MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Rock Creek Ranch
Hinsdale, Valley County, Montana

Prepared for:

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Helena, MT 59620-1001

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MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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MDT Project Number STPX-STPS 53(88)
Control Number 5230

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December 2010

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1. INTRODUCTION

The Rock Creek Ranch Wetland Mitigation 2010 Monitoring Report documents the sixth and final year of monitoring at the Rock Creek Ranch wetland mitigation site. Rock Creek Ranch is located in Valley County, approximately three miles east of Hinsdale along the north side of US Highway 2 (Figure 1). The ranch is situated east of Rock Creek and north of the Milk River in Watershed 11. The Montana Department of Transportation (MDT) sought to purchase up to 50 wetland credit acres in Watershed 11 (Milk River) to offset current and future wetland impacts resulting from proposed highway construction projects within the watershed.

The Rock Creek Ranch wetland mitigation project, constructed in fall 2004, sought to create or restore (re-establish) a maximum of 75 acres of primarily emergent and secondarily scrub/shrub wetlands within a 116.75-acre perpetual conservation easement in the southeast corner of the ranch property (Figure 1) (PBS&J 2009). The first 50 acres of established credits would be allocated to MDT. The department may purchase additional wetland credits as needed within the watershed. Approximately 1.08 acres of wetlands occurred in the project area prior to construction. The crediting does not include pre-existing wetlands located in an excavated east-west trench within the easement north of US Highway 2. The wetland ditch was constructed in 1996 by MDT prior to the Rock Creek project to mitigate for wetland impacts associated with the Hinsdale East and West road project.

The monitoring area is illustrated on Figure 2 of Appendix A and Figure 3 of Appendix A shows the mapped site features. The MDT Mitigation Monitoring Form, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the 2008 MDT Montana Wetland Assessment Forms completed in 2010 are included in Appendix B. Appendix C shows representative photographs of the site and Appendix D is the Project Plan Sheet.

The constructed wetlands were designed to collect water from precipitation and irrigation and natural seasonal flow from the Long Coulee Ditch. Irrigation water flows through the wetland mitigation area, which is the lowest elevation on the ranch with the exception of the US Highway 2 roadside ditch. Two low dikes located in the southeast property corner impound water on the site.

The mitigation wetlands were constructed to increase habitat diversity at the site. Project elements included excavating approximately two acres of four-foot deep sinuous sloughs within upland areas to provide open water and vegetated shallows and to maximize the edge effect. The site was also designed to provide habitat for sensitive wildlife species such as the black-necked stilt (*Himantopus mexicanus*). Spoils from the excavation were used to create two “islands” within the site. Willow seedlings were planted along the saturated zones of the flooded areas in spring 2007 with

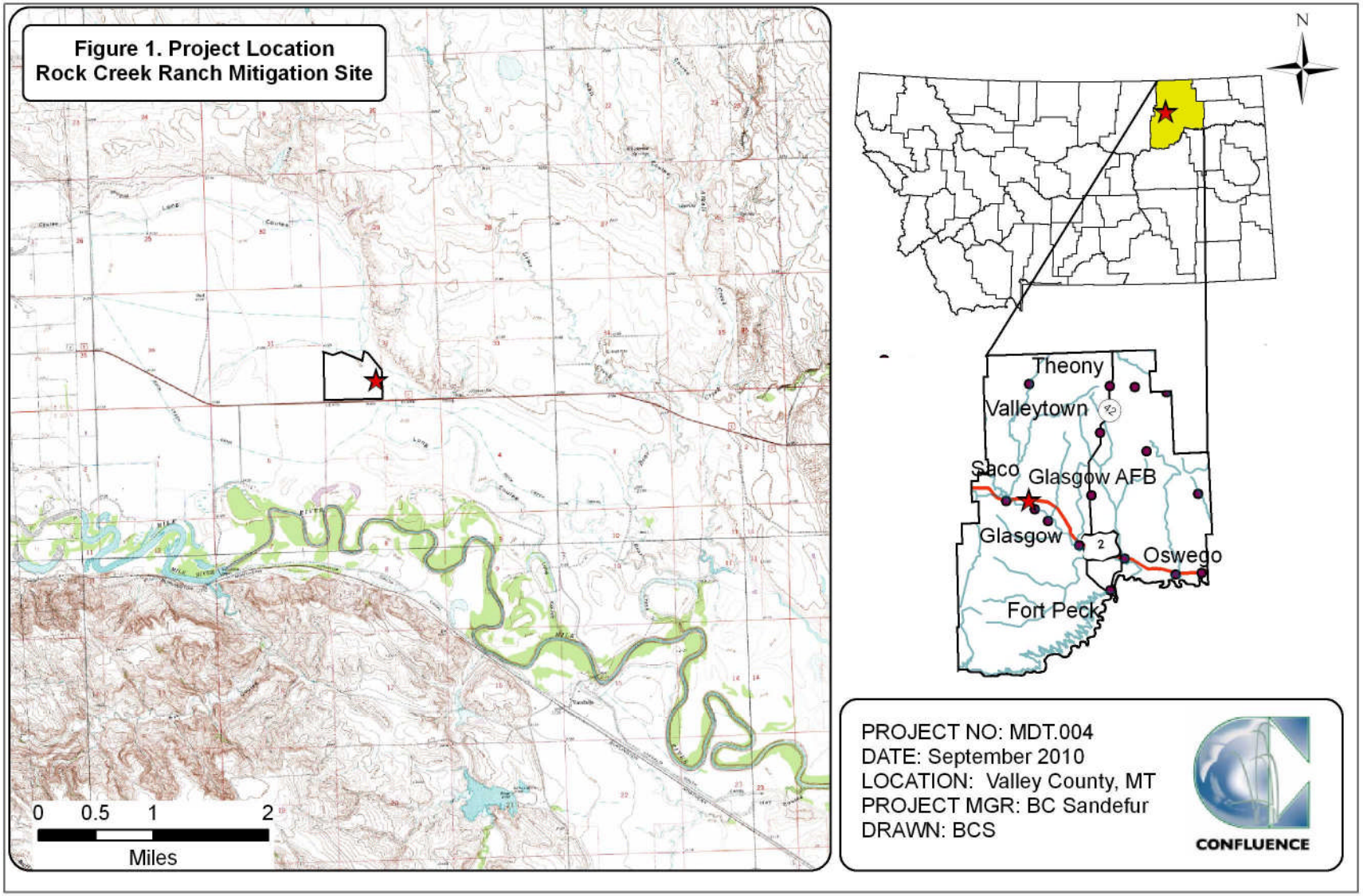

Figure 1. Project Location Rock Creek Ranch Mitigation Site.

the goal of establishing a minor scrub/shrub wetland component. Primary target wetland functions included general wildlife habitat, production export, flood attenuation, short and long term surface water storage, and sediment/nutrient/toxicant retention and removal.

The approved USACE credit ratios and approximate credit acreages are listed in Table 1 (PBS&J 2009). The short-term MDT credit goal is 50 acres with a potential long term option of approximately 76.26 credit acres.

Table 1. Credit ratios and acreages for Rock Creek Ranch Wetland Mitigation Site.

Mitigation Type	Credit Ratio	Mitigation Site Acreage	Credit Acreage
Wetland Creation/Re-Establishment	1:1	75	75
Wetland Enhancement (1,000 x 15 feet)	1:3	1.08	0.36
Upland Buffer (3,100 x 50 feet along south and southwest wetland borders)	1:4	3.6	0.9
Total Projected Wetland Mitigation Credit			**76.26**

2. METHODS

The site was monitored on August 3, 2010. Information contained on the Wetland Mitigation Site Monitoring Form and USACE Routine Wetland Determination Data Form (Environmental Laboratory 1987) was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation. The monitoring and wetland determination forms are included in Appendix B. Monitoring activity locations were mapped using a global positioning system (GPS) (Figure 2, Appendix A). Information collected included the wetland delineation, vegetation community mapping, vegetation transect monitoring, woody species survival, soils data collection, hydrology data collection, bird and wildlife use documentation, photographs, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as “permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season” (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered jurisdictional wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28

degrees Fahrenheit (Environmental Laboratory 1987). The frost-free period defined for the area characterized by the dominant soil map unit, Harlem Clay (23), is 110 to 130 days (USDA 2010). Areas defined as wetlands would require 14 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

The approximate design water depths are shown on the conceptual plan in Appendix D. Hydrological indicators outlined on the USACE wetland determination form were documented at five data points (RC-1 to RC-5) established within the project area. 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 and saturation requirements. No groundwater monitoring wells were installed at this site. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded electronically on the wetland determination 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 aerial photographs. Percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to 10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 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 a single vegetation belt transect approximately 10 feet wide and 385 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 B). Photographs were taken at the transect endpoints during the monitoring event (Appendix C). Woody species were planted at the site in May 2007. Woody species survival was tracked from 2007 through 2010.

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol “+”, “▲”, or “■” representing 0 to 0.1 acre, 0.1 to 1.0 acre, or greater than 1 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).

2.3. Soil

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

2.4. Wetland Delineation

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

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

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

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live

traps, and pitfall traps, were not used. A comprehensive wildlife species list of species observed from 2005 to 2010 was compiled.

2.6. Functional Assessment

Functional assessments were completed from 2005 to 2007 using the 1999 MDT Montana Wetland Assessment Method (Berglund 1999). The 2008 MDT Montana Wetland Assessment Method (Berglund and McEldowney 2008) was used to evaluate functions and values from 2008 through the remainder of the monitoring period. This method provides an objective means of assigning wetlands an overall rating and gives 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 (Berglund and McEldowney 2008). The 2008 revision refines ratings for some wetland functions, land management, and fish and wildlife habitat.

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

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points 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 2010 monitoring season. Points were collected using WAAS-enabled differentially corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

Dike structures, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current or future potential problems were documented.

3. RESULTS

3.1. Hydrology

Average annual precipitation recorded for the Glasgow WSO Airport station (243558) located approximately 25 miles east of the project site was 12.21 inches for the period of record from January 1895 through December 2009 (WRCC 2010). Annual precipitation rates from 2004 to 2009 were 12.47, 10.13, 10.33, 15.1, 15.56, and 10.17 inches, respectively (PBS&J 2009). The precipitation total from January 1 through August 31, 2010 was 14.19 inches. The total through August 2010 was 5.41 inches above normal (NOAA 2010).

Approximately 50 percent of the assessment area was inundated during the August 2010 investigation. The average depth of inundation across the site was 0.8 feet with a range of depths from 0.0 to 6.0 feet. The surface water depth at the emergent vegetation and open water boundary in the irrigation ditch located at the east edge of the site was 3 feet.

Data points RC-1 and RC-2 (Figure 2, Appendix A) exhibited saturation at 6 inches and 8 inches, respectively, below the ground surface (bgs) and the depth to free water in the pit (high water table) at 12 inches bgs. The sample plot for RC-3 represented a potential problem area based on seasonal hydrologic fluctuations and the absence of saturation within 12 inches of the ground surface during the August evaluation. Surface soil cracks provided evidence of seasonal inundation. The area was mapped as upland in 2009. There were no other primary indicators of wetland hydrology. Data point RC-4 located adjacent to the excavated slough was inundated with surface water to a depth of 8 inches Data point RC-5 was located in an upland with no wetland hydrologic indicators.

The excavated slough (community type 10 on Figure 3) that meanders through the center of the site was developed to provide open water and vegetated shallows and to maximize the edge effect. A majority of the slough contained ponded surface water approximately 1 to 4 feet deep. A vegetation cover of aquatic plants and broad-leaf cattail (*Typha latifolia*) has developed along the periphery of the slough.

3.2. Vegetation

A comprehensive list of 54 vegetation species identified at Rock Creek Ranch from 2005 through 2010 is shown on Table 2 and the Monitoring Forms (Appendix B). Seven vegetation community types, six wetland and one upland, were identified in August 2010 (Figure 3, Appendix A). Community types were Type 1 – *Typha latifolia/Alisma gramineum* Wetland, Type 2 – *Hordeum jubatum/Rumex crispus* Wetland, Type 3 – *Populus deltoides*/*Salix exigua* Wetland, Type 5 – Upland; Type 9 – *Alopecurus pratensis*/*Hordeum jubatum* Wetland, Type 10 – *Najas flexilis/Lemna minor* Wetland, and Type 11 – *Alisma gramineum/Najas flexilis* Wetland. Type 12 – Open water (number 12 on Figure 3, Appendix A) associated with Long's Coulee is included under the heading Wetlands and Other Special Aquatic Sites. Long's Coulee (Type 12) was

characterized by surface water depths greater than three feet with a well-developed wetland vegetation fringe.

Dominant species within each of these communities are listed on the Monitoring Forms (Appendix B). Communities 1, 2, 3, and 5 mapped in 2010 corresponded to the 2009 community types. Community 9 transitioned from *Rumex*/*Hordeum* to *Alopecurus pratensis*/*Hordeum jubatum* in 2010. Communities 10 and 11 developed in 2010. The open water slough was renamed as a separate type (Community 10) in 2010. The 2009 community Type 8 – *Rumex crispus / Typha latifolia* transitioned to Type 11 – *Alisma gramineum/Najas flexilis* in 2010 (Figure 3, Appendix A).

Table 2. Comprehensive vegetation species list at Rock Creek Ranch from 2005 to 2010.

Scientific Name	Common Name	Region 4 Wetland Indicator Status[1]
Agropyron repens	quackgrass	FAC
Agropyron smithii	wheatgrass,western	FACU
Agropyron trachycaulum	wheatgrass,slender	FACU
Agrostis alba	redtop	FACW
Alisma gramineum	water-plantain,narrow-leaf	OBL
Alopecurus pratensis	foxtail,meadow	FACW
Ammannia coccinea	ammannia,purple	OBL
Artemisia cana	sagebrush,silver	FACU
Avena fatua	**oat, wild**	NL
Beckmannia syzigachne	sloughgrass, American	OBL
Bromus inermis	smooth brome	NL
Bromus japonicus	**brome, Japanese**	FACU
Carex vesicaria	sedge,inflated	OBL
Chenopodium album	goosefoot,white	FAC
Cirsium arvense	thistle,creeping	FACU
Coreopsis tinctoria	tickseed,golden	FAC
Descurainia sophia	**mustard, common tansy**	NL
Echinochloa crusgalli	grass,barnyard	FACW
Eleocharis palustris	spikerush,creeping	OBL
Glyceria striata	**grass,fowl manna**	OBL
Grindelia squarrosa	gumweed,curly-cup	UPL
Helianthus annuus	sunflower,common	FACU
Hordeum jubatum	barley,fox-tail	FACW
Iva axillaris	sumpweed,small-flower	FACU
Kochia scoparia	summer-cypress, Mexican	FAC
Lactuca serriola	lettuce,prickly	FACU
Lemna minor	duckweed,lesser	OBL
Lepidium densiflorum	pepper-grass,dense-flower	FACU

[1]Region 4 (Great Plains) (Reed 1988).
New species identified in 2010 are show in **bold** type.

Table 2 (Continued). Comprehensive vegetation species list at Rock Creek Ranch from 2005 to 2010.

Scientific Name	Common Name	Region 4 Wetland Indicator Status[1]
Medicago sativa	alfalfa	NL
Melilotus alba	sweetclover,white	FACU-
Melilotus officinalis	sweetclover,yellow	FACU-
Myriophyllum sp	**milfoil, water**	NL
Najas flexilis	naiad,slender	OBL
Phleum pratense	timothy	FACU
Plantago major	plantain,common	FAC
Polygonum amphibium	smartweed,water	OBL
Populus deltoides	cotton-wood,eastern	FAC
*Populus trichocarpa**	black cottonwood	FACW
Potamogeton pectinatus	pondweed,sago	OBL
Potamogeton pusillus	**pondweed,small**	OBL
Rumex crispus	dock,curly	FACW
Rumex maritimus	dock,golden	FACW+
Sagittaria cuneata	arrow-head,northern	OBL
Salix amygdaloides	willow,peach-leaf	FACW
Salix exigua	willow,sandbar	FACW+
Salix lutea	willow,yellow	FACW+
Scirpus acutus	bulrush,hard-stem	OBL
Scirpus maritimus	bulrush,saltmarsh	NI
Scirpus microcarpus	**bulrush,small-fruit**	OBL
Spartina pectinata	cordgrass,prairie	FACW
Thlaspi arvense	penny-cress,field	NI
Tragopogon dubius	yellow salsify	NL
Typha latifolia	cattail,broad-leaf	OBL

[1]Region 4 (Great Plains) (Reed 1988).
New species identified in 2010 are show in **bold** type.
*Commonly accepted name for species not included in 1988 list.

Wetland community Type 1 – *Typha latifolia/Alisma gramineum* occurred in the Long Coulee ditch and across the center of the site from west to east (Figure 3, Appendix A). Broad-leaf cattail (*Typha latifolia*), narrow-leaf water plantain (*Alisma gramineum*) creeping spikerush (*Eleocharis palustris*), American sloughgrass (*Beckmannia syzigachne*), and slender naiad (*Najas flexilis*) dominated the wetland community. A photograph of community 1 is shown on page C-6 of Appendix C.

Wetland community Type 2 – *Alopecurus pratensis*/*Hordeum jubatum* has developed northwest and southwest of the outer perimeter of Type 1. Dominant species included foxtail barley (*Hordeum jubatum*), curly dock (*Rumex crispus*), meadow foxtail (*Alopecurus pratensis*), and common cattail. A photograph of Community 2 is shown on page C-5 of Appendix C.

Wetland community Type 3 – *Populus deltoides*/*Salix exigua* was identified in the roadside ditches created by MDT that border the south mitigation site boundary.

Woody species including Eastern cottonwood (*Populus deltoides*), peach-leaf willow (*Salix amygdaloides*), and sandbar willow (*Salix exigua*) dominated the cover.

Upland community Type 5 was a characterization of relict agricultural fields in the southwest corner of the site. Herbaceous grasses including wild oats, Western wheatgrass, Japanese brome (*Bromus japonicas*), quackgrass (*Agropyron repens*), slender wheatgrass (*Agropyron trachycaulum*), field pennycress (*Thlapsi arvense*), foxtail barley, and prickly lettuce (*Lactuca serriola*) dominated the community (page C6 of Appendix C).

Cover in the pre-existing wetland Type 9 – *Alopecurus/Hordeum* shifted from a dominance of curly dock to meadow foxtail from 2009 to 2010. Wetland data points RC-2 and RC-3 were located within Type 9. A photo of the community is shown on page C-5 of Appendix C.

A majority of the excavated slough was identified as community Type 10 – *Najas/Lemna* contained ponded surface water. Dominant species included slender naiad, lesser duckweed (*Lemna minor*), water mil-foil (*Myriophylium* spp.), and broad-leaf cattail.

Wetland community Type 11 – *Alisma/Najas* was identified in two inundated wetland areas, one between a large meander in the slough and the other southeast of the slough. The transect terminates in community 11. The community is dominated by narrow-leaf water plantain, slender naiad, creeping spikerush, broad-leaf cattail, and American sloughgrass.

Type 12, Long's Coulee, open water, was identified within the channel below the ordinary high water mark (OHWM) of the narrow ditch that parallels the east boundary. The open water encompassed minor cover percentages of lesser duckweed, slender naiad, and common cattail. The wetland fringe was mapped within Community 1 – *Typha/Alisma*.

An infestation of Canada thistle (*Cirsium arvense*), a Priority 2B noxious weed, was identified in the northwest corner of the site (Figure 3, Appendix A). The infestation was less than 0.1 acre in extent and represented 5 to 25 percent of the total vegetation cover in the area. Trace amounts of Canada thistle were also identified in Type 5 – Upland. Non-noxious, invasive species included prickly lettuce and field pennycress.

Vegetation transect data are summarized in Table 3 and Charts 1 and 2. Vegetation details are included on the Monitoring Forms (Appendix B). Transect endpoints are shown on the photos on pages C-4 and C-5 of Appendix C. Two wetland community types, 1 and 11, were identified on the transect. The species composition was consistent from 185 feet to 385 feet. The interval was dominated by narrow-leaf water plantain and creeping spikerush in the inundated

areas and by broad-leaf cattail in the less inundated areas. Only dead curly dock stems were observed, suggesting increased levels of inundation from above average precipitation during the 2010 growing season. There was abundant cover of green algae, pond weed, and slender naiad.

Table 3. Data summary of Transect 1 from 2005 to 2010 at Rock Creek Ranch.

Monitoring Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Transect Length (feet)	385	385	385	385	385	385
Vegetation Community Transitions along Transect	2	1	1	0	1	1
Vegetation Communities along Transect	2	2	2	1	2	2
Hydrophytic Vegetation Communities along Transect	1	2	2	1	2	2
Total Vegetative Species	9	7	6	4	7	8
Total Hydrophytic Species	5	6	6	3	7	8
Total Upland Species	4	1	0	1	0	0
Estimated % Total Vegetative Cover	100	70	80	85	90	95
% Transect Length Comprising Hydrophytic Vegetation Communities	30	100	100	100	100	100
% Transect Length Comprising Upland Vegetation Communities	70	0	0	0	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

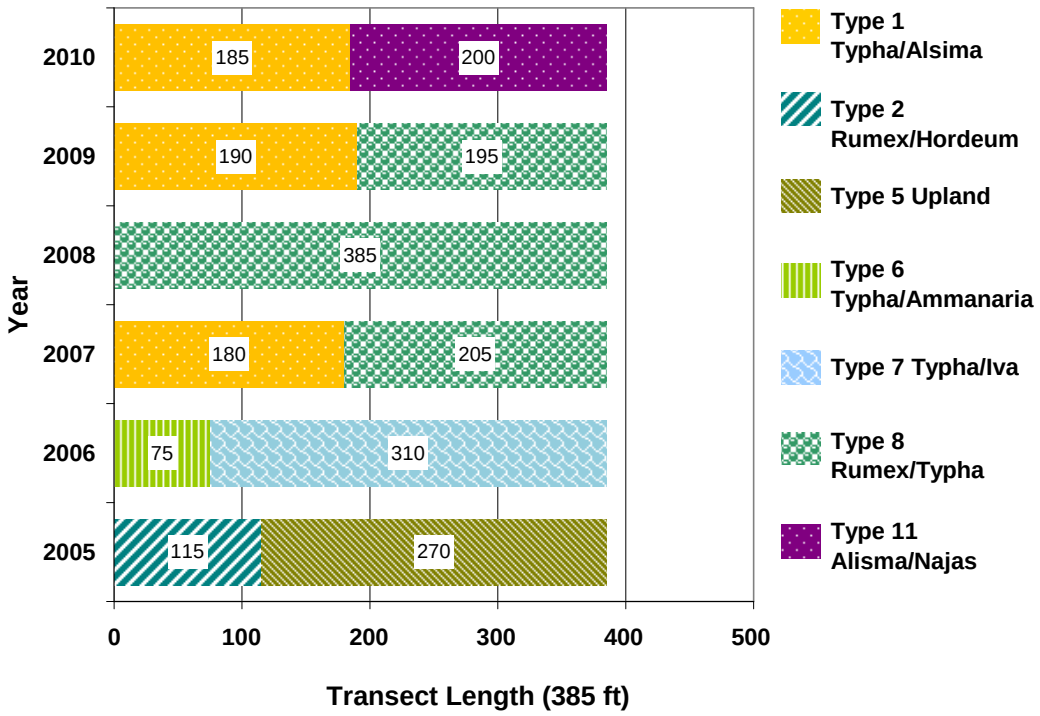

Chart 1. Transect map showing vegetation types on Transect 1 from the start (0 feet) to end (385 feet) for 2005 to 2010.

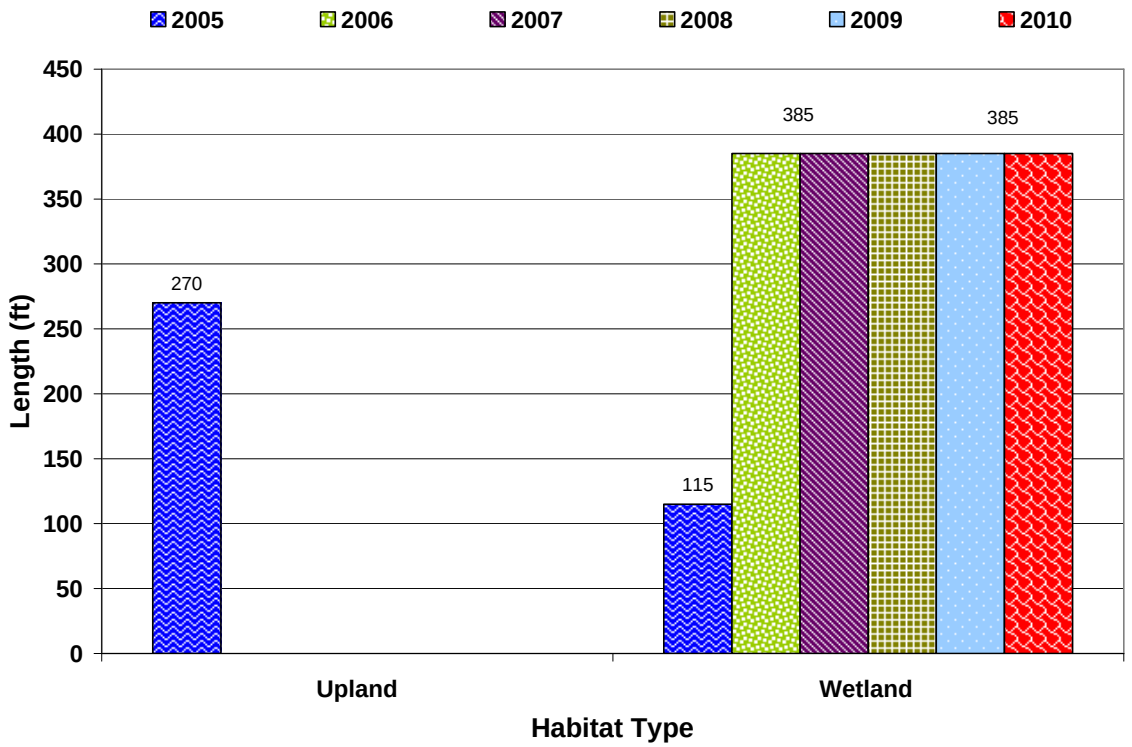

Chart 2: Length of habitat types within Transect 1 for 2005 to 2010.

Approximately 844, 30- and 40-cubic inch and 1-gallon black cottonwood and sandbar, yellow, and peach-leaf willows were planted at the site in 2007. No performance standards were associated with planted woody species survival. No live woody materials were observed in 2008, 2009, and 2010. The 2009 report attributed the mortality to excess inundation after planting and substantial deer browsing (PBS&J 2009). No volunteer woody species were observed within the primary mitigation area, although an abundance of volunteer woody species are present within the ditch along the southern periphery of the site and may serve as a long-term seed source as environmental conditions allow.

3.3. Soil

Soil at the mitigation site is mapped as Harlem clay. The soil is a well drained, non-hydric clay to silty clay loam found on floodplains and terraces. The taxonomic classification is a frigid Ustic Torrifluvents. Permeability is slow (0.06 to 0.2 inches/hour) and the soil type is classified as “favorable” for reservoir development (PBS&J 2009). The NRCS excavated four soil pits in the areas designed for inundation with a backhoe in November 2000 (PBS&J 2009). Pit logs indicated clay to depths of 25, 32, and 29 inches in three of the pits. Soil at pit four was classified as silty clay to 12 inches, clay from 12 to 22 inches, and loam / clay loam from 22 to 40 inches (PBS&J 2009). The soils observed in the 2010 test pits generally correlated with the defined map unit.

Five soil pits were excavated during the wetland delineation (Figure 2, Appendix A). Data points RC-1 to RC-4 were located in areas delineated as wetlands and

RC-5 was located in upland. The profile at RC-1 to RC-3 revealed clay soil (10 YR 4/1) with redoximorphic concentrations (10 YR 4/4) in the matrix. The soil at RC-4 was clay (10 YR 4/1) with manganese concretions (10 YR 2/1) in the matrix. The presence of a low-chroma color and redoximorphic features in these soils provided a positive indication of hydric soils. The upland soil at RC-5 was a light colored, friable clay (10 YR 4/2).

3.4. Wetland Delineation

Five data points (RC-1 through RC-5) were sampled on August 3, 2010 (USACE wetland forms, Appendix B; Photos on pages C-5 and C-6, Appendix C). Data points RC-1 to RC-4 were located in emergent marsh and wet meadow wetlands. The delineated wetland boundaries are illustrated on Figure 3 (Appendix A). Soil, vegetation, and hydrology characteristics at each data point are discussed in the preceding sections and on the USACE forms (Appendix B).

Delineation acreage results are listed in Table 4. Wetland acreage totals did not include the pre-existing MDT-created wetland ditches along US Highway 2, as the area was not included as part of the current mitigation project. The mitigation site encompassed approximately 1.08 acres of wetland prior to project implementation. The 2010 survey identified 1.34 acres of wetlands within the pre-existing corridor along the southern boundary of the mitigation area, suggesting this area may have been enhanced as a result of the creation of the adjacent wetlands. Total waters of the US including wetlands developed onsite through 2010 is 91.9 acres, an increase of 5.5 acres from 2009. The 2010 total included the pre-existing wetlands and open water areas (Type 12) found in the channel on the east boundary. The channel exhibited surface water depths greater than three feet and a well-developed wetland fringe. The surface water below the ordinary high water mark of the channel was identified as a water of the US.

Table 4. Wetland delineation acreage results in 2010 for the Rock Creek Ranch Wetland Mitigation Site.

Waters of the US	Acreage
Waters of the US inc. Wetlands	91.90
Pre-existing wetland	1.34*
Open Water	1.59**
Net Wetlands	**88.98**

*Does not include pre-existing ditch wetlands along US HWY 2. Acreage in 2003 was 1.08.
**Water of the US.

3.5. Wildlife

Twelve birds species including the American coot (*Fulica americana*), Canada goose (*Branta canadensis*) Cinnamon teal (*Anas cyanocephalus*), marsh wren (*Cistothorus palustris*), red-winged blackbird (*Agelaius phoeniceus*), blue-winged teal (*Anas discourse*), canvas back (*Aythya valisineria*), common loon (*Gavia immer)*, common raven (*Corvus corax*), mallard (*Anas platyrhynchos*), northern shoveler (*Anas clypeata*) and ruddy duck (*Oxyura jamaicensis*) were observed in 2010. Amphibians and reptiles observed in 2010 included the Northern leopard frog, western toad (*Bufo boreas*), plains gartersnake (*Thamnophis radix*), and painted turtle (*Chysemys picta*). White-tailed deer (*Odocoileus virginianus*), and the tracks of muskrat (*Ondatra zibethicus*) and raccoon (*Procyon lotor*) were recorded.

Table 5. Wildlife species observed at the Rock Creek Ranch Wetland Mitigation Site from 2005 to 2010.

COMMON NAMES	SCIENTIFIC NAMES
AMPHIBIAN	
Northern Leopard Frog	*Rana pipiens*
Western Chorus Frog	*Pseudacris triseriata*
Western Toad	***Bufo boreas***
BIRD	
American Avocet	*Recurvirostra americana*
American Bittern	*Botaurus lentiginosus*
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American White Pelican	*Pelecanus erythrorhynchos*
Bald Eagle	*Haliaeetus leucocephalus*
Bank Swallow	*Riparia riparia*
Barn Swallow	*Hirundo rustica*
Black-necked Stilt	*Himantopus mexicanus*
Blue-winged Teal	*Anas discors*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Bullock's Oriole	*Icterus bullockii*
Canada Goose	*Branta canadensis*
Canvasback	***Aythya valisineria***
Cinnamon Teal	***Anas cyanoptera***
Common Loon	***Gavia immer***
Common Raven	***Corvus corax***
Common Yellowthroat	*Geothlypis trichas*
Eared Grebe	*Podiceps nigricollis*
Eastern Kingbird	*Tyrannus tyrannus*
European Starling	*Sturnus vulgaris*

New species identified in 2010 are listed in **bold** type.

Table 5 (Continued). Wildlife species observed at the Rock Creek Ranch Wetland Mitigation Site from 2005 to 2010.

COMMON NAMES	SCIENTIFIC NAMES
BIRD	
Gadwall	*Anas strepera*
Golden Eagle	*Aquila chrysaetos*
Hairy Woodpecker	*Picoides villosus*
Killdeer	*Charadrius vociferus*
Long-billed Curlew	*Numenius americanus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Mallard	*Anas platyrhynchos*
Marbled Godwit	*Limosa fedoa*
Marsh Wren	*Cistothorus palustris*
Mourning Dove	*Zenaida macroura*
Northern Harrier	*Circus cyaneus*
Northern Pintail	*Anas acuta*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Northern Shoveler	*Anas clypeata*
Redhead	*Aythya americana*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ring-necked Pheasant	*Phasianus colchicus*
Ruddy Duck	*Oxyura jamaicensis*
Sandhill Crane	*Grus canadensis*
Savannah Sparrow	*Passerculus sandwichensis*
Semipalmated Sandpiper	*Calidris pusilla*
Sora	*Porzana carolina*
Swainson's Hawk	*Buteo swainsoni*
Swamp Sparrow	*Melospiza georgiana*
Townsend's Warbler	*Dendroica townsendi*
Tree Swallow	*Tachycineta bicolor*
Upland Sandpiper	*Bartramia longicauda*
Vesper Sparrow	*Pooecetes gramineus*
Western Meadowlark	*Sturnella neglecta*
Western Sandpiper	*Calidris mauri*
Western Tanager	*Piranga ludoviciana*
Willet	*Tringa semipalmata*
Willow Flycatcher	*Empidonax traillii*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Yellow-rumped Warbler	*Dendroica coronata*

New species identified in 2010 are listed in **bold** type.

Table 5 (Continued). Wildlife species observed at the Rock Creek Ranch Wetland Mitigation Site from 2005 to 2010.

COMMON NAMES	SCIENTIFIC NAMES
MAMMAL	
American Mink	*Mustela vison*
Badger	*Taxidea taxus*
Coyote	*Canis latrans*
Long-tailed Weasel	*Mustela frenata*
Muskrat	***Ondatra zibethicus***
Raccoon	*Procyon lotor*
Richardson's Ground Squirrel	*Spermophilus richardsonii*
White-tailed Deer	*Odocoileus virginianus*
White-tailed Jack Rabbit	*Lepus townsendii*
REPTILE	
Painted Turtle	*Chrysemys picta*
Plains Gartersnake	*Thamnophis radix*

New species identified in 2010 are listed in **bold** type.

3.6. Functional Assessment

The functional assessment results for 2010 are summarized in Table 6 and presented in Appendix B. Baseline conditions of the functions and values of the site wetlands were evaluated in 2003 using the 1999 MDT assessment method (Berglund 1999). The 2009 and 2010 assessments were completed using the 2008 assessment method (Berglund and McEldowney 2008).

The functional rating for the site improved from a Category IV wetland to a Category II wetland between the years 2003 to 2009 (Table 6). The assessment area in 2010 included created wetlands and the open water area (Community 12) in the channel located on the east boundary and did not include the pre-existing wetlands. The percent possible score increased from 69 percent in 2009 to 80 percent in 2010 based on an increase in the groundwater discharge and recharge function.

Highly rated functions included MTNHP species habitat (scarlet ammannia), general wildlife habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, production export/food chain support, and groundwater discharge/recharge.

Table 6. Summary of 2003 (Baseline) and 2009 and 2010 wetland function/value ratings and functional points at the Rock Creek Ranch Mitigation Project.

Function and Value Parameters from the MDT Montana Wetland Assessment Method	Pre-Project Wetland Ditches (2003)[1]	Pre-Project Isolated Wetland Patches (2003)[1]	Post-Project (2009)[2]	Post-Project (2010)[2]
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.0)	Low (0.1)	Low (0.1)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	High (1.0)	High (1.0)
General Wildlife Habitat	Low (0.3)	Low (0.1)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA
Flood Attenuation	Low (0.2)	NA	NA	NA
Short and Long Term Surface Water Storage	Low (0.3)	Low (0.3)	High (0.9)	High (0.9)
Sediment/Nutrient/Toxicant Removal	Low (0.3)	Mod (0.5)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Low (0.2)	NA	NA	NA
Production Export/Food Chain Support	Low (0.3)	Low (0.2)	High (1.0)	Exc. (1.0)
Groundwater Discharge/Recharge	Low (0.1)	Low (0.1)	Low (0.1)	High (1.0)
Uniqueness	Low (0.1)	Low (0.1)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Mod (0.1)	Mod (0.1)
Actual Points / Possible Points	**2.3 / 11**	**1.5 / 9**	**5.5 / 8**	**6.4 / 8**
% of Possible Score Achieved	**21**	**17**	**69**	**80**
Overall Category	**IV**	**IV**	**II**	**II**
Total Acreage of Assessed Wetlands within Easement (ac)	**0.77**	**0.31**	**86.40**	**90.57**
Functional Units (acreage x actual points)	**1.77**	**0.47**	**475.20**	**579.65**
Net Acreage Gain (ac)	NA	NA	**85.32**	**4.17**
Net Functional Unit Gain	NA	NA	**472.96**	**104.45**

[1](Berglund 1999).
[2](Berglund and McEldowney 2008).

3.7. Current Credit Summary

Approximately 91.9 acres of waters of the US were delineated on the mitigation site in 2010, which encompassed 1.59 acres of open water and 1.34 acres of pre-existing wetlands identified prior to mitigation site construction. Approximately 90.57 acres (total less pre-existing) was credited at a 1:1 ratio (Table 7). Only 1.08 acres of pre-existing wetland out of the 1.34 acres surveyed was applied toward the enhancement credit at a 3:1 ratio. The preservation of approximately 3.6 acres (out of 27.72 upland acres total on the site) of upland buffer was included for credit in the easement at a ratio of 4:1 resulting in 0.9 acres of credit. The maximum calculated credit for the final year of monitoring, at the Rock Creek Ranch mitigation site is 91.83 acres.

Table 7. Summary of calculated credit acreage in 2010 at Rock Creek Ranch.

Mitigation Type	Credit Ratio	2005 Projected Wetland Acreage	2005 Projected Credit Acreage	2010 Wetland Acreage	2010 Credit Acreage[1]
Wetland Creation/Re-Establishment	1:1	75	75	90.57	90.57
Wetland Enhancement (1,000 x 15 feet)	1:3	1.08	0.36	1.08	0.36
Upland Buffer (3,100 x 50 feet along south and southwest wetland borders)	1:4	3.6	0.9	3.6	0.90
Total Projected Wetland Mitigation Credits			**76.01**		**91.83**

[1]Wetland creation acreage includes 1.59 acres of open water (Community 12).

3.8. Photo Documentation

Photographs taken of photo points one through five (PP1 through PP5, Figure 2, Appendix A) in 2009 and 2010 are shown on pages C-1 to C-4 of Appendix C. Photographs of vegetation transect end points taken in 2009 and 2010 are shown on pages C-4 and C-5 of Appendix C. Photos of data points RC-1 through RC-5 are included on pages C-5 and C-6 of Appendix C.

3.9. Maintenance Needs

No man-made nesting structures were installed onsite. The control structures were in good repair. An infestation of Canada thistle (*Cirsium arvense*), a Priority 2B noxious weed, was identified in 2010 in the northwest corner of the site (Figure 3, Appendix A), a limited number of plants were also identified in Type 5 - Upland. The weed control plan should continue to be implemented to prevent encroachment of the weed into disturbed areas.

4. REFERENCES

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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Rock Creek Ranch Wetland Mitigation Site
Valley County, Montana

Figure 2: 2010 Monitoring Activity Locations

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

LOCATION: Cascade Co., MT

PROJECT NO: STPX-STPS 53(88)

FILE: Monitor2010.mxd

Project Name: Rock Creek Ranch Wetland Mitigation

Drawing Title: 2010 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	XXX	XXX

SCALE: Noted

Drawn: September 10, 2010

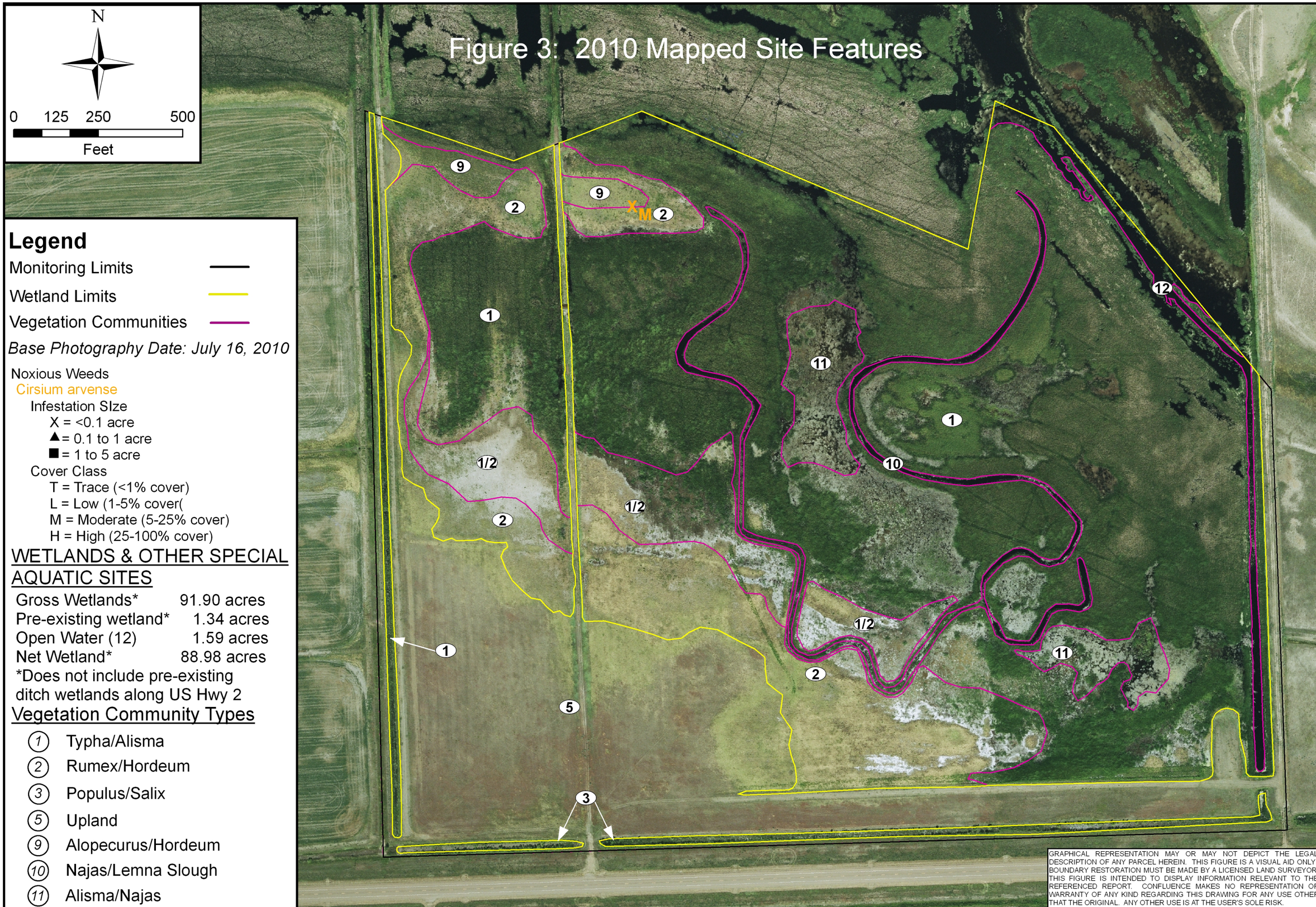
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -

Figure 3: 2010 Mapped Site Features



Legend

Monitoring Limits

Wetland Limits

Vegetation Communities

Base Photography Date: July 16, 2010

Noxious Weeds

Cirsium arvense

Infestation SIze

- X = <0.1 acre
- ▲= 0.1 to 1 acre
- ■= 1 to 5 acre

Cover Class

- T = Trace (<1% cover)
- L = Low (1-5% cover(
- M = Moderate (5-25% cover)
- H = High (25-100% cover)

WETLANDS & OTHER SPECIAL AQUATIC SITES

Gross Wetlands*	91.90 acres
Pre-existing wetland*	1.34 acres
Open Water (12)	1.59 acres
Net Wetland*	88.98 acres

*Does not include pre-existing ditch wetlands along US Hwy 2

Vegetation Community Types

1. Typha/Alisma
2. Rumex/Hordeum
3. Populus/Salix
5. Upland
9. Alopecurus/Hordeum
10. Najas/Lemna Slough
11. Alisma/Najas

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

LOCATION: Cascade Co., MT

PROJECT NO: STPX-STPS 53(88)

FILE: Monitor2010.mxd

Project Name: Rock Creek Ranch Wetland Mitigation

Drawing Title: 2010 Mapped Site Features

DRAWN: BCS | CHECKED: XXX | APPROVED: XXX

SCALE: Noted

Drawn: September 10, 2010

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

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

MDT Wetland Mitigation Monitoring
Rock Creek Ranch Wetland Mitigation Site
Valley County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Rock Creek Ranch Assessment Date/Time 8/3/2010 9:32:02 AM

Person(s) conducting the assessment: B. Sandefur

Weather: Clear & sunny, warm Location: West of Hinsdale, north of US HWY 2

MDT District: Glendive Milepost: 520

Legal Description: T 27N R 43E Section(s) 1

Initial Evaluation Date: 5/18/2005 Monitoring Year: 6 #Visits in Year: 1

Size of Evaluation Area: 119 (acres)

Land use surrounding wetland:

Agricultural

HYDROLOGY

Surface Water Source: Rock Creek Canal irrigation return

Inundation: ☑ Average Depth: 0.8 **(ft)** Range of Depths: 0-6 **(ft)**

Percent of assessment area under inundation: 50 %

Depth at emergent vegetation-open water boundary: 3 **(ft)**

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

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

Groundwater Monitoring Wells

Record depth of water surface below ground

Additional Activities Checklist:

☑ Map emergent vegetation-open water boundary on aerial photograph.

☑ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

VEGETATION COMMUNITIES

Site Rock Creek Ranch

(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:** Typha latifolia / Alisma gramineum

Species	Cover class	Species	Cover class
Alisma gramineum	4	Alopecurus pratensis	1
Beckmannia syzigachne	2	Eleocharis palustris	4
Najas flexilis	2	Polygonum amphibium	0
Rumex maritimus	0	Sagittaria cuneata	0
Scirpus microcarpus	0	Typha latifolia	5

Comments:

Community # 2 **Community Type:** Hordeum jubatum / Rumex crispus

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Hordeum jubatum	5
Iva axillaris	1	Lepidium densiflorum	1
Rumex crispus	5	Spartina pectinata	0
Typha latifolia	2		

Comments:

Community # 3 **Community Type:** Populus deltoides / Salix exigua

Species	Cover class	Species	Cover class
Eleocharis palustris	1	Glyceria striata	0
Lemna minor	1	Populus deltoides	4
Rumex maritimus	0	Salix amygdaloides	4
Salix exigua	3	Scirpus microcarpus	0

Comments:

Community # 5 Community Type: Upland /

Species	Cover class	Species	Cover class
Agropyron repens	2	Agropyron smithii	3
Agropyron trachycaulum	2	Artemisia cana	0
Avena fatua	4	Bromus japonicus	3
Chenopodium album	1	Cirsium arvense	0
Descurainia sophia	1	Grindelia squarrosa	1
Helianthus annuus	1	Hordeum jubatum	2
Kochia scoparia	1	Lactuca serriola	2
Phleum pratense	0	Rumex crispus	1
Thlaspi arvense	2	Tragopogon dubius	1

Comments:

Upland, pht 5650

Community # 9 Community Type: Alopecurus pratensis / Hordeum jubatum

Species	Cover class	Species	Cover class
Agropyron smithii	3	Alopecurus pratensis	4
Avena fatua	2	Chenopodium album	1
Helianthus annuus	0	Hordeum jubatum	4
Iva axillaris	1	Lactuca serriola	1
Rumex crispus	2		

Comments:

Community mapped as Rumex/Hordeum in 2009, now dominated by AloPrat/HorJub

Community # 10 Community Type: Najas flexilis / Lemna minor

Species	Cover class	Species	Cover class
Lemna minor	3	Myriophyllum spp.	3
Najas flexilis	3	Typha latifolia	2

Comments:

Community # 11 Community Type: Alisma gramineum / Najas flexilis

Species	Cover class	Species	Cover class
Alisma gramineum	5	Beckmannia syzigachne	2
Eleocharis palustris	2	Najas flexilis	4
Typha latifolia	2		

Comments:

Community # 12 **Community Type:** Open water /

Species	Cover class	Species	Cover class
Lemna minor	2	Najas flexilis	2
Open Water	5	Typha latifolia	1

Comments:

VEGETATION TRANSECTS

Site: Rock Creek Ranch Date: 8/3/2010 9:32:02 AM

Transect Number: 1 **Compass Direction from Start:** 0

Interval Data:

Ending Station 185 **Community Type:** Typha latifolia / Alisma gramineum

Species	Cover class	Species	Cover class
Alisma gramineum	4	Alopecurus pratensis	0
Potamogeton pusillus	3	Rumex crispus	0
Typha latifolia	5		

Ending Station 385 **Community Type:** Alisma gramineum / Najas flexilis

Species	Cover class	Species	Cover class
Alisma gramineum	5	Beckmannia syzigachne	0
Eleocharis palustris	2	Najas flexilis	4
Typha latifolia	3		

Transect Notes:

Species composition consistent from 185-385ft. Changes in dominant species, primarily dominated by typha, with more open areas dominated by AIisma and Ele pal. No live rumex, only last year dead stalks. Aundant green algae, pond weed, and najas.

PLANTED WOODY VEGETATION SURVIVAL

Rock Creek Ranch

Planting Type	#Planted	#Alive	Notes
Populus trichocarpa	42	0	No stems identified
Salix amygdaloides	126	0	No stems identified
Salix exigua	465	0	No stems identified
Salix lutea	211	0	No stems identified
Total	844	0	

Comments

No

Rock Creek Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure:_____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Coot	5	L	
Blue-winged Teal	3	FO	MA, OW
Canada Goose	8	L	MA, OW
Canvasback	1	FO	MA, OW
Cinnamon Teal	1	FO	MA, OW
Common Loon	3	L	OW
Common Raven	7	FO	
Mallard	4	BP, N	MA, OW
Marsh Wren	1	FO	
Northern Shoveler	1	FO	MA
Red-winged Blackbird	2	FO	MA
Ruddy Duck	2		MA, OW

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
Muskrat		Yes	No	Yes	
Northern Leopard Frog	5	No	No	No	
Plains Gartersnake	2	No	No	No	
Raccoon		Yes	Yes	No	
Western Toad	1	No	No	No	
White-tailed Deer	3	No	No	No	

Wildlife Comments:

Rock Creek Ranch

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
5618	48.39444	-106.943359	0	pp2
5620			0	pp1, north
5622			270	pp1, west
5623	48.394444	-106.945473	0	veg tran 1, start
5638			180	veg tran 1, end
5640			270	uplnd veg com along dike
5642			0	hor/rum and typha veg com boundary
5647	48.394459	-106.949898	0	pp3, north
5648	48.394459	-106.949898		pp4, east
5654			90	pp4
5655			180	pp4
5664	48.39732	-106.94313	300	pp5, nw
5666	48.39732	-106.94313	270	pp5, w
5668	48.39732	-106.94313	180	pp5, s

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

RC-1 thru RC-5

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? No

If yes, do they need to be repaired? No

If yes, describe the problems below and indicate if any actions were taken to remedy the problems

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? Yes

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

If no, describe the problems below.

All structures appeared in good working order; no erosion noted along constructed dike.

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

Project/Site: Rock Creek Ranch City/County: Valley Co. Sampling Date: 8/3/2010

Applicant/Owner: MDT State: MT Sampling Point: RC-1

Investigator(s): B. Sandefur Section, Township, Range: S 32 T 31N R 37E

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

Subregion (LRR): LRR E Lat: 48.3947233333333 Long: -106.948336666667 Datum: WGS 84

Soil Map Unit Name: Harlem clay

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:
Hor/Rum wetlnd

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Iva axillaris	15	☐	FAC
2. Hordeum jubatum	40	☑	FAC+
3. Rumex crispus	35	☑	FACW
4. Typha latifolia	10	☐	OBL
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	100 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: RC-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	95	10YR 4/4	5	C	M	Silty Clay	Soil moist at 4in
10-18	10YR 4/1	90	10YR 4/4	10	C	M	Clay	Inclsn of white salt conc or matrx depl b

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: Ustic Torrifluvents

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): 12
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 6

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

Project/Site: Rock Creek Ranch City/County: Valley Co. Sampling Date: 8/3/2010

Applicant/Owner: MDT State: MT Sampling Point: RC-2

Investigator(s): B. Sandefur Section, Township, Range: S 32 T 31N R 37E

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

Subregion (LRR): LRR E Lat: 48.3996983333333 Long: -106.953443333333 Datum: WGS 84

Soil Map Unit Name: Harlem clay

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:
HorJub/AloPra wetlnd

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus pratensis	20	☑	FACW
2. Hordeum jubatum	60	☑	FAC+
3. Grindelia squarrosa	5	☐	FACU
4. Rumex crispus	10	☐	FACW
5. Iva axillaris	3	☐	FAC
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	98 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 2

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

SOIL

Sampling Point: RC-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	100					Clay	
6-16	10YR 4/1	95	10YR 4/4	5	C	M	Clay	Soil moist @ 12in

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: Ustic Torrifluvents

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): 12
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 8

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

Project/Site: Rock Creek Ranch City/County: Valley Co. Sampling Date: 8/3/2010

Applicant/Owner: MDT State: MT Sampling Point: RC-3

Investigator(s): B. Sandefur Section, Township, Range: S 32 T 31N R 37E

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

Subregion (LRR): LRR E Lat: 48.3993733333333 Long: -106.950988333333 Datum: WGS 84

Soil Map Unit Name: Harlem clay

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 mapped as upland in 2009. Surface soil cracks provided evidence of seasonal inundation in spring. Area considered a problem area due to seasonal hydrologic fluctuations and absence of water table or saturation within 12 inches during time of evaluation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Iva axillaris	3	☐	FAC
2. Lactuca serriola	5	☐	FAC-
3. Alopecurus pratensis	30	☑	FACW
4. Hordeum jubatum	60	☑	FAC+
5. Avena fatua	10	☐	NL
6. Agropyron smithii	15	☐	FACU
7. Agropyron intermedium	10	☐	NL
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	133 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Veg boundary result of slight topographic increase approx 1ft. Inundation observed in adj typha

SOIL

Sampling Point: RC-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					Clay	
7-20	10YR 4/2	95	10YR 4/4	5	C	M	Clay	Mottle prominance increase with depth

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: Ustic Torrifluvents

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: Surface soil cracks positive indicators of wetland hydrology. Area appears endosaturated during spring when higher water table is present and saturated within 12 inches.

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

Project/Site: Rock Creek Ranch City/County: Valley Co. Sampling Date: 8/3/2010

Applicant/Owner: MDT State: MT Sampling Point: RC-4

Investigator(s): B. Sandefur Section, Township, Range: S 32 T 31N R 37E

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

Subregion (LRR): LRR E Lat: 48.3958333333333 Long: -106.946698333333 Datum: WGS 84

Soil Map Unit Name: Harlem clay

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:
Inundated cattail wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Typha latifolia	35	☑	OBL
2. Alopecurus pratensis	35	☑	FACW
3. Eleocharis palustris	25	☐	OBL
4. Alisma gramineum	20	☐	OBL
5. Potamogeton pectinatus	30	☑	OBL
6. Lemna minor	10	☐	OBL
7. Rumex maritimus	5	☐	FACW+
8. Sagittaria cuneata	0	☐	OBL
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	160 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Sagittaria with wrong indicator

SOIL

Sampling Point: RC-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/1	95					Clay	High plasticity, mod roots
4-10	10YR 4/1	95	10YR 2/1	5	C	M	Clay	Mn conc

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: Ustic Torrifluvents

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): 8

Water Table Present? Yes ☑ No ☐ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Typha wetland inundated 6-16in around plot

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

Project/Site: Rock Creek Ranch City/County: Valley Co. Sampling Date: 8/3/2010

Applicant/Owner: MDT State: MT Sampling Point: RC-5

Investigator(s): B. Sandefur Section, Township, Range: S 32 T 31N R 37E

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

Subregion (LRR): LRR E Lat: 48.3953183333333 Long: -106.950481666667 Datum: WGS 84

Soil Map Unit Name: Harlem clay

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:
Upland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Lactuca serriola	10	☑	FAC-
2. Hordeum jubatum	30	☑	FAC+
3. Agropyron repens	10	☑	FACU
4. Tragopogon dubius	10	☑	NL
5. Avena fatua	10	☑	NL
6. Descurainia sophia	10	☑	NL
7. Thlaspi arvense	10	☑	NI
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	90 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.286 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:
0

SOIL

Sampling Point: RC-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/3	100					Clay	friable
8-16	10YR 4/2	100					Clay	Light color (salt conc?) with depth

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: Ustic Torrifluvents

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:
Low chroma, no redox features.

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 Rock Creek Ranch Mitigation **2. MDT project#** STPX-STPS 53(88) **Control#**

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

6. Wetland Location(s): T 31N **R** 37E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts Just north of US Hwy 2, MP 520

Watershed 11-Milk **County** Valley

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 200

How assessed: Visually estimated

9. Assesssment area (AA) size (acres) 90.57

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☐ **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	Impounded	Seasonal/Intermittant	95
Depressional	Unconsolidated Bottom	Impounded	Seasonal/Intermittant	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)

Adjacent lands are cultivated haylands and pasture; lands to north are in WRP

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

Cirsium arvense

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

Large impounded emergent marsh; the AA only includes those areas within the conservation easement boundary, even though abundant wetlands occur to the north and west. Surrounding use is agricultural.

13. Structural Diversity: (based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes], see #10 above)

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

Comments:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ○ D ◉ S Whooping crane

No usable habitat ☐ S

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

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

Sources for documented use USF&WS

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 Scarlet Ammannia

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ○ D ○ S

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 Previous monitoring documentation

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]):

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] 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

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 [x] **NA** here and proceed to 14E.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

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

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** _____

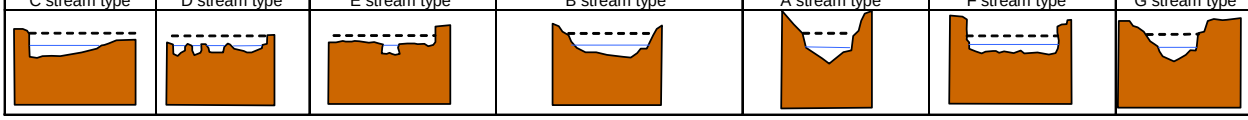
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating _____

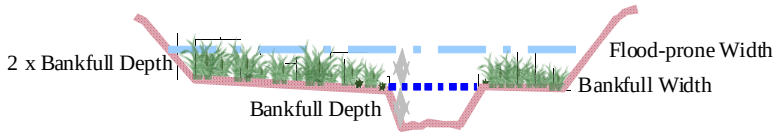
iii. Final Score and Rating: _____ **Comments:**

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

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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



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

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

Comments:

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments:

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments:

14I. Production Export/Food Chain Support:

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

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

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

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

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

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

Comments:

14K. Uniqueness:

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

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

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

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

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

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

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

Comments:

General Site Notes

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

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	.1	1	9.057	☐
B. MT Natural Heritage Program Species Habitat	H	1	1	90.57	☑
C. General Wildlife Habitat	H	.9	1	81.513	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	NA	0	0	0	☐
F. Short and Long Term Surface Water Storage	H	.9	1	81.513	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	90.57	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☐
I. Production Export/Food Chain Support	E	1	1	90.57	☑
J. Groundwater Discharge/Recharge	H	1	1	90.57	☑
K. Uniqueness	M	.4	1	36.228	☐
L. Recreation/Education Potential (bonus points)	M	.1	NA	9.057	☐
Totals:		6.4	8	579.648	
Percent of Possible Score			**80** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
☐ Score of 1 functional point for Uniqueness; **or**
☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

☑ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
☐ Score of .9 functional point for Uniqueness; **or**
☑ Percent of possible score > 65% (round to nearest whole #).

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

☐

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

☐ "Low" rating for Uniqueness; **and**
☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined above)

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

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Rock Creek Ranch Wetland Mitigation Site
Valley County, Montana

Photo Point 1 – *Photo 1* **Location:** PP1
Bearing: North **Taken in 2009**

Photo Point 1 – *Photo 1* **Location:** PP1
Bearing: North **Taken in 2010**

Photo Point 1 – *Photo 2* **Location:** PP1
Bearing: West **Taken in 2009**

Photo Point 1 – *Photo 2* **Location:** PP1
Bearing: West **Taken in 2010**

Photo Point 2 – *Photo 1* **Location:** PP2
Bearing: North **Taken in 2009**

Photo Point 2 – *Photo 1* **Location:** PP2
Bearing: North **Taken in 2010**

Photo Point 3 – *Photo 1* **Location:** PP3
Bearing: North **Taken in 2009**

Photo Point 3 – *Photo 1* **Location:** PP3
Bearing: North **Taken in 2010**

Photo Point 3 – *Photo 2* **Location:** PP3
Bearing: East **Taken in 2009**

Photo Point 3 – *Photo 2* **Location:** PP3
Bearing: East **Taken in 2010**

Photo Point 4 – *Photo 1* **Location:** PP4
Bearing: East **Taken in 2009**

Photo Point 4 – *Photo 1* **Location:** PP4
Bearing: East **Taken in 2010**

Photo Point 4 – *Photo 2* **Location:** PP4
Bearing: South **Taken in 2009**

Photo Point 4 – *Photo 2* **Location:** PP4
Bearing: South **Taken in 2010**

Photo Point 5 – *Photo 1* **Location:** PP5
Bearing: Northwest **Taken in 2009**

Photo Point 5 – *Photo 1* **Location:** PP5
Bearing: Northwest **Taken in 2010**

Photo Point 5 – *Photo 2* **Location:** PP5
Bearing: West **Taken in 2009**

Photo Point 5 – *Photo 2* **Location:** PP5
Bearing: West **Taken in 2010**

Photo Point 5 – *Photo 3* **Location:** PP5
Bearing: South/Southwest **Taken in 2009**

Photo Point 5 – *Photo 3* **Location:** PP5
Bearing: South/Southwest **Taken in 2010**

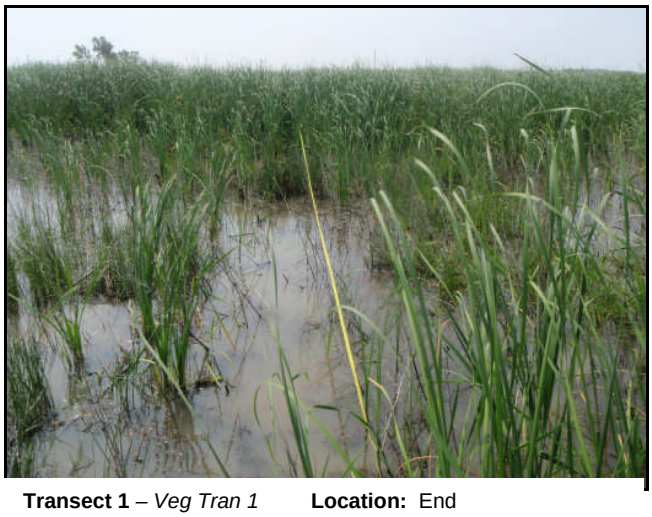
Photo Point 5 – *Photo 4* **Location:** PP5
Bearing: Northwest **Taken in 2009**

Photo Point 5 – *Photo 4* **Location:** PP5
Bearing: Northwest **Taken in 2010**

Transect 1 – *Veg Tran 1* **Location:** Start
Bearing: North **Taken in 2009**

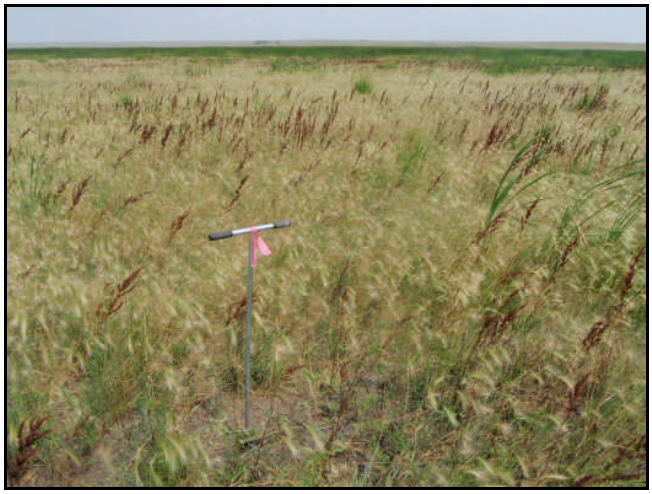
Transect 1 – *Veg Tran 1* **Location:** Start
Bearing: South **Taken in 2010**

Transect 1 – *Veg Tran 1* **Location:** End
Bearing: North **Taken in 2009**



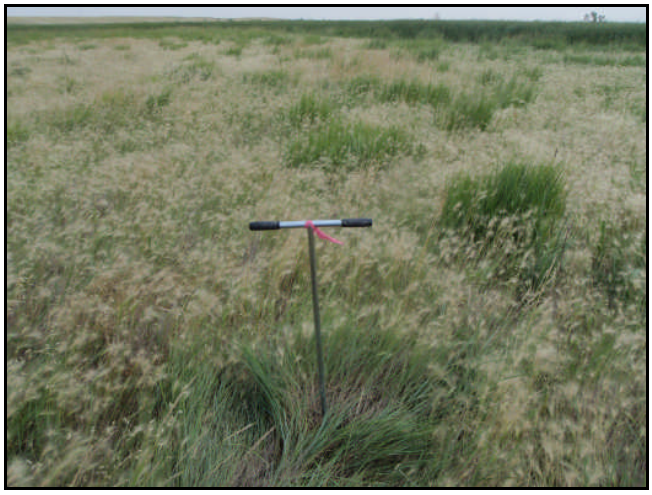
Transect 1 – *Veg Tran 1* **Location:** End
Bearing: North **Taken in 2010**

Bearing: 0 Degrees **Location: Com 1 and 2 Bndry**
Taken in 2010

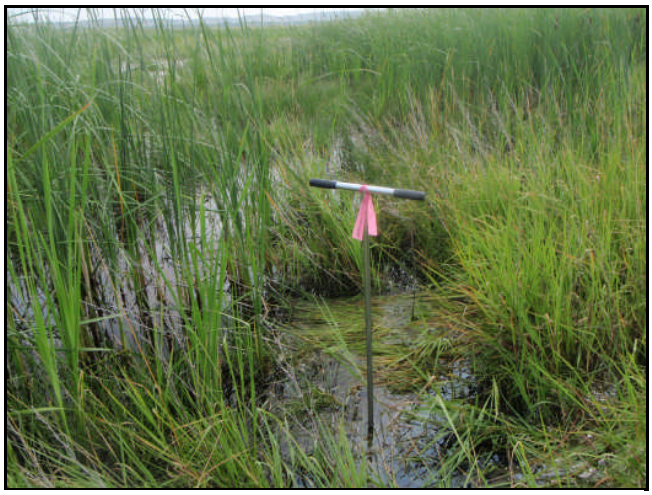


Data Point: RC-1 **Location:** Veg Com 2
Bearing: 0 Degrees **Taken in 2010**

Data Point: RC-2 **Location:** Veg Com 9
Bearing: 60 Degrees **Taken in 2010**



Data Point: RC-3 **Location:** Veg Com 4
Bearing: 120 Degrees **Taken in 2010**



Data Point: RC-4
Bearing: NA
Location: Veg Com 1
Taken in 2010

Data Point: RC-5
Bearing: 270 Degrees
Location: Veg Com 5
Taken in 2010

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Rock Creek Ranch Wetland Mitigation Site
Valley County, Montana

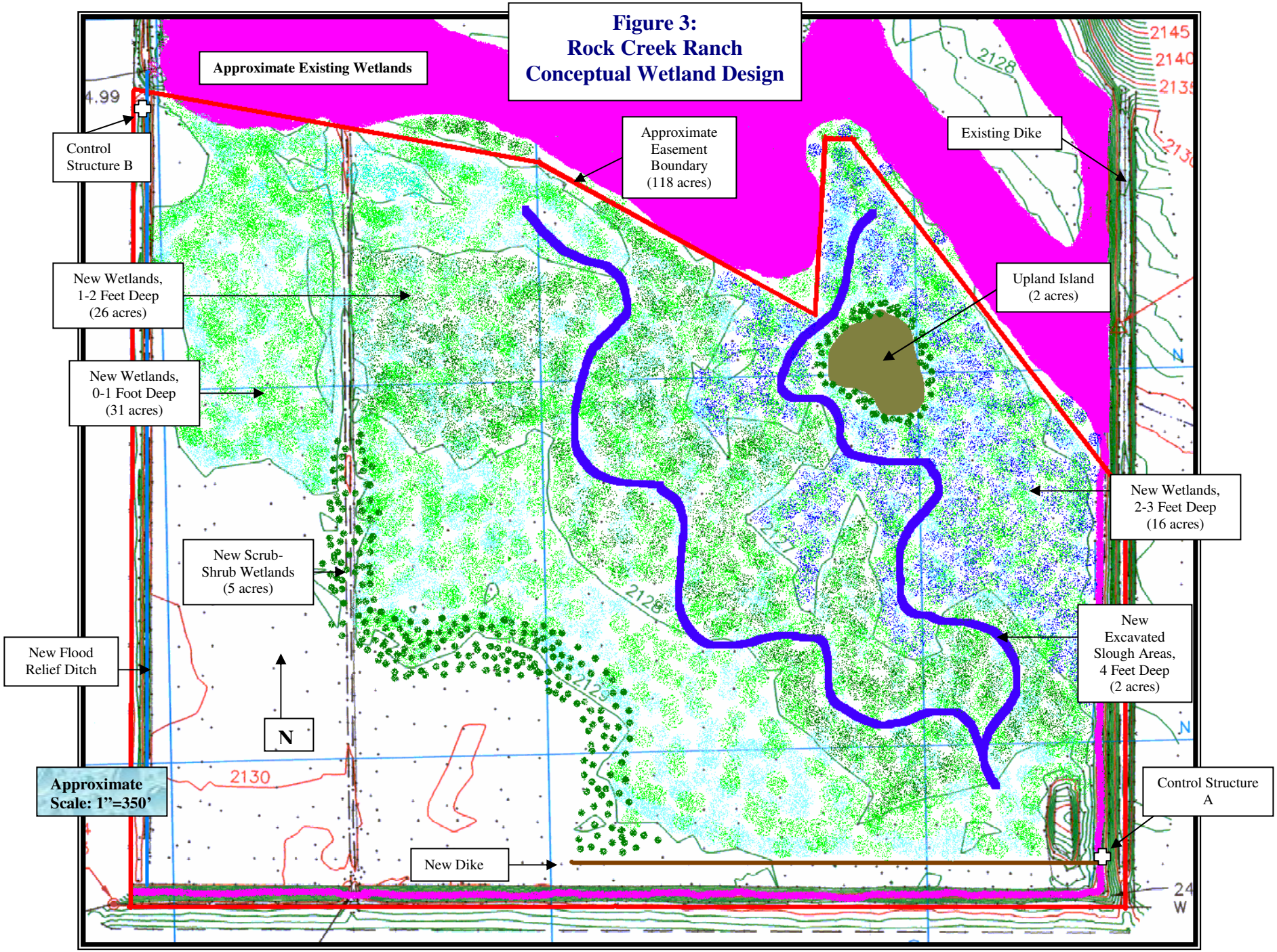


Figure 3:
Rock Creek Ranch
Conceptual Wetland Design
Approximate Existing Wetlands
Control Structure B
Approximate Easement Boundary (118 acres)
Existing Dike
New Wetlands, 1-2 Feet Deep (26 acres)
Upland Island (2 acres)
New Wetlands, 0-1 Foot Deep (31 acres)
New Wetlands, 2-3 Feet Deep (16 acres)
New Scrub-Shrub Wetlands (5 acres)
New Excavated Slough Areas, 4 Feet Deep (2 acres)
New Flood Relief Ditch
N
Approximate Scale: 1"=350'
Control Structure A
New Dike
2145
2140
2130
2128
2127
2129