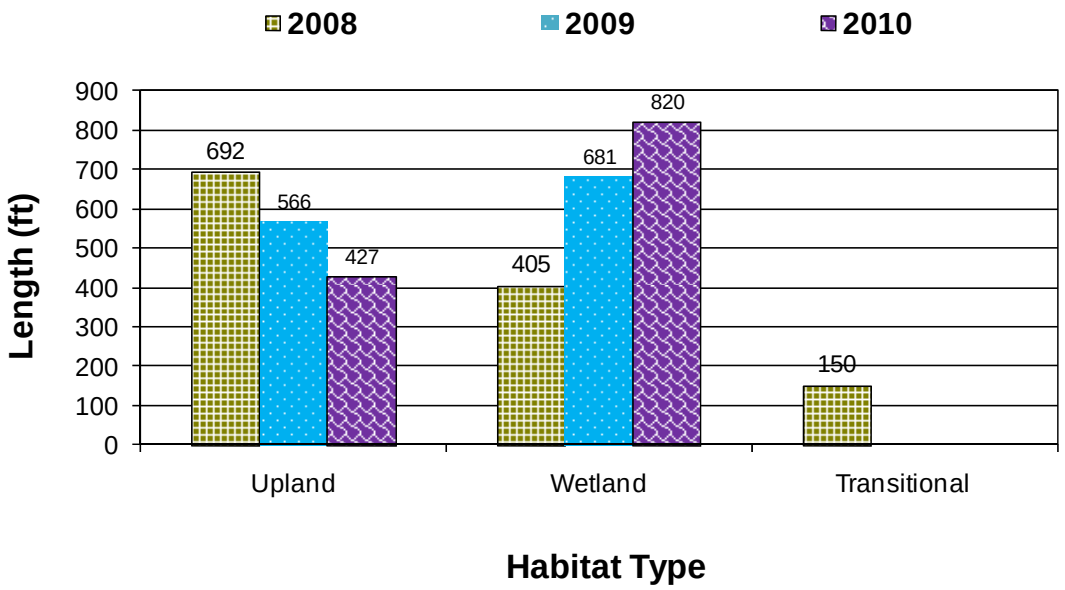


Chart 2. Length of habitat types within Transect 1 from 2008 to 2010.

Canada thistle (*Cirsium arvense*), a Priority 2B noxious weed, was identified in two areas on the north mitigation boundary near the home site (Figure 3, Appendix A). The infestations each covered 0.1 to 1.0 acres, comprising between 1 and 5 percent of cover (west area) and 5 to 25 percent of cover (east area).

Woody vegetation installed in May 2008 consisted of 45 plant clusters located along the filled drainage ditch and the secondary ditch plugged in three locations. Plant species included bog birch (*Betula pumila*), speckled alder (*Alnus incana*), and red-osier dogwood (*Cornus stolonifera*). Approximately 961 plants were counted during 2008 monitoring. Approximately 79 percent (756 stems) survived the first growing season (PBS&J 2009). Survival decreased notably in 2009 to 35 percent (339 stems) (PBS&J 2009). Speckled alder exhibited the least mortality in 2009 at 45 percent. Mortality in 2009 for red-osier dogwood and bog birch was approximately 70 percent and 98 percent, respectively. The high mortality of red-osier dogwood and bog birch containerized species was potentially the result of excessively wet conditions and competition from forbs and grasses (PBS&J 2009). Fifty red-osier dogwood stems out of 246 stems planted (20 percent survival) were alive in 2010. Approximately 200 specked alder saplings were observed out of the 470 planted (43 percent survival). No live bog birch saplings were noted in 2010. Abundant natural recruitment of willows was observed throughout community four and provides a positive indication that the site will establish with this species.

3.3. Soil

Two soil units were mapped within the easement area, the Mooseflat Loam, 0 to 4 percent slopes, located along the Rock Creek corridor and the Foxgulch-Copperbasin-Wisdom complex, 0 to 2 percent slopes, that encompasses the

remaining study area (USDA 2010). The taxonomic class of the Mooseflat series is a fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquoll.

Data points BH-1, BH-3, and BH-4 were located in areas that met the wetland criteria. The soil profile at BH-1 revealed a loam soil (10 YR 2/1) with a histic epipedon. The soil at BH-3 was identified as a clay loam (10 YR 2/1) with redoximorphic depletions (10 YR 4/1) in the matrix. Hydric soil indicators were a histic epipedon and low-chroma color. The profile at BH-4 revealed a clay loam (10 YR 2/1). The low-chroma color was a positive indication of a hydric soil. The test pit soils generally correlated with the soil map unit. Data point BH-2 was located in upland characterized by a clay loam soil (10 YR 3/2) without redoximorphic features. The test pit soils did not confirm the mapped soil units.

3.4. Wetland Delineation

The site was delineated by MDT in June 2001 (PBS&J 2009). Approximately 31 acres of drained and impacted wetland habitat was delineated within the project boundaries. The wetland delineation identified 49.81 wetland acres in August 2008 and 56.76 acres in August 2009, a gain of 25.76 acres from 2007 to 2009 (PBS&J 2009). The total included 14 acres of pre-existing wetland targeted for preservation located in the Rock Creek corridor and northwest corner of the site.

The wetland boundaries delineated in 2010 were mapped on Figure 3 (Appendix A). Table 5 summarizes the wetland acreages delineated from 2008 to 2010. Approximately 81.23 acres of wetland were delineated in 2010, which included 14 acres of pre-existing wetland. This represented an increase in total wetland acres of 24.47 acres from 2009 to 2010. The habitat in the northeast and southwest corners of the site transitioned from an upland community to wetland communities. Uplands encompassed 13.63 acres within the project area.

Table 5. Wetland acreages delineated in 2008 to 2010 at the Big Hole Grazing Association Wetland Mitigation Site.

Habitat Type	2008 Acreage	2009 Acreage	2010 Acreage
Wetland habitat	49.81	56.76	81.23

3.5. Wildlife

Direct and indirect observations of wildlife species from 2008 to 2010 were listed in Table 6 and Appendix B. Three moose were seen on the site during the field survey in 2009 (PBS&J 2009). A moose cow and calf are observed regularly by the landowner. Eight new bird species were observed in 2010 including bank swallow, black-capped chickadee, cliff swallow, northern harrier, red-tailed hawk, sandhill crane, song sparrow, and tree swallow. Nineteen bird species have been identified at the mitigation site since 2008. Twelve elk, one moose, and one white-tailed deer were observed during 2010 monitoring. Evidence of a badger burrow was noted. Indications of beaver browse were observed on willow stems along Rock Creek.

Table 6. Wildlife species observed within the Big Hole Grazing Association Wetland Mitigation Site from 2008 to 2010.

COMMON NAME	SCIENTIFIC NAME
BIRD	
Bank Swallow	*Riparia riparia*
Black-billed Magpie	*Pica hudsonia*
Black-capped Chickadee	***Poecile atricapillus***
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Raven	*Corvus corax*
Great Blue Heron	*Ardea herodias*
Great Horned Owl	*Bubo virginianus*
Killdeer	*Charadrius vociferus*
Mallard	*Anas platyrhynchos*
Northern Harrier	*Circus cyaneus*
Red-tailed Hawk	***Buteo jamaicensis***
Red-winged Blackbird	*Agelaius phoeniceus*
Rock Pigeon	*Columba livia*
Sandhill Crane	*Grus canadensis*
Song Sparrow	*Melospiza melodia*
Spotted Sandpiper	*Actitis macularius*
Tree Swallow	*Tachycineta bicolor*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
MAMMAL	
Badger	*Taxidea taxus*
Beaver	***Castor canadensis***
Deer Spp.	
Elk or Wapiti	***Cervus canadensis***
Moose	*Alces americanus*
Striped Skunk	***Mephitis mephitis***
White-tailed Deer	***Odocoileus virginianus***

Species first identified in 2010 are listed in **bold** type.

3.6. Functional Assessment

The 2001 baseline functional assessment by MDT rated the wetlands that occurred along the Rock Creek corridor and in the northwest corner (fen area) as Category II wetlands and the remaining wetlands on the site as Category III using the 1999 MDT Montana Wetland Assessment Method (PBS&J 2009) (Berglund 1999). The 2009 and 2010 wetland conditions were assessed using the 2008 Montana Wetlands Assessment Method (Berglund and McEldowney 2008). The 2009 and 2010 assessment results are shown in Table 7. Two assessment areas (AA) were evaluated in 2010 (Functional Assessment Forms, Appendix B). One AA encompassed 10 acres of the Rock Creek corridor. The remaining wetlands on the site were included in the second 71.23-acre AA. The difference in AA-2 acreages between 2009 and 2010 is the result of an increase in wetland

development and the inclusion of the 4.0 acre pre-existing fen in the northwest corner of the site.

All wetlands within the Big Hole Grazing Association mitigation area were rated as Category II wetlands (Table 7). The Rock Creek corridor AA rated high for general wildlife habitat, general fish habitat, flood attenuation, short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge (Table 7). The wetlands outside the Rock Creek corridor received high ratings for short and long term surface water storage, sediment/nutrient, toxicant removal, groundwater discharge/recharge, and uniqueness. There was a slight increase in the functional points for the Listed/Proposed T&E category based on the suspected, incidental habitat use of the gray wolf and grizzly bear.

Table 7. Summary of 2009 and 2010 wetland function/value ratings and functional points at the Big Hole Grazing Association mitigation site.

Function and Value Parameters 2008 MDT Montana Wetland Assessment Method	2009 Assessment 1 (Rock Creek Wetlands)	2009 Assessment 2 (Remaining Wetlands)	2010 Assessment 1 (Rock Creek Wetlands)	2010 Assessment 2 (Remaining Wetlands)
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)
General Wildlife Habitat	High (0.9)	Mod (0.7)	High (0.9)	Mod (0.7)
General Fish/Aquatic Habitat	High (0.8)	NA	High (0.8)	NA
Flood Attenuation	High (0.8)	NA	High (0.8)	NA
Short and Long Term Surface Water Storage	High (0.8)	High (1.0)	High (0.8)	High (1.0)
Sediment/Nutrient/Toxicant Removal	High (0.9)	High (1.0)	High (0.9)	High (1.0)
Sediment/Shoreline Stabilization	High (1.0)	NA	High (1.0)	NA
Production Export/Food Chain Support	High (1.0)	Mod (0.6)	High (1.0)	Mod (0.6)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Mod (0.4)	High (0.9)	Mod (0.4)	High (0.9)
Recreation/Education Potential	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**7.85 / 11**	**5.45 / 8**	**8.15 / 11**	**5.75 / 8**
% of Possible Score Achieved	**71%**	**68%**	**74.1%**	**71.9%**
Overall Category	**II**	**II**	**II**	**II**
Total Acreage of Assessed Wetlands and Other Aquatic Habitats within Site Boundaries (ac)	**10**	**39.81**	**10**	**71.23**
Functional Units (acreage x actual points)	**78.50**	**217**	**81.50**	**409.6**

3.7. Photo Documentation

Representative photographs were taken from photo points one to seven (PP1 to PP7) and of the transect end points (Appendix C). Photos of PP1 to PP7 taken in 2009 and 2010 are presented on pages C-2 to C-8 of Appendix C. Photos of transect end points shot in 2009 and 2010 are shown on C-9 of Appendix C. The 2010 aerial photograph taken on July 15, 2010, was used as a base for Figures 2 and 3 (Appendix A).

3.8. Maintenance Needs

There are no man-made water control features on the site. The wooden fence around the perimeter was in good condition in 2009 and 2010. All man-made bird nesting structures installed in 2008 by MDT were in good condition, although

two of the wood duck boxes were tilted from frost-heave and may require maintenance if the problem persists.

Containerized plant survival declined significantly from 2008 to 2010. Canada thistle infestations have spread since 2009 (Figure 3, Appendix A). The infestations covered between 0.1 and 1.0 acres, comprising between 1 and 5 percent of cover and 5 to 25 percent of cover in two locations near the home site.

3.9. Current Credit Summary

The overall project goal was to provide 45.8 acres of USACE-approved mitigation credit within the 96-acre easement area. Credit was to be achieved through restoring 42.3 acres of wetland at a ratio of 1:1 and preserving 14.0 acres of existing wetland at a ratio of 4:1 for 3.5 acres of credit (PBS&J 2009). The 14.0 acres targeted for preservation encompassed the Rock Creek corridor and fen area in the northwest corner of the site. This area had never been impacted by historic drainage activities. The mitigation site benefited from the elimination of grazing.

There are currently 67.23 acres of restored wetland, which includes the 14.0 acres of preserved wetlands. These areas were separated to determine the estimated 70.73 credit acres to date shown in Table 7.

Table 8. Summary of wetland credits.

Mitigation Type	2008 Acreage	2009 Acreage	2010 Acreage	Credit Ratios	2010 Estimated Credit Acres
Wetland Restoration	49.81	56.76	67.23	1:1	67.23
Wetland Preservation (pre-existing)	ND	ND	14.00	4:1	3.50
TOTAL			**81.23**		**70.73**

ND – not differentiated in 2008 and 2009.

4. REFERENCES

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Appendix A

Figures 2 and 3

2010 MDT Wetland Mitigation Monitoring
Big Hole Grazing Association
Beaverhead County, Montana

Figure 2: 2010 Monitoring Activity Locations

Legend

- Vegetation Transect
- Monitoring Limits
- DataPoints
- PhotoPoints
- Bluebird Box
- Wood Duck Box
- MonitoringWell

Base Photography Date: July 15, 2010

BH-1
BH-2
BH-3
BH-4
PP1
PP2
PP3
PP4
PP5
PP6
PP7
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
T-1 Start
T-1 End
WDB1
WDB3
WDB4
BB1
BB2
BB3
BB4
BB5
BB6
BB7
BB8
BB9
BB10

N

0 125 250 500
Feet

LOCATION: Beaverhead Co., MT
PROJ NO: STPX-0001(45)
FILE: BigHole/Monitor2010.mxd

Project Name
Big Hole Grazing Association
Wetland Mitigation Site

Drawing Title
2010 Monitoring Activity Locations

DRAWN BCS | CHECKED BV | APPROVED XXX

SCALE: Noted

Drawn: September 24, 2010

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAT THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

Figure 3: 2010 Mapped Site Features

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities

Base Photography Date: July 15, 2010

Noxious Weeds
Cirsium arvense
Infestation SIze
X = <0.1 acre
▲ = 0.1 to 1 acre
■ = 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (5-25% cover)
H = High (25-100% cover)

0 125 250 500
Feet

Vegetation Community Types

1 Poa pratensis/Phleum pratense
3 Carex spp.
4 Salix spp./Carex spp.
5 Juncus spp./Agrostis alba
6 Carex spp/Alopecurus pratensis
7 Carex spp/Juncus spp.

Acreages

Project Area	94.86 acres
Wetlands	81.23 acres
Uplands	13.63 acres

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAT THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Beaverhead Co., MT
PROJ NO: STPX-0001(45)
FILE: BigHole/Veg2010.mxd

Project Name: Big Hole Grazing Association
Wetland Mitigation Site
Drawing Title: 2010 Mapped Site Features

DRAWN BCS
CHECKED BV
APPROVED XXX
SCALE: Noted
Drawn: September 27, 2010
PROJ MGR: B Sandefur

CONFLUENCE consulting Incorporated

Figure 3

REV -

Appendix B

2010 Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Delineation Form
2010 MDT Functional Assessment Form

2010 MDT Wetland Mitigation Monitoring
Big Hole Grazing Association
Beaverhead County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Big Hole Grazing Association Assessment Date/Time 8/17/2010 10:50:14 AM

Person(s) conducting the assessment: B. Sandefur

Weather: Clear & sunny, warm Location: 10 miles southwest of Wisdom, MT

MDT District: Butte Milepost: 0

Legal Description: T 4S R 16W Section(s) 2

Initial Evaluation Date: 8/6/2008 Monitoring Year: 3 #Visits in Year: 1

Size of Evaluation Area: 95 (acres)

Land use surrounding wetland:

Rangeland, agriculture (hayland), riparian

HYDROLOGY

Surface Water Source: Rock Creek, precipitation, springs, high water table

Inundation: ☑ Average Depth: 0.5 **(ft)** Range of Depths: 0-3 **(ft)**

Percent of assessment area under inundation: 50 %

Depth at emergent vegetation-open water boundary: 1 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: No

Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc**:**

Groundwater Monitoring Wells

Record depth of water surface below ground

Well ID	Water Surface Depth
MW-7	0.1 **(ft)**
MW-8	0.1 **(ft)**
MW-3	1.4 **(ft)**
MW-5	0.4 **(ft)**
MW-6	0.6 **(ft)**
MW-2	1.4 **(ft)**
MW-1	0.9 **(ft)**
MW-4	0.4 **(ft)**

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.

Hydrology Notes:

VEGETATION COMMUNITIES

Site Big Hole Grazing Association

(Cover Class Codes **0** = < 1%, **1** = 1-5%, **2** = 6-10%, **3** = 11-20%, **4** = 21-50% , **5** = >50%)

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Poa pratensis / Phleum pratense

Species	Cover class	Species	Cover class
Achillea millefolium	1	Alopecurus pratensis	2
Cirsium scariosum	1	Crepis capillaris	1
Hordeum brachyantherum	1	Iris missouriensis	2
Juncus balticus	2	Lupinus wyethii	1
Phleum pratense	3	Poa pratensis	3
Potentilla gracilis	1	Taraxacum officinale	1

Comments:

Community # 3 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Carex aquatilis	3	Carex praegracilis	2
Carex utriculata*	5	Geum macrophyllum	1
Juncus balticus	1	Potentilla gracilis	0
Senecio sphaerocephalus	1		

Comments:

Sedges are a dominant component throughout the wetland areas within the Big Hole mitigation site. Changes in soil moisture regime and secondary dominant species dictate community boundaries.

Community # 4 **Community Type:** Salix spp. / Carex spp.

Species	Cover class	Species	Cover class
Agrostis alba	1	Aster hesperius	1
Carex aquatilis	2	Carex utriculata*	3
Castilleja miniata	0	Geum aleppicum	0
Juncus balticus	1	Lupinus wyethii	1
Mentha arvensis	1	Polemonium acutiflorum	1
Potentilla fruticosa	0	Salix bebbiana	2
Salix exigua	3	Salix lemmonii	3
Senecio sphaerocephalus	1		

Comments:

Community # 5 Community Type: Juncus spp. / Agrostis alba

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis alba	3
Agrostis stolonifera	2	Alopecurus pratensis	2
Aster hesperius	1	Carex praegracilis	1
Carex utriculata*	2	Eleocharis palustris	2
Epilobium ciliatum	1	Hordeum brachyantherum	1
Juncus balticus	3	Juncus tenuis	2
Mimulus guttatus	0	Potentilla fruticosa	1
Potentilla gracilis	1	Sonchus arvensis	0

Comments:

Community # 6 Community Type: Carex spp. / Alopecurus pratensis

Species	Cover class	Species	Cover class
Agrostis alba	1	Agrostis stolonifera	1
Alopecurus pratensis	3	Carex aquatilis	4
Carex nebrascensis	3	Carex utriculata*	4
Epilobium ciliatum	0	Geum aleppicum	0
Juncus balticus	2	Mimulus guttatus	0
Potentilla fruticosa	0	Potentilla gracilis	1
Rumex crispus	1	Salix bebbiana	1
Thlaspi arvense	0		

Comments:

Community # 7 Community Type: Carex spp. / Juncus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis stolonifera	2
Alnus incana	0	Alopecurus pratensis	1
Aster hesperius	0	Beckmannia syzigachne	1
Carex aquatilis	1	Carex praegracilis	1
Carex utriculata*	3	Epilobium ciliatum	1
Geum aleppicum	0	Hordeum brachyantherum	1
Hordeum jubatum	1	Juncus tenuis	2
Juncus torreyi	1	Lemna minor	1
Mimulus guttatus	1	Myriophyllum hippuroides	1
Poa juncifolia	1	Potentilla gracilis	1
Rumex crispus	1	Salix exigua	1
Senecio sphaerocephalus	1	Sparganium emersum	0
Stellaria longifolia	0	Taraxacum officinale	0
Thlaspi arvense	0	Trifolium repens	1

Comments:

VEGETATION TRANSECTS

Site: Big Hole Grazing Association Date: 7/2010 10:50:14 AM

Transect Number: 1 **Compass Direction from Start:** 5

Interval Data:

Ending Station 252 **Community Type:** Poa pratensis / Phleum pratense

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis stolonifera	2
Carex praegracilis	2	Epilobium ciliatum	1
Mentha arvensis	1	Phleum pratense	2
Poa pratensis	5	Rumex crispus	1
Sonchus arvensis	1	Trifolium repens	1

Ending Station 472 **Community Type:** Juncus spp. / Agrostis alba

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis alba	2
Alopecurus pratensis	3	Carex utriculata*	3
Eriophorum gracile	1	Glyceria elata	3
Juncus balticus	4	Trifolium repens	2

Ending Station 657 **Community Type:** Poa pratensis / Phleum pratense

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Alopecurus pratensis	4
Carex aquatilis	2	Carex utriculata*	2
Epilobium ciliatum	0	Glyceria striata	2
Juncus balticus	3	Phleum pratense	1
Phleum pratense	1	Poa pratensis	5
Potentilla gracilis	1	Rumex crispus	1
Trifolium repens	1	Triglochin palustre	1

Ending Station 811 **Community Type:** Juncus spp. / Agrostis alba

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis alba	2
Alopecurus pratensis	2	Aster hesperius	1
Carex praegracilis	2	Carex utriculata*	4
Juncus balticus	2	Poa pratensis	4
Rumex crispus	1	Trifolium repens	1

Ending Station 1057 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Carex nebrascensis	2
Carex praegracilis	1	Geum aleppicum	1
Juncus balticus	3	Juncus torreyi	1
Poa pratensis	4	Potentilla gracilis	1

Ending Station 1103 **Community Type:** Carex spp / Juncus spp.

Species	Cover class	Species	Cover class
Agrostis alba	3	Carex aquatilis	2
Juncus balticus	4	Poa pratensis	4

Ending Station 1202 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Alopecurus pratensis	3	Carex nebrascensis	3
Carex praegracilis	2	Eleocharis palustris	2
Epilobium ciliatum	1	Lemna minor	1
Myriophyllum hippuroides	1	Poa pratensis	2
Triglochin maritimum	1		

Ending Station 1247 **Community Type:** Juncus spp. / Agrostis alba

Species	Cover class	Species	Cover class
Agrostis alba	3	Alopecurus pratensis	3
Aster hesperius	1	Carex aquatilis	2
Carex utriculata*	4	Crataegus douglasii	0
Epilobium ciliatum	1	Hordeum brachyantherum	1
Juncus balticus	3	Mimulus guttatus	1

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Big Hole Grazing Association

Planting Type	#Planted	#Alive	Notes
Red-oiser Dogwood	246	50	
Thin-leaf Alder	470	200	
Water Birch	245	0	

Comments

No volunteer woody species identified during site visit. Abundant source for recruitment exist within the ditch along the southern periphery of the site.

Big Hole Grazing Association

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bluebird and wood duck

How many? 12

Are the nesting structures being used? Yes

Do the nesting structures need repairs? Yes

Nesting Structure Comments:

One of the wood duck nest structures was tilted from frost heave to an angle that wouldn't support active nesting. The tilting duck box is WDB-1, the closest one to PP4. A few of the B boxes with signs of nesting.

Species	#Observed	Behavior	Habitat
Bank Swallow	3	FO	OW, SS
Black-capped Chickadee	3		SS,UP,
Cliff Swallow	20	FO	
Northern Harrier	3	FO	SS, WM
Red-tailed Hawk			WM
Sandhill Crane	2	L	
Song Sparrow		FO	SS,UP,
Tree Swallow	12	FO	SS,UP,

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

AB = Aquatic bed **SS** = Scrub/Shrub **FO** = Forested **UP** = Upland buffer **I** = Island

WM = Wet meadow **MA** = Marsh **US** = Unconsolidated shore **MF** = Mud Flat **OW** = Open Water

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Badger		No	No	Yes	
Beaver		No	No	No	Chewed willow stems
Elk or Wapiti	12	No	No	No	
Moose	1	No	No	No	
Striped Skunk		No	No	No	Smelled 'em
White-tailed Deer	3	No	No	No	

Wildlife Comments:

Big Hole Grazing Association

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.

Photo #	Latitude	Longitude	Bearing	Description
5981			0	PP1
5982			270	PP1
5983			90	PP1
5985			270	PP2
5986			90	PP2
5987			315	PP2
5990			135	PP4
5992			135	PP4
5993			215	PP4
5994			315	PP5
5996			210	PP5
6001			90	PP5
				PP5
6005			315	PP3
6006			270	PP3
6007			135	PP3
6010			5	Veg Tran, Start
6018			185	Veg Tran, End
6156			90	PP7
6157			180	PP7
6158			270	PP7
6166			180	PP6
6167			315	PP6
6168			135	PP6

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology

☑ Map emergent vegetation/open water boundary on aerial photos.
☑ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc).

Photos

☑ One photo from the wetland toward each of the four cardinal directions
☑ One photo showing upland use surrounding the wetland.
☑ One photo showing the buffer around the wetland
☑ One photo from each end of each vegetation transect, toward the transect

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

☑ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)
☑ Delineate wetland – upland boundary onto aerial photograph.

Wetland Delineation Comments

Functional Assessments

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

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? Yes

If yes, do they need to be repaired? Yes

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? Yes

If yes, are the structures working properly and in good working order? Yes

If no, describe the problems below.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Big Hole Grazing | City/County: Beaverhead | Sampling Date: 8/17/2010

Applicant/Owner: MDT | State: MT | Sampling Point: BH-1

Investigator(s): B. Sandefur | Section, Township, Range: S 2 T 4S R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat | Slope (%):

Subregion (LRR): LRR E | Lat: 45.5214883333333 | Long: -113.548186666667 | Datum: WGS 84

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
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: 5ft)			
1. Agrostis alba	45	☑	FACW
2. Carex aquatilis	45	☑	OBL
3. Juncus tenuis	15	☐	FAC
4. Juncus balticus	20	☐	OBL
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
	125 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: BH-1

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
0-6	5YR 3/4	95					Mucky Peat	
6-12	10YR 2/1	95					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:

- ☐ Histosol
- ☑ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic /Oxyaquic /Aquic Haplocryolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☐ No ☑	Depth (inches):	
Water Table Present?	Yes ☑ No ☐	Depth (inches):	10
Saturation Present? (includes capillary fringe)	Yes ☑ No ☐	Depth (inches):	2

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Big Hole Grazing | City/County: Beaverhead | Sampling Date: 8/17/2010

Applicant/Owner: MDT | State: MT | Sampling Point: BH-2

Investigator(s): B. Sandefur | Section, Township, Range: S 2 T 4S R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.52199 | Long: -113.548633333333 | Datum: WGS 84

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
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: 5ft)			
1. Juncus balticus	20	☑	OBL
2. Potentilla gracilis	20	☑	FAC
3. Cirsium scariosum	10	☐	NL
4. Alopecurus pratensis	15	☐	FACW
5. Agrostis alba	20	☑	FACW
6. Achillea millefolium	5	☐	FACU
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	90 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: BH-2

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
0-5	10YR 2/1	100					Clay Loam	
5-13	10YR 3/2	95					Clay Loam	Dry soils

[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:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic /Oxyaquic /Aquic Haplocryolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Only one secondary indicator observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

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 ☑

Remarks: No hydro indicator

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Big Hole Grazing | City/County: Beaverhead | Sampling Date: 8/17/2010

Applicant/Owner: MDT | State: MT | Sampling Point: BH-3

Investigator(s): B. Sandefur | Section, Township, Range: S 2 T 4S R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.5199983333333 | Long: -113.548625 | Datum: WGS 84

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
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: 5ft)			
1. Juncus balticus	40	☑	OBL
2. Poa pratensis	40	☑	FACU+
3. Carex praegracilis	20	☑	FACW
4. Epilobium ciliatum	5	☐	FACW-
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: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: BH-3

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
0-3	7.5YR 3/4	100					Mucky Peat	
3-7	10YR 2/1	100					Peaty Muck	
7-13	10YR 2/1	95	10YR 4/1	3	D	M	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:

- ☐ Histosol
- ☑ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic /Oxyaquic /Aquic Haplocryolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☐ No ☑	Depth (inches):	
Water Table Present?	Yes ☑ No ☐	Depth (inches):	10
Saturation Present? (includes capillary fringe)	Yes ☑ No ☐	Depth (inches):	2

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Big Hole Grazing | City/County: Beaverhead | Sampling Date: 8/17/2010

Applicant/Owner: MDT | State: MT | Sampling Point: BH-4

Investigator(s): B. Sandefur | Section, Township, Range: S 2 T 4S R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.5192133333333 | Long: -113.548576666667 | Datum: WGS 84

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
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: 5ft)			
1. Epilobium ciliatum	5	☐	FACW-
2. Poa pratensis	60	☑	FACU+
3. Phleum pratense	10	☐	FACU
4. Alopecurus pratensis	20	☑	FACW
5. Juncus balticus	25	☑	OBL
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	120 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: BH-4

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
0-2	7.5YR 3/4	100					Peat	
2-15	10YR 2/1	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:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☑ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic /Oxyaquic /Aquic Haplocryolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

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): 10

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Big Hole Grazing | City/County: Beaverhead | Sampling Date: 8/19/2010

Applicant/Owner: MDT | State: MT | Sampling Point: BH-5

Investigator(s): B. Sandefur | Section, Township, Range: S 2 T 4S R 16W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.5180283333333 | Long: -113.545815 | Datum: WGS 84

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
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: 5ft)			
1. Rumex crispus	10	☐	FACW
2. Glyceria elata	35	☑	FACW+
3. Carex praegracilis	40	☑	FACW
4. Juncus balticus	25	☑	OBL
5. Trifolium repens	10	☐	FACU+
6. Carex aquatilis	5	☐	OBL
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	125 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: BH-5

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
0-2	10YR 4/3	95					Silt Loam	
2-12	10YR 2/1	95	10YR 3/4	3	C	M	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:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☑ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic /Oxyaquic /Aquic Haplocryolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

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** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Big Hole Grazing | City/County: Beaverhead | Sampling Date: 8/19/2010

Applicant/Owner: MDT | State: MT | Sampling Point: BH-6

Investigator(s): B. Sandefur | Section, Township, Range: S 2 T 4S R 16W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): LRR E | Lat: 45.5162133333333 | Long: -113.552076666667 | Datum: WGS 84

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
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: 5ft)			
1. Carex utriculata	80	☑	OBL
2. Glyceria elata	10	☐	FACW+
3. Alopecurus pratensis	5	☐	FACW
4. Carex praegracilis	20	☑	FACW
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
	115 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: BH-6

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
0-1	7.5YR 3/2	95					Mucky Peat	
1-8	10YR 2/1	95					Clay Loam	
8-14	10YR 2/2	95	10YR 3/4	3	C	M	Clay Loam	Very gravelly

[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:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic /Oxyaquic /Aquic Haplocryolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☑ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

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): 8

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Big Hole Grazing Assoc. **2. MDT project#** STPX 1(45) **Control#**

3. Evaluation Date 8/19/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** All wetlands outside Rock Creek corrid

6. Wetland Location(s): **T** 4S **R** 16W **Sec1** 2 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 6 - Upper Missouri **County** Beaverhead

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 71.23

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 71.23

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	Emergent Wetland		Permanent/Perennial	20
Slope	Scrub-Shrub Wetland		Seasonal/Intermittant	10
Slope	Emergent Wetland		Seasonal/Intermittant	70

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) 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	low disturbance	moderate 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%.	moderate	moderate disturbance	high disturbance
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%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

No disturbance within AA identfied.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

AA wetland created/restored by plugging man-made drain ditches. All disturbed areas revegetated. Land surrounding AA moderately grazed with cattle observed adjacent to AA during field assessment.

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 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◯ S Gray wolf, Grizzly bear

No usable habitat ▣ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.3L	.1L	0L

Sources for documented use USF&WS, ranch manager has observed wolves onsite.

14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)

i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◯ S Bald Eagle

No usable habitat ▣ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use MTNHP

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
- ☐ interviews with local biologists 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
- ☐ interviews with local biologists with knowledge of the 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
- ☐ interviews with local biologists 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 instructions 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	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

Comments Several species of wildlife observed during assessment

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14D. General Fish Habitat Rating: (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, etc.]. 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 ☑ **NA** here and proceed to 14E.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points 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	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 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?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

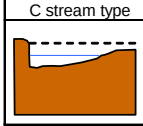
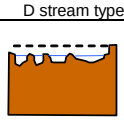
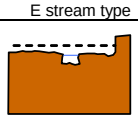
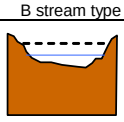
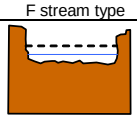
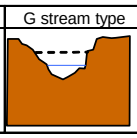
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

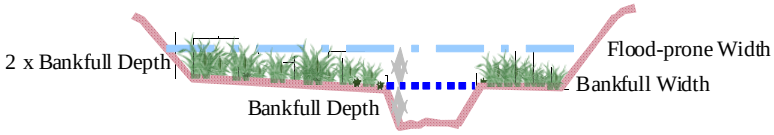
iii. Final Score and Rating: _____ **Comments:**

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☑ **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points 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		
% 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**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodrpone width _____ **/** **Bankfull width** _____ **=** **Entrenchment ratio** _____

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 (check)? **Y** ◯ **N** ◉

Comments:

14F. Short and Long Term Surface Water Storage: (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, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions 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	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands 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, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of 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 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 with 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	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments:

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or 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, click ☑ **NA** here and proceed to 14I.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

*% 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	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions 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	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: 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).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .6M

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & 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 arrive at [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information		NA		

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points 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)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments: Organic accumulation at soil surface within Carex wetland

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ☐ Educational/scientific study; ☑ Consumptive rec.; ☑ Non-consumptive rec.; ☐ Other

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

Permission required to access property

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): All wetlands outside Rock Creek corridor

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	L	.3	1	21.369	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	14.246	☐
C. General Wildlife Habitat	M	.7	1	49.861	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	NA	0	0	0	☐
F. Short and Long Term Surface Water Storage	H	1	1	71.23	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	71.23	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☐
I. Production Export/Food Chain Support	M	.6	1	42.738	☐
J. Groundwater Discharge/Recharge	H	1	1	71.23	☑
K. Uniqueness	H	.9	1	64.107	☑
L. Recreation/Education Potential (bonus points)	L	.05	NA	3.5615	☐
Totals:		5.75	8	409.5725	
Percent of Possible Score			**71.88** %		

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; otherwise 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 RATING:
(check appropriate category based on the criteria outlined above)

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Big Hole Grazing Assoc. **2. MDT project#** STPX 1(45) **Control#**

3. Evaluation Date 8/19/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Rock Creek corridor

6. Wetland Location(s): **T** 4S **R** 16W **Sec1** 2 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 6 - Upper Missouri **County** Beaverhead

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 8

Purpose of Evaluation

How assessed: Visually estimated

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 10

☐ **Mitigation Wetlands: pre-construction**

How assessed: Visually estimated

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Rock Bottom		Permanent/Perennial	10
Riverine	Emergent Wetland		Seasonal/Intermittant	20
Riverine	Scrub-Shrub Wetland		Seasonal/Intermittant	70

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) 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	low disturbance	moderate 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%.	moderate	moderate disturbance	high disturbance
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%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

No signs of grazing identified during assessment.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

AA includes the Rock Creek channel and adjacent SS and Em wetland. Land surrounding AA includes undisturbed wetland, pasture, and rangeland.

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 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	◉ D ○ S	Gray wolf, grizzly bear
No usable habitat	☐ S	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.3L	.1L	0L

Sources for documented use USF&WS, ranch manager observed wolves onsite

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14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)

i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	◉ D ○ S	grayling, westslope cutthroat
No usable habitat	☐ S	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use MTNHP, MFWP-MFISH

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence): Moderate

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
- ☐ interviews with local biologists 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
- ☐ interviews with local biologists with knowledge of the 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
- ☐ interviews with local biologists 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 instructions 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	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

Comments Several species of wildlife observed during assessment, including moose, elk, and numerous birds

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14D. General Fish Habitat Rating: (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, etc.]. 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 ☐ **NA** here and proceed to 14E.) Cold Water

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points 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	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 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?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

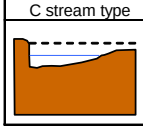
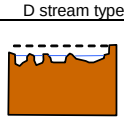
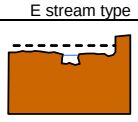
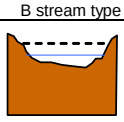
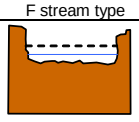
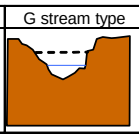
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

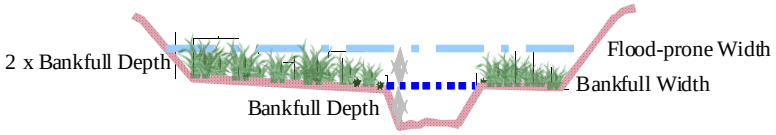
iii. Final Score and Rating: _____ **Comments:**

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☐ **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points 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		
% 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**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodrpone width 25 **/** **Bankfull width** 8 **=** **Entrenchment ratio** 3.125

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 (check)? **Y** ◯ **N** ◉

Comments:

14F. Short and Long Term Surface Water Storage: (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, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions 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	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands 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, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of 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 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 with 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	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments:

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or 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, click ☐ **NA** here and proceed to 14I.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

*% 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	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments:

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions 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	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: 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).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & 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 arrive at [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information		NA		

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points 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)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ☐ Educational/scientific study; ☑ Consumptive rec.; ☑ Non-consumptive rec.; ☐ Other

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

General Site Notes

Fishing and hunting by permission

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Rock Creek corridor

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	L	.3	1	3	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	2	☐
C. General Wildlife Habitat	H	.9	1	9	☑
D. General Fish Habitat	H	.8	1	8	☐
E. Flood Attenuation	H	.8	1	8	☐
F. Short and Long Term Surface Water Storage	H	.8	1	8	☐
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	9	☐
H. Sediment/Shoreline Stabilization	H	1	1	10	☑
I. Production Export/Food Chain Support	E	1	1	10	☑
J. Groundwater Discharge/Recharge	H	1	1	10	☑
K. Uniqueness	M	.4	1	4	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.5	☐
Totals:		8.15	11	81.5	
Percent of Possible Score			**74.09** %		

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; otherwise 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 RATING:
(check appropriate category based on the criteria outlined above)

I	II	III	IV

Appendix C

Project Area Photographs

2010 MDT Wetland Mitigation Monitoring
Big Hole Grazing Association
Beaverhead County, Montana



Photo Point 1 – *Photo 1* **Location:** Veg Com 3
Bearing: North **Taken in 2009**



Photo Point 1 – *Photo 1* **Location:** Veg Com 3
Bearing: North **Taken in 2010**



Photo Point 1 – *Photo 2* **Location:** Veg Com 5
Bearing: West **Taken in 2009**



Photo Point 1 – *Photo 2* **Location:** Veg Com 5
Bearing: West **Taken in 2010**



Photo Point 1 – *Photo 3* **Location:** Veg Com 6
Bearing: East **Taken in 2009**



Photo Point 1 – *Photo 3* **Location:** Veg Com 6
Bearing: East **Taken in 2010**



Photo Point 2 – *Photo 1*
Bearing: Northwest
Location: Veg Com 3
Taken in 2009



Photo Point 2 – *Photo 1*
Bearing: Northwest
Location: Veg Com 3
Taken in 2010



Photo Point 2 – *Photo 2*
Bearing: West
Location: Veg Com 4
Taken in 2009



Photo Point 2 – *Photo 2*
Bearing: West
Location: Veg Com 4
Taken in 2010



Photo Point 2 – *Photo 3*
Bearing: East
Location: Veg Com 6
Taken in 2009



Photo Point 2 – *Photo 3*
Bearing: East
Location: Veg Com 6
Taken in 2010



Photo Point 3 – *Photo 1*
Bearing: Southeast
Location: Veg Com 5
Taken in 2009



Photo Point 3 – *Photo 1*
Bearing: Southeast
Location: Veg Com 5
Taken in 2010



Photo Point 3 – *Photo 2*
Bearing: West
Location: Veg Com 3
Taken in 2009



Photo Point 3 – *Photo 2*
Bearing: West
Location: Veg Com 3
Taken in 2010



Photo Point 3 – *Photo 3*
Bearing: Northwest
Location: Veg Com 3
Taken in 2009



Photo Point 3 – *Photo 3*
Bearing: Northwest
Location: Veg Com 3
Taken in 2010



Photo Point 4 – *Photo 1* **Location:** Veg Com 7
Bearing: Southeast **Taken in 2009**



Photo Point 4 – *Photo 1* **Location:** Veg Com 7
Bearing: Southeast **Taken in 2010**



Photo Point 4 – *Photo 2* **Location:** Veg Com 3
Bearing: Southeast **Taken in 2009**



Photo Point 4 – *Photo 2* **Location:** Veg Com 3
Bearing: Southeast **Taken in 2010**



Photo Point 4 – *Photo 3* **Location:** Veg Com 1
Bearing: Southwest **Taken in 2009**



Photo Point 4 – *Photo 3* **Location:** Veg Com 1
Bearing: Southwest **Taken in 2010**



Photo Point 5 – *Photo 1* **Location:** Veg Com 7
Bearing: East **Taken in 2009**



Photo Point 5 – *Photo 1* **Location:** Veg Com 7
Bearing: East **Taken in 2010**



Photo Point 5 – *Photo 2* **Location:** Veg Com 7
Bearing: Southwest **Taken in 2009**



Photo Point 5 – *Photo 2* **Location:** Veg Com 7
Bearing: Southwest **Taken in 2010**



Photo Point 5 – *Photo 3* **Location:** Veg Com 1
Bearing: Northwest **Taken in 2009**



Photo Point 5 – *Photo 3* **Location:** Veg Com 1
Bearing: Northwest **Taken in 2010**



Photo Point 6 – *Photo 1* **Location:** Veg Com 3
Bearing: Southeast **Taken in 2009**



Photo Point 6 – *Photo 1* **Location:** Veg Com 3
Bearing: Southeast **Taken in 2010**



Photo Point 6 – *Photo 2* **Location:** Veg Com 3
Bearing: South **Taken in 2009**



Photo Point 6 – *Photo 2* **Location:** Veg Com 3
Bearing: South **Taken in 2010**



Photo Point 6 – *Photo 3* **Location:** Veg Com 3
Bearing: Northwest **Taken in 2009**



Photo Point 6 – *Photo 3* **Location:** Veg Com 3
Bearing: Northwest **Taken in 2010**



Photo Point 7 – *Photo 1*
Bearing: East
Location: Veg Com 7
Taken in 2009



Photo Point 7 – *Photo 1*
Bearing: East
Location: Veg Com 7
Taken in 2010



Photo Point 7 – *Photo 2*
Bearing: West
Location: Veg Com 1
Taken in 2009



Photo Point 7 – *Photo 2*
Bearing: West
Location: Veg Com 1
Taken in 2010



Photo Point 7 – *Photo 3*
Bearing: South
Location: Veg Com 7
Taken in 2009



Photo Point 7 – *Photo 3*
Bearing: South
Location: Veg Com 7
Taken in 2010



Transect 2– *Start*
Bearing: 5 deg

Location: Veg com 1
Taken in 2009



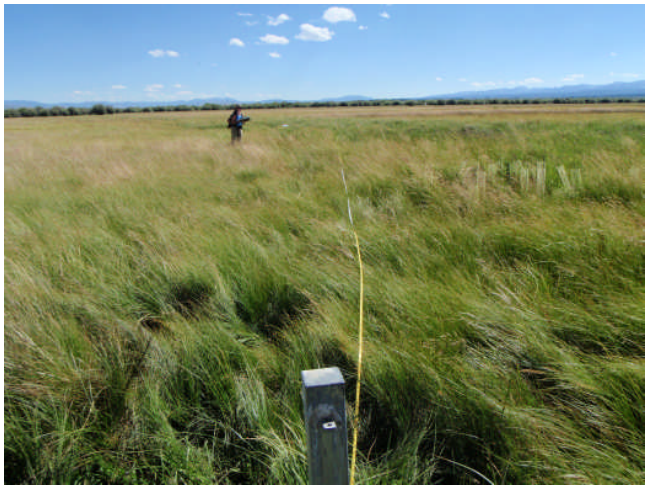
Transect 2– *Start*
Bearing: 5 deg

Location: Veg com 1
Taken in 2010



Transect 1– End
Bearing: 185 deg

Location: Veg com 5
Taken in 2009



Transect 1– *End*
Bearing: 185 deg

Location: Veg com 5
Taken in 2010

Appendix D

Project Plan Sheets

2010 MDT Wetland Mitigation Monitoring
Big Hole Grazing Association
Beaverhead County, Montana

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPX 1(45)	4

DETAIL
SITE PLAN

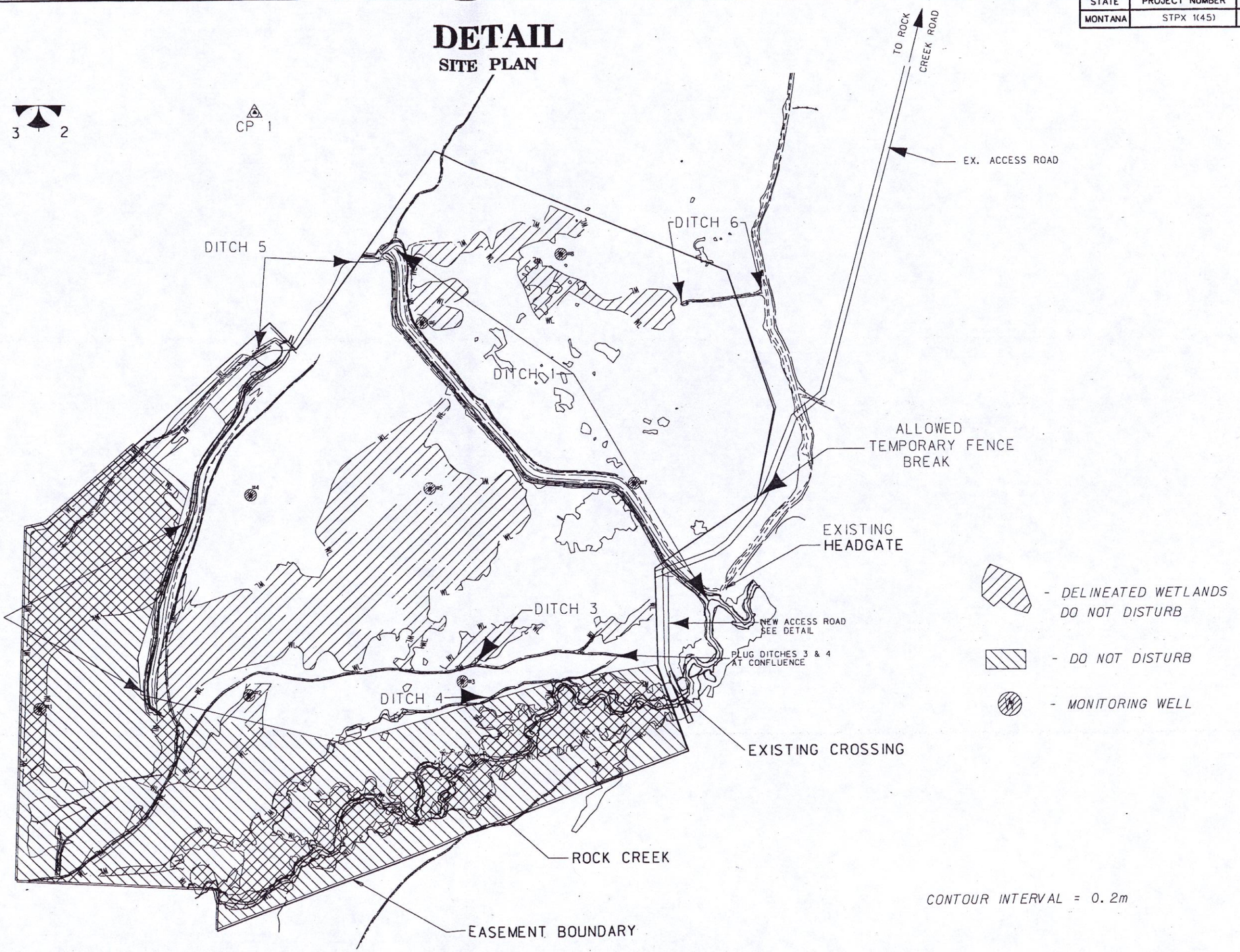
MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

T. 4 S. R. 16 W.

SEC. 2

NO SCALE



LENGTH OF DITCH TO BE FILLED

DITCH #1 = 520m±
DITCH #3 = 3m±
DITCH #4 = 3m±
DITCH #5 = 172m±
DITCH #6 = 82m±

DESIGNED BY
REVIEWED BY
CHECKED BY

x4668rdpln999.dgn 30 PM CPS - U0217