MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2011

Big Hole Grazing Association
Beaverhead County, Montana



Prepared for:

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December 2011

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

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CCI Project No: MDT.004

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1. INTRODUCTION

The Big Hole Grazing Association (BHGA) Wetland Mitigation 2011 Monitoring Report documents the fourth 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. The project provided a wetland mitigation reserve in Watershed # 6 – Upper Missouri River Basin.

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 MDT Wetland Mitigation Site Monitoring Form, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the MDT Montana Wetland Assessment Forms. Appendix C contains relevant photographs of the project site 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.

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. 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 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).

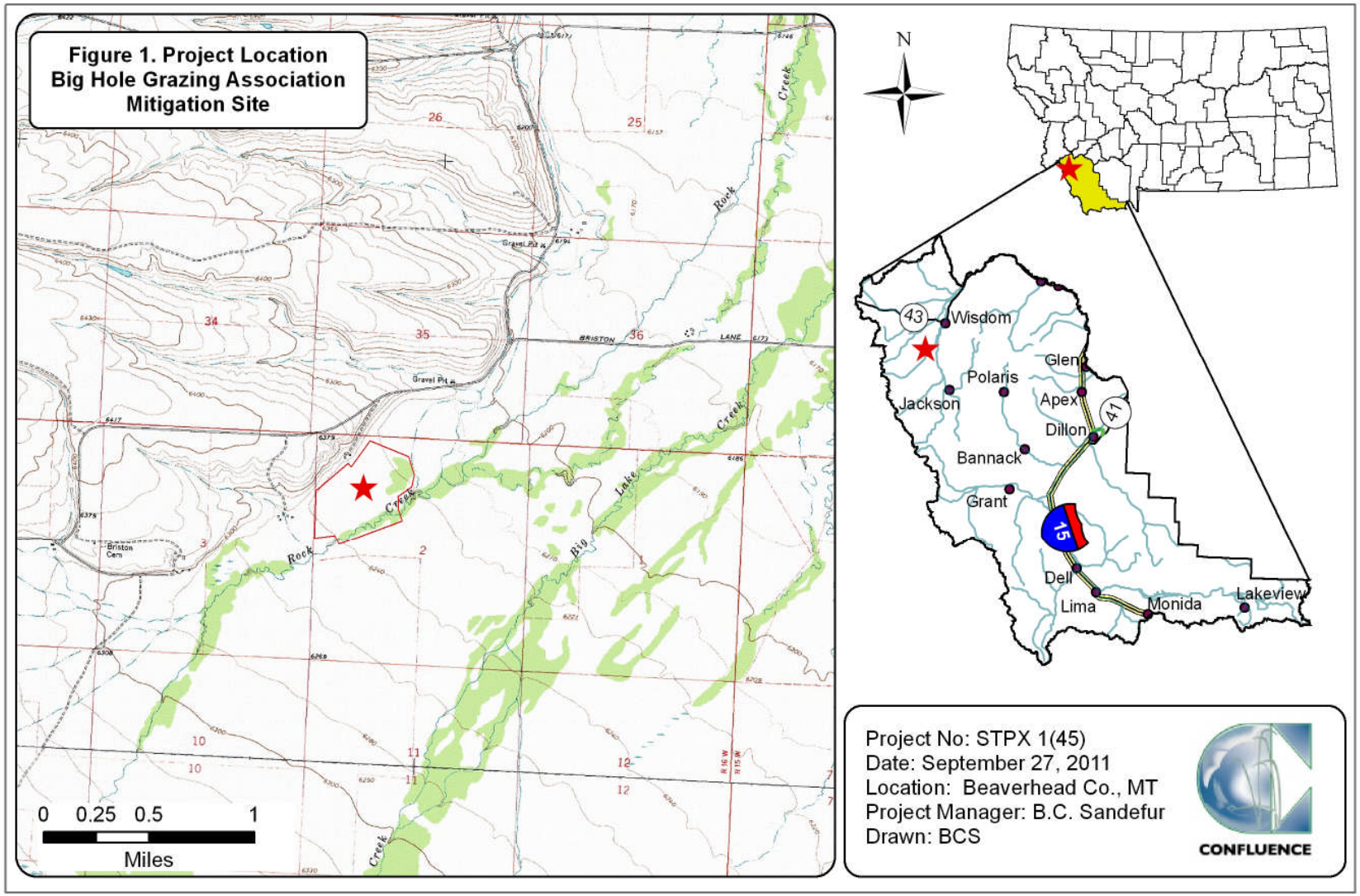


Figure 1. Project location BHGA Mitigation Site.

2. METHODS

The site was visited on August 3, 2011. Information contained on the Mitigation Monitoring Form and the Wetland Data Forms 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; soil 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 determining wetland hydrology as the number of days when there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). Temperature data recorded for the meteorological station at Wisdom, Montana (249067) has a probability range of 17 to 79 days for temperatures above 28 degrees Fahrenheit. The median (5 years in 10) growing season is 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.

When present, hydrological indicators as outlined on the Wetland Data Form were documented at four data points 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. Groundwater depths in wells MW-1 through MW-8 were measured during the 2010 and 2011 investigations (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 wetland 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 the 2011 aerial photograph. The base photography was taken on August 16, 2011. 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). The transect location was 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-11 & 12, 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 "**X**", "▲", 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. Each cluster was examined for plant survival in 2011.

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 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 Wetland Data 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 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 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 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 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 monitoring period was compiled.

2.6. Functional Assessment

The 1999 MDT Montana Wetland Assessment Method (MWAM) (Berglund 1999) was employed to complete functional assessments of the site in 2001. The 2008 MWAM (Berglund and McEldowney 2008) was used to evaluate functions and values on the site from 2009 to 2011. 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 Wetland 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 and upland conditions, trends, current land use surrounding the site, 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 (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 2011 monitoring season. Points were collected using WAAS-enabled differential correction 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, 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 BHGA 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 Wisdom station, Montana (249067) recorded an average total annual precipitation rate of 11.99 inches from January 1923 to December 2010 (WRCC 2011). Annual precipitation was 14.51 inches in 2010, 2.52 inches above the 87 year average. Precipitation data recorded for January through June was 7.78 and 8.62 inches in 2009 and 2010, respectively. Cumulative precipitation for January through May 2011 was 4.78 inches; there was no data available for June (NCDC 2011).

Eight groundwater monitoring wells installed in 2001 were monitored annually by the USGS through 2008. Well locations are shown on Figure 2 (Appendix A). 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 measured in 2007 following site construction were notably higher in 2008. Water levels in 2009 were above the ground surface at wells MW-6, MW-7, and MW-8. Saturation and inundation levels in several wet meadows indicated that groundwater levels were similar from 2008 to 2009 and

displayed a positive response toward wetland development. Groundwater levels measured in 2010 were less than one foot below the ground surface (bgs) in wells MW-1, and M-4 through MW-8. Depths in MW-7 and MW-8 were within 0.1 foot of the ground surface. Groundwater levels measured in 2011 (Table 1) showed that, with the exception of MW-1, all wells exhibited water levels within one foot of the ground surface. Water levels in three wells, MW-2, 4, & 5, were above the ground surface and reflected extensive areas of inundation present during the 2011 monitoring event. Overall, recorded water levels within monitoring wells have documented a general increase in groundwater elevation following drainage modifications to the site.

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

Well Number	2010 Water Surface (bgs)	2011 Water Surface (bgs)
MW-1	0.9	1.3
MW-2	1.4	+0.3
MW-3	1.4	1.0
MW-4	0.4	+0.1
MW-5	0.4	+0.2
MW-6	0.6	0.4
MW-7	0.1	0.0
MW-8	0.1	1.0

Surface water depths on the site ranged from 0.0 to 3.0 feet with an average depth site wide of 0.3 foot. Approximately 65 percent of the site was inundated, an increase of approximately 15 percent from 2010. Two data points, BH-1w and BH-2w, were located within wetlands (Figure 2, Appendix A). The hydrologic indicators at both data points was saturation within the upper 12 inches of the soil profile.

3.2. Vegetation

The 76 plant species identified at the mitigation site from 2008 to 2011 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 2011, one upland community and five wetland communities (Figure 3, Appendix A; Monitoring Form, Appendix B).

The 2011 communities were upland Type 1 – *Poa pratensis/Phleum pratense*, wetland Type 3 – *Carex* species (spp.), wetland Type 4 – *Salix* spp./ *Carex* spp., wetland Type 5 – *Juncus spp./Agrostis alba*, wetland Type 7 – *Carex* spp./*Juncus* spp., and wetland Type 8 – *Juncus balticus*. The community types generally correlated to those identified in 2010 with the exception of replacing the wetland Type 6 – *Carex* spp./*Alopecurus pratensis* community with wetland Type 8 – *Juncus balticus*.

The northwest corner of the project contained a sedge-dominated fen (community 3) that was not impacted by historic ditching activities. 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. Since 2009, the area has shown evidence of reverting to historical conditions with the restoration of site hydrology and natural regeneration of willows (Community 6, Figure 3, Appendix A).

Table 2. Vegetation species observed from 2008 to 2011 at the BHGA Wetland Mitigation Site.

Scientific Names	Common Names	Region 9 Indicator Status[1]
Achillea millefolium	yarrow,common	FACU
Aconitum columbianum	**monkshood,Columbia**	**FACW**
Agropyron repens	**quackgrass**	**FACU**
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Agrostis stolonifera	bentgrass,spreading	FAC+
Allium geyeri	**onion,Geyer**	**FACU**
Alnus incana	alder,speckled	FACW
Alopecurus pratensis	foxtail,meadow	FACW
Arnica amplexicaulis	**arnica,streambank**	**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 athrostachya	**sedge,slender-beak**	**FACW**
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
*Carex utriculata**	beaked sedge	OBL
Castilleja miniata	indian-paintbrush,scarlet	FAC
Castilleja occidentalis	**indian-paintbrush,western**	**FAC+**
Centaurea maculosa	spotted knapweed	NL
Cirsium arvense	thistle,Canada	FACU+
Cirsium scariosum	meadow thistle	NL
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

[1]Region 9 (Northwest) (Reed 1988).
New species identified in 2011 are in **bold** type.
*Commonly accepted name not included in the 1988 list.

Table 2 (Continued). Vegetation species observed from 2008 to 2011 at the BHGA Wetland Mitigation Site.

Scientific Names	Common Names	Region 9 Indicator Status[1]
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+
Juncus balticus	rush,Baltic	OBL
Juncus effusus	**rush,soft**	**FACW+**
Juncus ensifolius	**rush,three-stamen**	**FACW**
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	Wyeth's lupine	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
Penstemon procerus	**beardtongue,small-flower**	**NI**
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
Populus tremuloides*	**quaking aspen**	**FAC+**
Potentilla fruticosa	cinquefoil,shrubby	FAC-
Potentilla glandulosa	cinquefoil,gland	FAC-
Potentilla gracilis	cinquefoil,northwest	FAC
Ranunculus sp.		**NL**
Rosa woodsii	rose,Wood's	FACU
Rumex crispus	dock,curly	FACW
Salix bebbiana	willow,Bebb	FACW
Salix exigua	willow,sandbar	OBL
Salix lemmonii	willow,Lemmon's	FACW+
Salix lutea	**willow,yellow**	**OBL**

[1]Region 9 Northwest (Reed 1988).
New species identified in 2011 are show in **bold** type.
*Commonly accepted name not included in the 1988 list.

Table 2 (Continued). Vegetation species observed from 2008 to 2011 at the BHGA Wetland Mitigation Site.

Scientific Names	Common Names	Region 9 Indicator Status[1]
Scirpus acutus	bulrush,hard-stem	OBL
Senecio sphaerocephalus	groundsel,ball-head	FACW
Sisymbrium altissimum	**mustard,tall tumble**	**FACU-**
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 2011 are show in **bold** type.

Upland vegetation community Type 1 – *Poa pratensis/Phleum pratense* was identified at the south boundary and in isolated islands located within the site. Community type 1 was dominated by herbaceous species that included (in descending order of importance) Kentucky bluegrass (*Poa pratensis*), meadow foxtail (*Alopecurus pratensis*), common timothy (*Phleum pratense*), Baltic rush (*Juncus balticus*), northwest cinquefoil (*Potentilla gracilis*), fox-tail barley (*Hordeum jubatum*), common yarrow (*Achillea millefolium*), quackgrass (*Agropyron repens*), and ten other species with less than 5% cover. Due to increased wetness saturation and inundation at the site, the extent of this community continued to decrease in 2011 as hydrophytic species flourished and the cover of wetland community 7 increased.

Wetland community Type 3 – *Carex* species (spp.) extended across the northwest quarter and center of the site. The community contained predominantly beaked sedge (*Carex utriculata*) with lesser amounts of clustered field sedge (*Carex praegracilis*), water sedge (*Carex aquatilis*), slender-beak sedge (*Carex athrostachya*), and Nebraska sedge (*Carex nebrascensis*). Other noteworthy species in this community included American sloughgrass (*Beckmania syzigachne*), tufted hairgrass (*Deschampsia cespitosa*), hairy willow-herb (*Epilobium ciliatum*), few-flower spikerush (*Eleocharis pauciflora),* fowl manna grass (*Glyceria striata*), narrow-leaf burreed (*Sparganium emersum*), and twenty other species with cover class codes of 1 or less.

Wetland community Type 4 – *Salix* spp./ *Carex* spp. was located along the Rock Creek corridor and along the east half and southwest corner of the project area. This community was dominated primarily by woody species including sandbar willow (*Salix exigua*), Bebb willow (*Salix bebbiana*), and Lemmon's willow (*Salix*

lemmonii). Beaked sedge, clustered field sedge, and Baltic rush dominated the herbaceous species. Geyer onion (*Allium geyeri*), hairy willow-herb, sticky tall Jacob's ladder (*Polemonium acutiflorum*), scarlet indian-paintbrush (*Castilleja miniata*), and shoots of shrubby cinquefoil (*Potentilla fruticosa*) and quacking aspen (*Populus tremuloides*) were also present within the understory of this community.

The dominant species in wetland community Type 5 – *Juncus spp*./*Agrostis alba* were Baltic rush, redtop (*Agrostis alba*), beaked sedge, meadow foxtail, soft rush, and three-stamen rush. Twenty-two species were identified in this community during the 2011 field survey. The community formed in drier moisture regimes in the northeast corner and center of the site, decreasing in extent as site conditions have continued to become wetter. Young willow shoots should continue to establish, ultimately leading to an expansion of Type 4 into Type 5.

Wetland community Type 7 – *Carex* spp./*Juncus* spp. covered a large area in the west half and central region of the site. This community experienced the greatest expanse in aerial coverage in 2011 and replaced areas of community 1 due to substantial wetland hydrology within the site. Beaked sedge, field clustered sedge, slender-beak sedge, Baltic rush, slender rush (*Juncus tenuis*), meadow fox-tail, fowl manna grass, and 21 other species comprised this community.

Wetland community Type 8 – *Juncus balticus* replaced a small area mapped as community 6 (Type 6 – *Carex* spp./*Alopecurus pretense*) in 2010 and was slightly drier than the adjacent wetland communities. This community contained Baltic rush, Kentucky bluegrass, meadow barley (*Hordeum brachyantherum*), hairy willow-herb, northwest cinquefoil, and Siskiyou aster (*Aster hesperius*).

Overall plant composition was identified on the 1,247-foot vegetation transect during the 2011 monitoring event. Transect data were summarized in Table 3 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 7 –*Carex* spp./*Juncus* spp., community 5 – *Juncus* spp./*Agrostis alba*, and community 3 – *Carex* spp. Hydrophytic species dominated 100 percent of the transect in 2011, an increase of 34.2 percent from 2010 and an increase of 44.2 percent since 2009. This data reflects the continued increase of wetland hydrology, development of hydrophytic vegetation, and expansion of wetland acreage within the BHGA mitigation site since construction. Photographs of the transect end points from 2009 to 2011 are shown on pages C-12 and C-13 of Appendix C.

Table 3. Data summary for Transect 1 from 2008 to 2011.

Vegetation Community Transitions along Transect	7	7	7	5
Vegetation Communities along Transect	3	3	4	3
Hydrophytic Vegetation Communities along Transect	2	2	3	3
Total Vegetative Species	22	22	31	30
Total Hydrophytic Species	13	14	26	23
Total Upland Species	9	8	5	7
Estimated % Total Vegetative Cover	75	80	90	100
% Transect Length Comprising Hydrophytic Vegetation Communities	45	55	65.8	100
% Transect Length Comprising Upland Vegetation Communities	55	45	34.2	0.0
% Transect Length Comprising Unvegetated Open Water	0	0	0.0	0.0
% Transect Length Comprising Bare Substrate	0	0	0.0	0.0

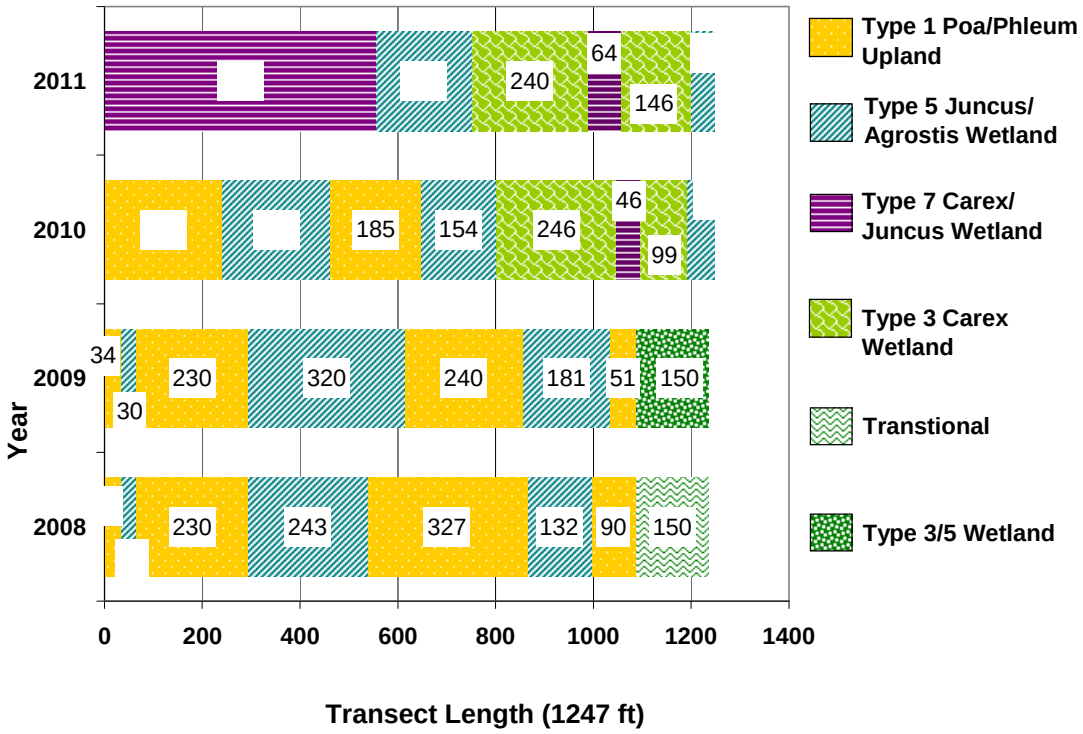


Chart 1. Transect map showing community types on Transect 1 from beginning (0 feet) to end (1,247 feet) identified from 2008 to 2011.

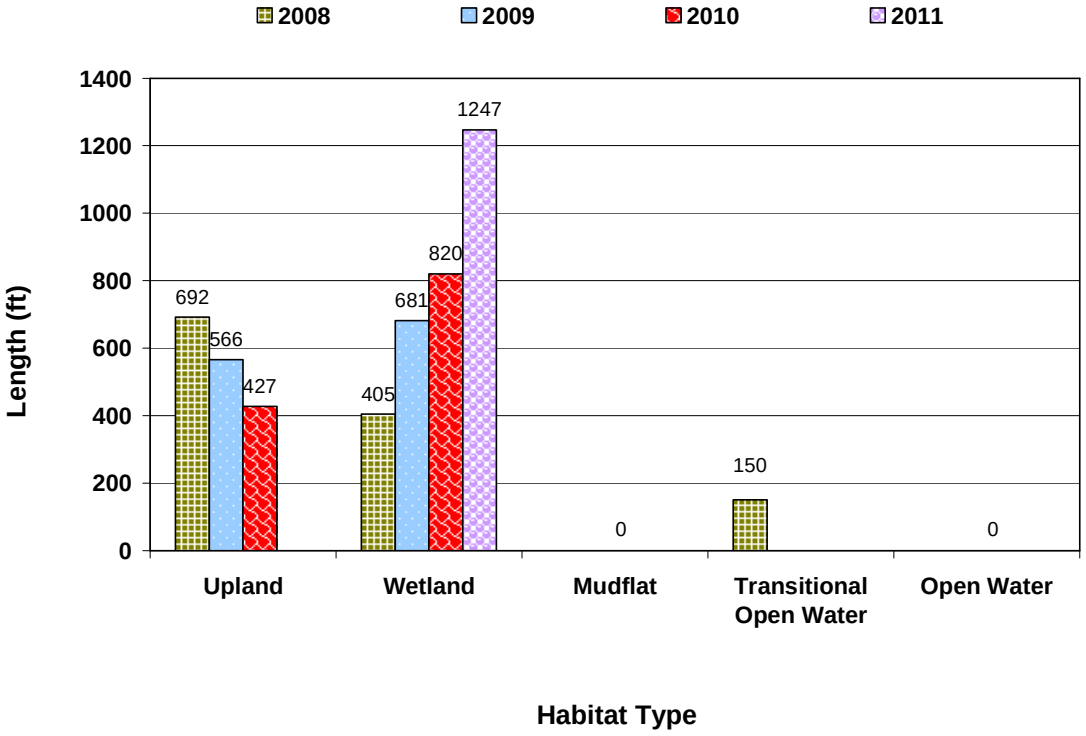


Chart 2. Length of habitat types within Transect 1 from 2008 to 2011.

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 covered 0.1 to 1.0 acres and less than 0.1 acres, comprising between 1 and 5 percent of cover and 5 to 25 percent of cover, respectively.

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. Survival decreased notably to 35 percent in 2009 (339 stems). 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. Fifty red-osier dogwood stems out of 246 stems planted (20 percent survival) were alive in 2010. Approximately 200 speckled alder saplings were observed out of the 470 planted (43 percent survival). No live bog birch saplings were noted in 2010. Similar survival rates were noted in 2011, with roughly 200 speckled alders, 50 red-osier dogwoods, and no live bog birch recorded. Abundant natural recruitment of willows and shrubby cinquefoil were observed throughout community Type 4,

providing a positive indication that the site will establish additional scrub/shrub habitat over time.

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 Mooseflat series has been classified as Typic Cryaquoll, Foxgulch is a Fluvaquentic Haplocryolls, Wisdom is a superactive Oxyaquic Haplocryolls, and Copperbasin classified as an Aquic Haplocryolls. All four of these series are listed on the Montana Hydric Soils list.

Data points BH-1w and BH-2w were located in areas that met the wetland criteria. The soil profile at BH-1w revealed a clay loam soil with a low chroma matrix (10 YR 3/1) and dark yellowish brown (10 YR 4/4) mottles. The soil at BH-2w was identified as a clay loam (10 YR 3/1) with redoximorphic depletions (10 YR 4/2) in the matrix. Hydric soil indicators were low-chroma color. The soils at BH-1u revealed a low chroma matrix with dark gray (10YR 4/1) depletions providing a positive indication of a hydric soil. However, this data point lacked hydrophytic vegetation and sufficient wetland hydrology to qualify as a wetland. Overall, the test pit soils generally correlated with the soil map units.

3.4. Wetland Delineation

The site was delineated by MDT in June 2001. Approximately 31 acres of drained and impacted wetland habitat was delineated within the project boundaries. The wetland delineation identified a total of 49.81 wetland acres in August 2008, 56.76 acres in August 2009, and 81.23 acres in August 2010. This consistent gain of wetland acreage is a reflection of the abundant wetland hydrology that enters the site and the successful capture of this hydrology across the site through the filled and plugged historic drain ditches. This total wetland acreage included 14 acres of pre-existing wetlands targeted for preservation located in the Rock Creek corridor and northwest corner of the site.

The wetland boundaries delineated in 2011 were mapped on Figure 3 (Appendix A). Table 4 summarizes the wetland acreages delineated from 2008 to 2011. Approximately 88.26 acres of wetland were delineated in 2011, which included 14 acres of pre-existing wetland. This represented an increase in total wetland acres of 7.03 from 2010 to 2011. Habitat within the central portions of the site converted from upland community Type 1 to wetland community Type 7. Uplands encompassed 6.60 acres within the project area in 2011.

Table 4. Wetland acreages delineated in 2008 to 2011 at the BHGA Wetland Mitigation Site.

Habitat Type	2008 Acreage	2009 Acreage	2010 Acreage	2011 Acreage
Wetland	49.81	56.76	81.23	88.26

3.5. Wildlife

Direct and indirect observations of wildlife species from 2008 to 2011 were listed in Table 5 and Appendix B. Three moose were seen on the site during the field survey in 2009. A moose cow and calf are observed regularly by the landowner. A moose was observed browsing along the Rock Creek corridor during both the 2010 and 2011 surveys. A total of seven bird species were identified during the 2011 survey, with one new species (American Kestrel) to bring the total number of birds observed at this site since mitigation monitoring began up to twenty-one. Abundant elk tracks were observed throughout the site. A red fox den was located along the northern boundary of the site and the land manager observed the successful rearing of six kits in this den in 2011. The landowner has also observed the occasional gray wolf and grizzly bear traverse the site. Indications of beaver browse and dam construction were observed along Rock Creek.

Table 5. Wildlife species observed within the BHGA Wetland Mitigation Site from 2008 to 2011.

COMMON NAME	SCIENTIFIC NAME
BIRD	
American Crow*	*Corvus brachyrhynchos*
American Kestrel*	***Falco sparverius***
American Robin*	*Turdus migratorius*
Bank Swallow*	*Riparia riparia*
Barn Swallow*	*Hirundo rustica*
Black-billed Magpie*	*Pica hudsonia*
Black-capped Chickadee	*Poecile atricapillus*
Bobolink*	*Dolichonyx oryzivorus*
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Raven	*Corvus corax*
Great Blue Heron	***Ardea herodias***
Great Horned Owl	*Bubo virginianus*
House Wren*	*Troglodytes aedon*
Killdeer*	*Charadrius vociferus*
Mallard	*Anas platyrhynchos*
Northern Harrier	***Circus cyaneus***
Northern Shrike*	*Lanius excubitor*
Red-tailed Hawk*	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Rock Pigeon	*Columba livia*
Rough-legged Hawk*	*Buteo lagopus*
Sandhill Crane	***Grus canadensis***

Species identified in 2011 are listed in **bold** type.

*Species identified by MDT staff in 2011

Table 5 (continued). Wildlife species observed within the BHGA Wetland Mitigation Site from 2008 to 2011.

BIRD	
Song Sparrow*	*Melospiza melodia*
Spotted Sandpiper*	*Actitis macularius*
Tree Swallow*	***Tachycineta bicolor***
Violet-green swallow*	*Tachycineta thalassina*
Western Bluebird*	*Sialia mexicana*
Western Meadowlark*	*Sturnella neglecta*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe*	***Gallinago delicata***
Yellow-Rumped Warbler*	*Dendroica coronata*
Yellow Warbler*	***Dendroica petechia***
MAMMAL	
Badger	*Taxidea taxus*
Beaver*	***Castor canadensis***
Coyote	*Canis latrans*
Deer Sp.*	
Elk or Wapiti*	***Cervus canadensis***
Gray Wolf	*Canus lupus*
Grizzly Bear	*Ursus arctos horribilis*
Meadow vole*	*Microtus pennsylvanicus*
Moose*	***Alces americanus***
Muskrat*	*Ondatra zibethicus*
Racoon*	*Procyon lotor*
Red Fox*	***Vulpes vulpes***
Richardson's Ground Squirrel*	*Spermophilus richardsonii*
Striped Skunk	*Mephitis mephitis*
White-tailed Deer	*Odocoileus virginianus*
AMPHIBIAN	
Columbia Spotted Frog*	*Rana luteiventris*

Species identified in 2011 are listed in **bold** type.

*Species identified by MDT staff in 2011

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 MWAM (Berglund 1999). The 2009 through 2011 wetland conditions were assessed using the 2008 MWAM (Berglund and McEldowney 2008). The 2009 through 2011 assessment results are shown in Table 6. Two assessment areas (AA) were evaluated within the BHGA wetland mitigation site (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 78.26-acre AA. The difference in AA-2 acreages between years is the result of continued wetland development at the site.

All wetlands within the BHGA mitigation area were rated as Category I wetlands in 2011, an increase from Category II wetlands in 2010 (Table 6). The Rock Creek corridor AA rated excellent for general wildlife habitat, general fish habitat, and production export/food chain support and rated high for flood attenuation, short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, sediment/shoreline stabilization, and groundwater discharge/recharge. The wetlands outside the Rock Creek corridor received an excellent rating for general wildlife habitat, and high ratings for short and long term surface water storage, sediment/nutrient, toxicant removal, groundwater discharge/recharge, and uniqueness. Increased functional units were observed for both AAs, with a considerable increase in AA-2 as a result of the increase of wetland habitat as this site continues to develop.

Table 6. Summary of 2009 through 2011 wetland function/value ratings and functional points at the BHGA mitigation site.

Function and Value Parameters 2008 MDT Montana Wetland Assessment Method	2009 AA 1 (Rock Creek Wetlands)	2009 AA 2 (Remaining Wetlands)	2010 AA 1 (Rock Creek Wetlands)	2010 AA 2 (Remaining Wetlands)	2011 AA 1 (Rock Creek Wetlands)	2011 AA 2 (Remaining Wetlands)
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	High (0.9)	Mod (0.7)	High (0.9)	Mod (0.7)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	High (0.8)	NA	High (0.8)	NA	Exc. (1.0)	NA
Flood Attenuation	High (0.8)	NA	High (0.8)	NA	High (0.9)	NA
Short and Long Term Surface Water Storage	High (0.8)	High (1.0)	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)	High (0.9)	High (1.0)
Sediment/Shoreline Stabilization	High (1.0)	NA	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)	Exc. (1.0)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	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)	Mod (0.4)	High (0.9)
Recreation/Education Potential	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Mod (0.1)	Mod (0.1)
Actual Points / Possible Points	**7.85 / 11**	**5.45 / 8**	**8.15 / 11**	**5.75 / 8**	**9 / 11**	**6.7 / 8**
% of Possible Score Achieved	**71%**	**68%**	**74.1%**	**71.9%**	**81.8%**	**83.8%**
Overall Category	**II**	**II**	**II**	**II**	**I**	**I**
Total Acreage of Assessed Wetlands within Site Boundaries (ac)	**10**	**39.81**	**10**	**71.23**	**10**	**78.26**
Functional Units (acreage x actual points)	**78.50**	**217**	**81.50**	**409.6**	**90.00**	**524.3**

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 between 2009 and 2011 are presented on pages C-2 to C-12 of Appendix C. Photos of transect end points shot between 2009 and 2011 are shown on C-12 and 13 of Appendix C. Photographs of the four wetland data points are shown on C-12 and C-13. The 2011 aerial photograph taken on August 16, 2011, 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 surrounding the perimeter was in good condition in 2011. 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 to promote continued bird usage.

Containerized plant survival declined significantly from 2008 to 2010. Mortality may have been linked to excessively wet conditions. Survival seemed to stabilize during this past growing season and may reflect suitable micro-habitats within the inundated/saturated wetlands. Sufficient natural regeneration of willows is occurring at the site and no supplemental planting is recommended for the BHGA site. Canada thistle infestations were consistent between 2010 and 2011 (Figure 3, Appendix A). The total infestations covered less than 1.0 acre, with cover classes between 1 and 25 percent in two locations near the home site. Continued weed spraying is recommended to control these two populations.

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. The 14.0 acres targeted for preservation encompassed the Rock Creek corridor and fen area in the northwest corner of the site. These areas had not been impacted by historic drainage activities. The mitigation site benefited from the elimination of grazing.

There are currently 74.26 acres of restored wetland habitat and 14.0 acres of preserved wetlands within the BHGA mitigation site. These acreages are summarized with the appropriate credit ratios in Table 7. A total of 77.76 credit acres have been calculated for this site based on the results of the 2011 monitoring efforts. Both AAs increased ratings from Category II to Category I wetlands in 2011 and indicate that this mitigation project has resulted in the creation and protection of high quality wetlands within the Upper Missouri watershed. No supplemental planting is recommended for the BHGA site based on the woody plantings mortality linked to excessively wet conditions and the natural regeneration of willows and shrubby cinquefoil within the site. Based on current trends, the BHGA site should continue to provide high quality plant and wildlife wetland habitat.

Table 7. Summary of wetland credits.

Mitigation Type	Credit Ratios	2008 Acreage	2008 Credit Acres	2009 Acreage	2009 Credit Acres	2010 Acreage	2010 Credit Acres	2011 Acreage	2011 Credit Acres
Wetland Restoration	1:1	35.81	35.81	42.76	42.76	67.23	67.23	74.26	74.26
Wetland Preservation (pre-existing)	4:1	14.00	3.50	14.00	3.50	14.00	3.50	14.00	3.50
TOTAL		**49.81**	**39.31**	**56.76**	**46.26**	**81.23**	**70.73**	**88.26**	**77.76**

4. REFERENCES

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Appendix A

Figures 2 and 3

2011 MDT Wetland Mitigation Monitoring
Big Hole Grazing Association
Beaverhead County, Montana

Figure 2: 2011 Monitoring Activity Locations

Vegetation Transect

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

0 125 250 500
Feet

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 THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Beaverhead Co., MT
PROJ NO: STPX-0001(45)
FILE: BigHole/Monitor2011.mxd

Project Name: Big Hole Grazing Association Wetland Mitigation Site
Drawing Title: 2011 Monitoring Activity Locations

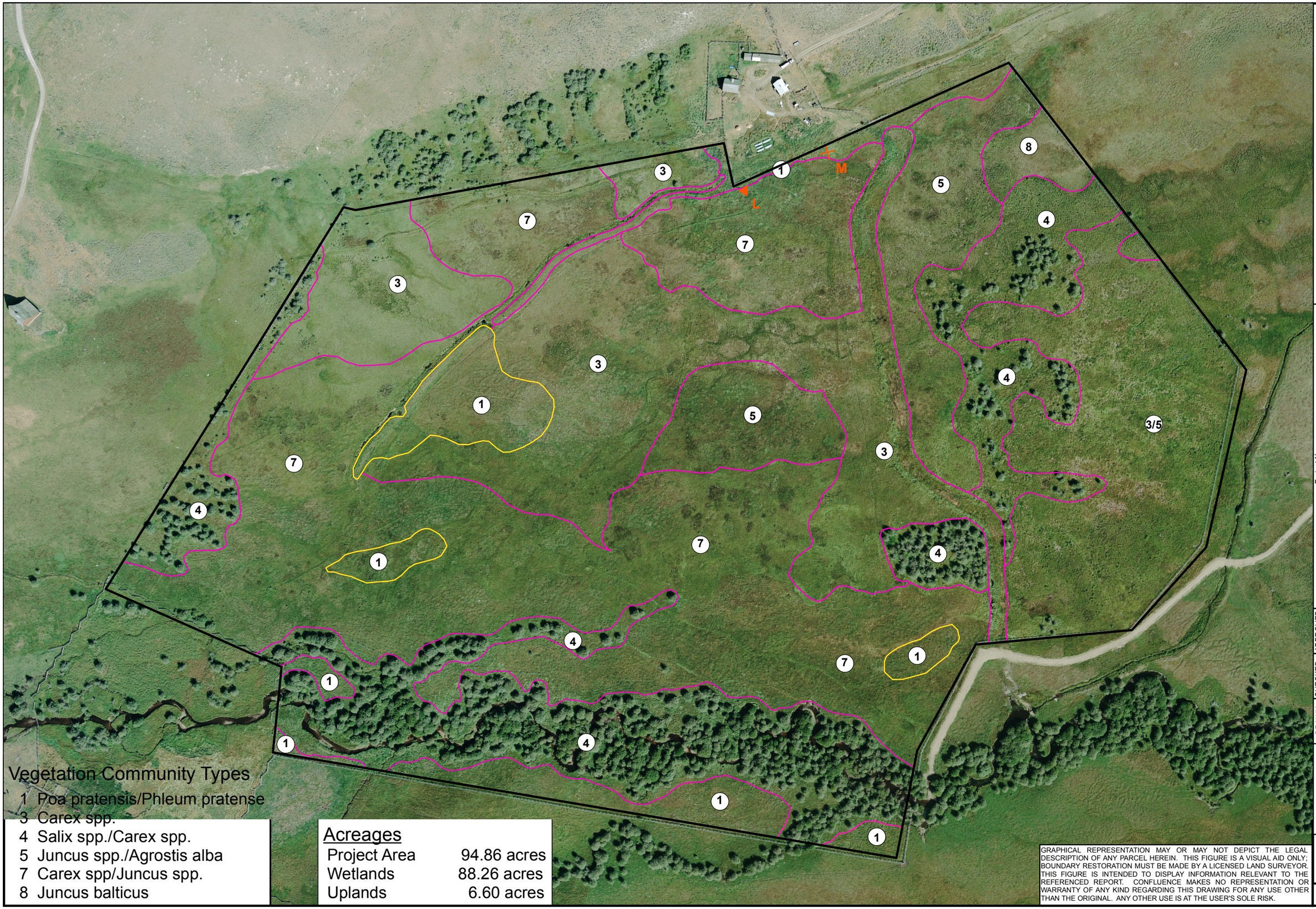
DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted
Drawn: September 24, 2011
PROJ MGR: B Sandefur

CONFLUENCE
consulting Incorporated

Figure 2

REV -



Vegetation Community Types

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

Acreages

Project Area	94.86 acres
Wetlands	88.26 acres
Uplands	6.60 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 THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Beaverhead Co., MT

PROJ NO: STPX-0001(45)

FILE: BigHole/Veg2011.mxd

Project Name
Big Hole Grazing Association
Wetland Mitigation Site

Drawing Title
2011 Mapped Site Features

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 16, 2011

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure
3

REV -

Appendix B

2011 Wetland Mitigation Site Monitoring Form
2011 USACE Wetland Delineation Form
2011 MDT Functional Assessment Form

2011 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 8/3/2011 7:58:33 AM

Person(s) conducting the assessment: B. Sandefur, L. Soderquist

Weather: Partially cloudy, warm, light rain Location: 10 miles southwest of Wisdom, MT

MDT District: Butte Milepost:

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

Initial Evaluation Date: 8/6/2008 Monitoring Year: 4 #Visits in Year: 1

Size of Evaluation Area: 95 (acres)

Land use surrounding wetland:

Rangeland, agriculture (hayland), riparian, rural residential

HYDROLOGY

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

Inundation: ☑ Average Depth: 0.3 **(ft)** Range of Depths: 0-3 **(ft)**

Percent of assessment area under inundation: 65 %

Depth at emergent vegetation-open water boundary: 2 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes

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

Extensive areas of inundation present throughout site, saturated soils.

Groundwater Monitoring Wells

Record depth of water surface below ground surface, in feet.

Well ID	Water Surface Depth (ft)	
MW-7	0	**(at ground surface)**
MW-6	0.4	
MW-5	-0.2	**(inundated)**
MW-3	1	
MW-8	1	
MW-4	-0.1	**(inundated)**
MW-1	1.3	
MW-2	-0.3	**(inundated)**

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:

Wells 5, 4, & 2 with surface water, number indicated in table is above ground depth.

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 **Acres** 6.6

Species	Cover class	Species	Cover class
Achillea millefolium	2	Agropyron repens	2
Alopecurus pratensis	3	Aster hesperius	1
Cirsium arvense	1	Cirsium scariosum	1
Hordeum brachyantherum	1	Hordeum jubatum	2
Iris missouriensis	0	Juncus balticus	2
Phleum pratense	2	Poa pratensis	4
Potentilla gracilis	2	Rumex crispus	0
Sisymbrium altissimum	0	Taraxacum officinale	1
Thlaspi arvense	0	Trifolium repens	0

Comments:

Community # 3 **Community Type:** Carex spp. / **Acres** 23.89

Species	Cover class	Species	Cover class
Achillea millefolium	0	Aconitum columbianum	0
Agrostis alba	0	Allium geyeri	0
Alopecurus pratensis	1	Beckmannia syzigachne	4
Calamagrostis scopulorum	1	Carex aquatilis	0
Carex athrostachya	0	Carex nebrascensis	0
Carex praegracilis	1	Carex utriculata*	5
Cirsium scariosum	0	Deschampsia cespitosa	2
Eleocharis pauciflora	2	Epilobium ciliatum	2
Geum aleppicum	1	Geum macrophyllum	0
Glyceria striata	2	Gnaphalium palustre	1
Hordeum brachyantherum	1	Hordeum jubatum	1
Juncus balticus	1	Juncus tenuis	1
Lemna minor	0	Mentha arvensis	1
Mimulus guttatus	0	Potentilla gracilis	0
Rumex crispus	0	Salix lutea	1
Sparganium angustifolium	2		

Comments:

Community # 4 **Community Type:** Salix spp. / Carex spp. **Acres** 18.76

Species	Cover class	Species	Cover class
Allium geyeri	1	Carex praegracilis	2
Carex utriculata*	3	Castilleja miniata	0
Epilobium ciliatum	1	Juncus balticus	2
Penstemon procerus	0	Polemonium acutiflorum	1
Populus tremuloides*	0	Potentilla fruticosa	1
Salix bebbiana	3	Salix exigua	3
Salix lemmonii	3		

Comments:

Community # 5 **Community Type:** Juncus spp. / Agrostis alba **Acres** 12.94

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis alba	3
Allium geyeri	0	Alnus incana	0
Alopecurus pratensis	1	Aster hesperius	1
Carex praegracilis	1	Carex utriculata*	2
Cirsium scariosum	0	Epilobium ciliatum	0
Eriophorum gracile	0	Glyceria striata	0
Juncus balticus	3	Juncus effusus	1
Juncus ensifolius	0	Mimulus guttatus	0
Potentilla fruticosa	1	Potentilla gracilis	1
Rumex crispus	0	Salix exigua	0
Taraxacum officinale	0	Trifolium repens	0

Comments:

Community # 7 **Community Type:** Carex spp. / Juncus spp. **Acres** 31.71

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis alba	0
Allium geyeri	1	Alopecurus pratensis	3
Arnica amplexicaulis	0	Beckmannia syzigachne	1
Calamagrostis scopulorum	1	Carex athrostachya	0
Carex praegracilis	1	Carex utriculata*	4
Castilleja occidentalis	0	Cirsium scariosum	0
Epilobium ciliatum	1	Eriophorum gracile	1
Geum macrophyllum	0	Glyceria striata	3
Hordeum brachyantherum	1	Juncus balticus	3
Juncus tenuis	0	Lupinus wyethii	0
Mentha arvensis	0	Potentilla gracilis	0
Ranunculus spp.	0	Rumex crispus	0
Senecio sphaerocephalus	0	Thlaspi arvense	0
Trifolium pratense	0	Trifolium repens	2

Comments:

Community # 8 **Community Type:** Juncus balticus / **Acres** 0.97

Species	Cover class	Species	Cover class
Aster hesperius	0	Epilobium ciliatum	1
Hordeum brachyantherum	1	Juncus balticus	4
Poa pratensis	2	Potentilla gracilis	1
Thlaspi arvense	1		

Comments:

Total Vegetation Community Acreage **94.87**

(Note: some area within the project bounds may be open water or other non-vegetative ground cover.

VEGETATION TRANSECTS

Site: Big Hole Grazing Association Date: 8/3/2011 7:58:33 AM

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

Interval Data:

Ending Station 555 **Community Type:** Carex spp. / Juncus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis alba	3
Allium geyeri	0	Alopecurus pratensis	2
Arnica amplexicaulis	0	Calamagrostis scopulorum	2
Carex aquatilis	2	Carex athrostachya	2
Carex utriculata*	1	Cirsium scariosum	0
Epilobium ciliatum	1	Eriophorum gracile	1
Geum macrophyllum	0	Glyceria striata	3
Hordeum brachyantherum	1	Juncus balticus	4
Juncus tenuis	2	Mentha arvensis	1
Ranunculus spp.	0	Senecio sphaerocephalus	1
Trifolium repens	1		

Ending Station 750 **Community Type:** Juncus spp. / Agrostis alba

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis alba	3
Allium geyeri	0	Alopecurus pratensis	2
Carex praegracilis	1	Carex utriculata*	2
Epilobium ciliatum	0	Juncus balticus	4
Taraxacum officinale	0	Trifolium repens	0

Ending Station 990 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Aconitum columbianum	0	Agrostis alba	1
Allium geyeri	0	Alopecurus pratensis	1
Carex aquatilis	3	Carex athrostachya	0
Carex utriculata*	5	Cirsium scariosum	0
Epilobium ciliatum	1	Geum macrophyllum	0
Juncus balticus	1	Potentilla gracilis	0

Ending Station 1054 **Community Type:** Carex spp. / Juncus spp.

Species	Cover class	Species	Cover class
Agrostis alba	2	Carex athrostachya	1
Carex praegracilis	1	Carex utriculata*	3
Epilobium ciliatum	0	Juncus balticus	4
Potentilla gracilis	0	Senecio sphaerocephalus	0

Ending Station 1200 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Beckmannia syzigachne	1
Calamagrostis scopulorum	0	Carex aquatilis	1
Carex nebrascensis	1	Carex praegracilis	2
Carex utriculata*	5	Eleocharis pauciflora	1
Epilobium ciliatum	1	Lemna minor	0

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

Species	Cover class	Species	Cover class
Agrostis alba	3	Alopecurus pratensis	3
Carex praegracilis	1	Carex utriculata*	3
Epilobium ciliatum	1	Juncus balticus	1
Juncus effusus	1		

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Big Hole Grazing Association

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

Comments

Similar survival rates to 2010. A small amount of willow recruitment observed along Rock Creek corridor and increased amounts within comm 4.

Big Hole Grazing Association

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bluebird and wood duck boxes

How many? 12

Are the nesting structures being used? Yes

Do the nesting structures need repairs? Yes

Nesting Structure Comments:
Duck box nearest to T1-end tilting.

Species	#Observed	Behavior	Habitat
American Kestrel	1	FO, L	UP, WM
Great Blue Heron	1	FO, L	WM
Northern Harrier	1	FO	UP, WM
Sandhill Crane	2	FO, N	MA, SS, WM
Tree Swallow	50	F, FO, L, N	SS, WM
Wilson's Snipe	1	FO, L, N	
Yellow Warbler	2	FO	SS, WM

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
Beaver		No	No	No	Recently chewed stems along Rock Creek
Elk or Wapiti		Yes	Yes	No	
Moose	1	Yes	Yes	No	
Red Fox		No	No	Yes	

Wildlife Comments:

Fox den on north side of site, landowner has observed fox with 6 kits using den.

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
8416	45.518509	-113.545387	0	PP1
8417	45.518509	-113.545387	270	PP1
8418	45.518509	-113.545387	90	PP1
8419	45.519192	-113.545837	310	PP2
8420	45.519192	-113.545837	270	PP2
8421	45.519192	-113.545837	90	PP2
8424	45.520527	-113.548622	185	T1 end
8425	45.520576	-113.548637	135	PP3
8426	45.520576	-113.548637	270	PP3
8427	45.520576	-113.548637	310	PP3
8429	45.521328	-113.549263	135	PP4
8430	45.521328	-113.549263	135	PP4
8431	45.521328	-113.549263	225	PP4
8432	45.520317	-113.55024	90	PP5
8433	45.520317	-113.55024	225	PP5
8434	45.520317	-113.55024	315	PP5
8435	45.517311	-113.547882	5	T1 start
8444	45.51815	-113.545937	120	BH-1u
8445	45.518173	-113.545959	200	BH-1w
8446	45.518654	-113.54818	90	BH-2W
8447	45.517929	-113.55072	180	BH-3U
8451			135	PP6
8452			180	PP6
8453			315	PP6
8455	45.517124	-113.550652	90	PP7

8456	45.517124	-113.550652	270	PP7
8457	45.517124	-113.550652	180	PP7

Comments:

Big Hole Grazing Association

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? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

Duck box WDB1 with excessive tilt, needs to be straightened for use by birds.

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

Project/Site: Big Hole Grazing Association City/County: Beaverhead Sampling Date: 8/2/2011

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

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

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): flat Slope (%): _____

Subregion (LRR): LRR E Lat: 45.51818 Long: -113.54592 Datum: _____

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex, 0-2% slope

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: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Poa pratensis	80	☑	FACU+
2. Alopecurus pratensis	20	☐	FACW
3. Achillea millefolium	10	☐	FACU
4. Taraxacum officinale	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	115 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: BH-1u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Silt Loam	
4-10	10YR 2/2	100					Clay Loam	
10-16	10YR 5/2	95	10YR 4/1	5	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
- ☐ Aquic 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: Plot located in a slight upland rise with surface water in adjacent wet point. Appears to be trending toward wet community.

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

Project/Site: Big Hole Grazing Association City/County: Beaverhead Sampling Date: 8/2/2011

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

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

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

Subregion (LRR): LRR E Lat: 45.517895 Long: -113.54588 Datum:

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex, 0-2% slope

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 transition into wet community, surface water in adjacent wet areas.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Glyceria striata	30	☑	OBL
2. Poa pratensis	25	☑	FACU+
3. Carex athrostachya	20	☑	FACW
4. Juncus balticus	20	☑	OBL
5. Epilobium ciliatum	1	☐	FACW-
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	96 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: BH-1w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Silt Loam	
5-12	10YR 3/1	95	10YR 4/4	5	C	PL	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
- ☐ Aquic 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): 12

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

Project/Site: Big Hole Grazing Association | City/County: Beaverhead | Sampling Date: 8/2/2011

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

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

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

Subregion (LRR): LRR E | Lat: 45.517895 | Long: -113.54588 | Datum:

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex, 0-2% slope

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:
Area first identified as wetland in 2011. Additional areas within polygon with 2-3 in of surface water.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Epilobium ciliatum	10	☐	FACW-
2. Carex athrostachya	25	☑	FACW
3. Carex utriculata*	35	☑	OBL
4. Mimulus guttatus	5	☐	OBL
5. Agrostis alba	10	☐	FACW
6. Carex aquatilis	10	☐	OBL
7. Potentilla gracilis	5	☐	FAC
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	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:

SOIL

Sampling Point: BH-2w

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
0-8	10YR 2/1	100					Clay Loam	
8-14	10YR 3/1	95	10YR 4/2	5	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
- ☐ Aquic 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 Association City/County: Beaverhead Sampling Date: 8/2/2011

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

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

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

Subregion (LRR): LRR E Lat: 45.51792 Long: -113.550695 Datum:

Soil Map Unit Name: Foxgulch-Copperbasin-Wisdom complex, 0-2% slope

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:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Poa pratensis	40	☑	FACU+
2. Achillea millefolium	40	☑	FACU
3. Taraxacum officinale	15	☐	FACU
4. Hordeum brachyantherum	10	☐	FACW
5. Phleum pratense	5	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	110 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: BH-3u

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
0-10	10YR 3/2	100					Silty Clay	
10-16	10YR 3/4	100					Silty Clay	dry & friable

[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
- ☐ Aquic 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: No hydro indicators

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Big Hole Grazing Assoc. **2. MDT project#** STPX 1(45) **Control#** CN 4668

3. Evaluation Date 8/3/2011 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** All wetlands outside Rock Creek AA

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

Approx Stationing or Mileposts

Watershed 10020004 **Watershed/County** Upper Missouri Watershed/Beaverhead County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 78.26

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 78.26

☐ **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
Depressional	Emergent Wetland		Permanent/Perennial	50
Depressional	Scrub-Shrub Wetland		Seasonal/Intermittant	20
Depressional	Emergent Wetland		Seasonal/Intermittant	30

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)

Area managed in conservation easement with no disturbance identified within AA. Abundant willow/woody regeneration within AA.

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

Canada thistle (Cirsium arvensis)

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

AA is a large wet meadow, emergent marsh, and shrub/scrub wetland created/restored by plugging man-made drain ditches. AA does not include Rock Creek channel or corridor. All disturbed areas have revegetated. Wetland acreage within AA has continued to increase with increase water table elevation. A majority of the site was inundated during the site investigation. AA is not grazed or hayed. Land surrounding AA moderately grazed with horses and cattle observed adjacent to AA. Moose and Elk common within AA.

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: Woody regeneration within AA along established willow stands.

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	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 US F&WS, ranch manager on-site wldlf observations.

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	Great Blue Heron
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, animals observed on-site

14C. General Wildlife Habitat Rating:

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

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 Remote site with low human disturbance, good connectivity to surrounding habitats. Abundant wildlife observed on site.

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**

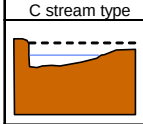
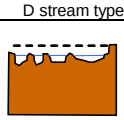
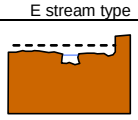
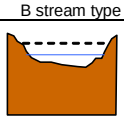
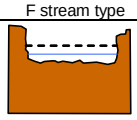
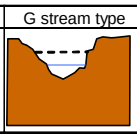
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

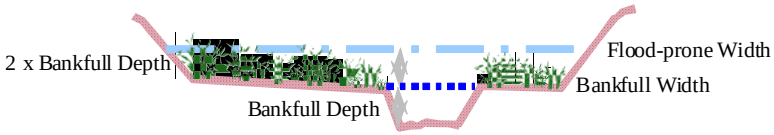
iii. Final Score and Rating: 0 NA **Comments:**

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: AA appeared to store greater than 5 acre feet during investigation as 80-acre site was largely inundated. Site with the potential to store a large quantity of water during spring run-off.

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: Large site with considerable area of inundation present during growing-season site visit.

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: No streams or open water subject to wave action through AA

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	.9	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8	.5M	.6M	.3	.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** .8H

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- [x] The AA is a slope wetland
- [x] Springs or seeps are known or observed
- [ ] Vegetation growing during dormant season/drought
- [x] 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
- [x] Shallow water table and the site is saturated to the surface
- [ ] Other:

ii. Recharge Indicators

- [ ] Permeable substrate present without underlying impeding layer
- [x] 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: Known springs along boundary of AA in northwest corner of site

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 near spring source

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

Substantial increase in ratings and FU due to abundant hydrologic input, improved wildlife habitat, and an increase in wetland acreage.

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

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	23.478	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	46.956	☐
C. General Wildlife Habitat	E	1	1	78.26	☑
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	78.26	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	78.26	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☐
I. Production Export/Food Chain Support	H	.8	1	62.608	☐
J. Groundwater Discharge/Recharge	H	1	1	78.26	☑
K. Uniqueness	H	.9	1	70.434	☐
L. Recreation/Education Potential (bonus points)	M	.1	NA	7.826	☐
Totals:		6.7	8	524.342	
Percent of Possible Score			**83.75** %		

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

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#** CN 4668

3. Evaluation Date 8/3/2011 **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 10020004 **Watershed/County** Upper Missouri Watershed/Beaverhead County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 10

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	5
Riverine	Emergent Wetland		Permanent/Perennial	20
Riverine	Scrub-Shrub Wetland		Permanent/Perennial	40
Riverine	Scrub-Shrub Wetland		Seasonal/Intermittant	30
Riverine	Aquatic Bed		Permanent/Perennial	5

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)

Natural disturbance within AA includes beaver and moose foraging. No human or livestock disturbance identified during site evaluation.

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

Canada thistle (Cirsium arvensis)

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

AA includes 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: Established willow corridor along creek, regeneration along margins of community.

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	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 US F&WS, ranch manager on-site wldlf observations.

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	Great blue heron
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, animals observed on-site

14C. General Wildlife Habitat Rating:

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

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 within AA, including moose, elk, and numerous birds. Sandhill cranes suspected to nest within AA.

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** 1 E

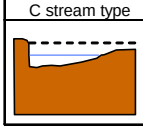
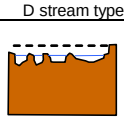
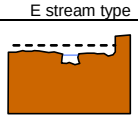
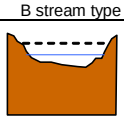
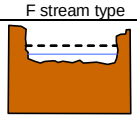
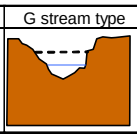
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating 1 E

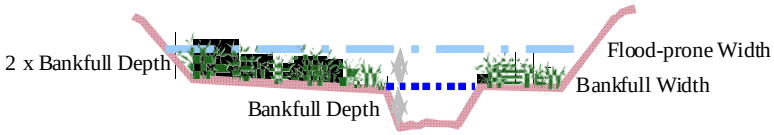
iii. Final Score and Rating: 1 E **Comments:** Excellent cover, abundant pools and undercut banks along stream. Downstream irrigation structure sometimes inhibits fish passage.

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 74 **/** **Bankfull width** 24 **=** **Entrenchment ratio** 3.08333333333333

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: D-type channel (numerous channels), well-vegetated with willows and deep-binding roots.

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: Beaver dams/debris jams observed along channel increase water storage within creek.

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: Abundant willows, sedges, and rush along banks of Rock Creek.

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: Willows, sedges, and other deep-rooted hydrophytes well-established along streambanks.

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	.9	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8	.5M	.6M	.3	.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:

Fishing and hunting by permission

General Site Notes

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	M	.6	1	6	☐
C. General Wildlife Habitat	E	1	1	10	☑
D. General Fish Habitat	E	1	1	10	☑
E. Flood Attenuation	H	.9	1	9	☐
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)	M	.1	NA	1	☐
Totals:		9	11	90	
Percent of Possible Score			**81.82** %		

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

I **II** **III** **IV**

Appendix C

Project Area Photographs

2011 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 2010**



Photo Point 1 – *Photo 1* **Location:** Veg Com 3
Bearing: North **Taken in 2011**



Photo Point 1 – *Photo 2* **Location:** Veg Com 5
Bearing: West **Taken in 2011**



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



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

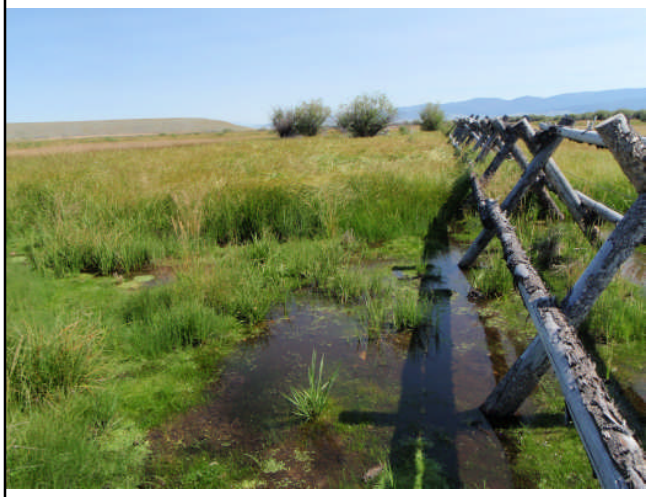


Photo Point 1 – *Photo 3* **Location:** Veg Com 6
Bearing: East **Taken in 2010**



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



Photo Point 1 – *Photo 3* **Location:** Veg Com 6
Bearing: East **Taken in 2011**



Photo Point 2 – *Photo 1* **Location:** Veg Com 3
Bearing: Northwest **Taken in 2011**



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



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



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



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



Photo Point 2 – *Photo 2* **Location:** Veg Com 4
Bearing: West **Taken in 2011**



Photo Point 2 – *Photo 3* **Location:** Veg Com 6
Bearing: East **Taken in 2011**



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





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



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



Photo Point 3 – *Photo 1* **Location:** Veg Com 5
Bearing: Southeast **Taken in 2011**



Photo Point 3 – *Photo 2* **Location:** Veg Com 3
Bearing: West **Taken in 2011**



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





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



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



Photo Point 3 – *Photo 3* **Location:** Veg Com 3
Bearing: Northwest **Taken in 2011**



Photo Point 4 – *Photo 1* **Location:** Veg Com 7
Bearing: Southeast **Taken in 2011**



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 2010**



Photo Point 4 – *Photo 2* **Location:** Veg Com 3
Bearing: Southeast **Taken in 2011**



Photo Point 4 – *Photo 3* **Location:** Veg Com 1
Bearing: Southwest **Taken in 2011**



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



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



Photo Point 5 – *Photo 1* **Location:** Veg Com 7
Bearing: East **Taken in 2011**



Photo Point 5 – *Photo 2* **Location:** Veg Com 7
Bearing: Southwest **Taken in 2011**



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



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



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



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



Photo Point 5 – *Photo 3*
Bearing: Northwest
Location: Veg Com 1
Taken in 2011

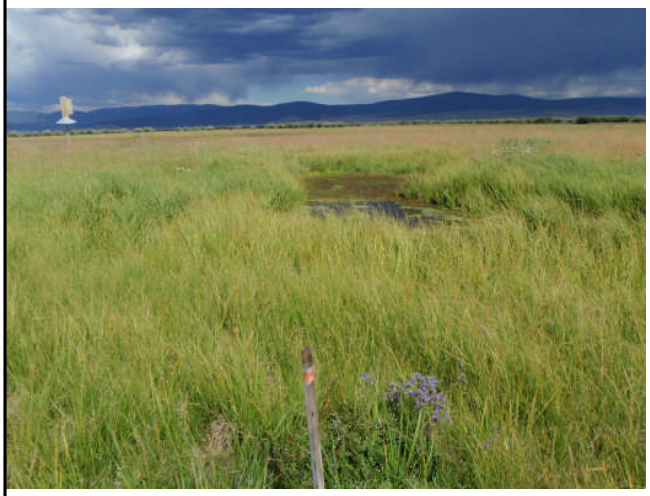


Photo Point 6 – *Photo 1*
Bearing: Southeast
Location: Veg Com 3
Taken in 2011



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



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



Photo Point 6 – *Photo 2* **Location:** Veg Com 3
Bearing: South **Taken in 2011**



Photo Point 6 – *Photo 3* **Location:** Veg Com 3
Bearing: Northwest **Taken in 2011**



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



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



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



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



Photo Point 7 – *Photo 1* **Location:** Veg Com 7
Bearing: East **Taken in 2011**



Photo Point 7 – *Photo 2* **Location:** Veg Com 1
Bearing: West **Taken in 2011**



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



Transect 1 – *Start*
Bearing: 5 deg
Location: Veg com 1
Taken in 2009



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



Transect 1 – *Start*
Bearing: 5 deg
Location: Veg com 1
Taken in 2010



Photo Point 7 – *Photo 3*
Bearing: South
Location: Veg Com 7
Taken in 2011



Transect 1 – *Start*
Bearing: 5 deg
Location: Veg com 1
Taken in 2011



Transect 1– End
Bearing: 185 deg
Location: Veg com 5
Taken in 2009



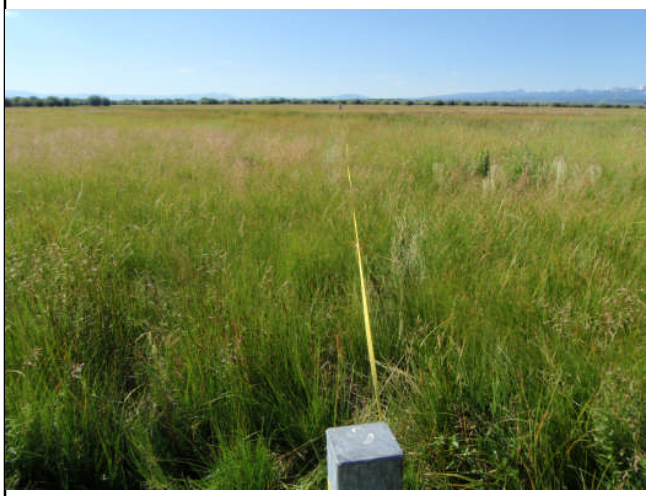
BH – 1U
Bearing: 120 deg
Location: Veg Com 1
Taken in 2011



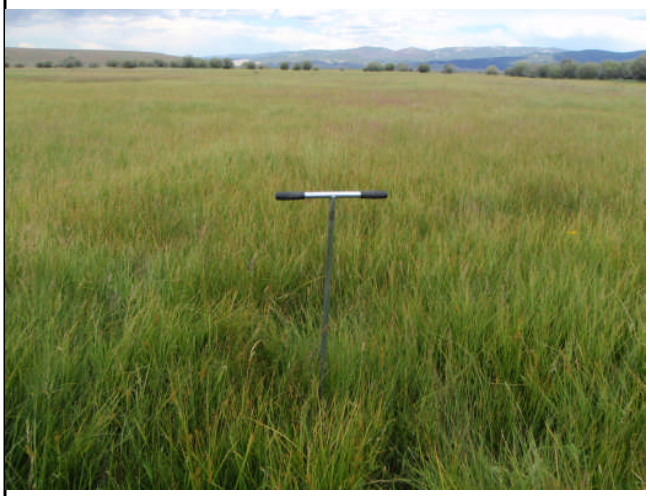
Transect 1– *End*
Bearing: 185 deg
Location: Veg com 5
Taken in 2010



BH – 1W
Bearing: 200 deg
Location: Veg Com 7
Taken in 2011



Transect 1– *End*
Bearing: 185 deg
Location: Veg com 5
Taken in 2011



BH – 2W
Bearing: 180 deg
Location: Veg Com 7
Taken in 2011



BH – 3U
Bearing: 270 deg

Location: Veg Com 1
Taken in 2011

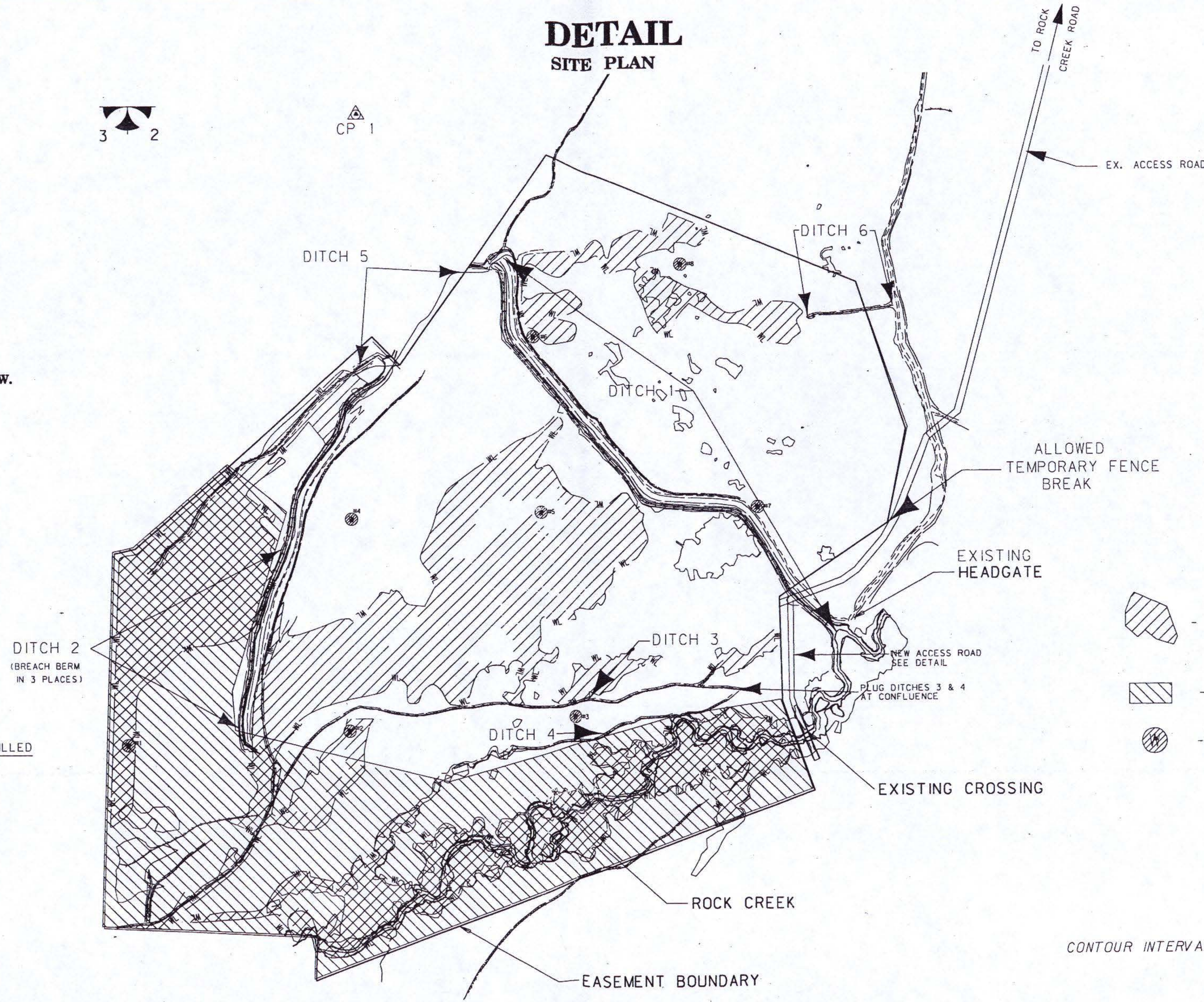
Appendix D

Project Plan Sheets

2011 MDT Wetland Mitigation Monitoring
Big Hole Grazing Association
Beaverhead County, Montana

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

DETAIL
SITE PLAN



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±

- DELINEATED WETLANDS DO NOT DISTURB
- DO NOT DISTURB
- MONITORING WELL

CONTOUR INTERVAL = 0.2m

MONTANA CADD
MONTANA DEPARTMENT OF TRANSPORTATION

...\4668rdpln999.dgn DESIGNED BY
2007 REVIEWED BY
30 PM CHECKED BY
CPS - U0277