MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2011

Easton Ranch
Park County, Montana



Prepared for:

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December 2011

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Park County, Montana

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TABLE OF CONTENTS

1. INTRODUCTION....1

2. METHODS....6

2.1. Hydrology....6

2.2. Vegetation....7

2.3. Soil....8

2.4. Wetland Delineation....8

2.5. Wildlife....8

2.6. Functional Assessment....9

2.7. Photo Documentation....9

2.8. GPS Data....9

2.9. Maintenance Needs....9

3. RESULTS....9

3.1. Hydrology....9

3.2. Vegetation....10

3.3. Soil....22

3.4. Wetland Delineation....22

3.5. Wildlife....23

3.6. Functional Assessment....25

3.7. Photo Documentation....26

3.8. Maintenance Needs....26

3.9. Current Credit Summary....27

4. REFERENCES....29

Cover: View of an inundated depression in wetland #2 containing aquatic macrophytes located near the south boundary.

TABLES

Table 1. Wetland Credit Determination. 3
Table 2. Vegetation species observed in 2011 at the Easton Ranch Wetland Mitigation Site. 13
Table 3. Data summary for Transect 1 in 2011 at the Easton Ranch Wetland Mitigation Site. 16
Table 4. Data summary for Transect 2 in 2011 at the Easton Ranch Wetland Mitigation Site. 18
Table 5. Data summary for Transect 3 in 2011 at the Easton Ranch Wetland Mitigation Site. 19
Table 6. Total wetland acres delineated in August 2011 at Easton Ranch. 23
Table 7. Wildlife species observed within Easton Ranch Mitigation Site in 2011. 24
Table 8. Functions and Values of Easton Ranch Wetlands. 26
Table 9. Summary of wetland credits as of 2011. 28

CHARTS

Chart 1. Transect map showing community types on Transect 1 in 2011 from start (0 feet) to finish (1376 feet in 2011 and 1072 feet in 2010) at Easton Ranch. 16
Chart 2. Length of habitat types within Transect 1 in 2011 at Easton Ranch. 17
Chart 3. Transect maps showing community types on Transect 2 from start (0 feet) to finish (1,333 feet) at Easton Ranch..... 18
Chart 4. Length of habitat types within Transect 2 in 2011 at Easton Ranch. 19
Chart 5. Transect maps showing community types on Transect 3 in 2011 from start (0 feet) to finish (751 feet) at Easton Ranch. 21
Chart 6. Length of habitat types within Transect 3 in 2011 at Easton Ranch. 21

FIGURES

Figure 1. Project location of Easton Ranch Mitigation Site. 2
Figure 2. 2011 Monitoring Activity Locations – Appendix A
Figure 3. 2011 Mapped Site Features – Appendix A

APPENDICES

Appendix A Figures 2 and 3
Appendix B 2011 MDT Wetland Mitigation Site Monitoring Form
2011 USACE Wetland Determination Data Form
2011 MDT Montana Wetland Assessment Form
Appendix C Project Area Photographs
Appendix D Project Plan Sheet

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1. INTRODUCTION

The Easton Ranch Wetland Mitigation 2011 Monitoring Report presents the results of the second year of post-construction monitoring at the Easton Ranch mitigation area. The Montana Department of Transportation (MDT) wetland mitigation project at the Easton Ranch is located in the northwest quarter of Section 32, Township 4 North, Range 9 East, Park County, Montana. The property is located approximately three miles east of US Highway 89 and four miles northeast of Wilsall (Figure 1). The wetland conservation easement area encompasses approximately 34 fenced acres and is located east of the Shields River within the boundaries of the larger Easton Family Ranch, the previous landowner. Figures 2 and 3 in Appendix A show the site Monitoring Activity Locations and Mapped Site Features, respectively. The MDT Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms (USACE 2010), and the 2008 MDT Montana Wetland Assessment Forms are included in Appendix B. Project area photographs are included in Appendix C and the Project Plan Sheet is included in Appendix D.

The wetland restoration site is located within Watershed 13 – Upper Yellowstone River Basin. Wetlands were developed at this location to provide compensatory mitigation for wetland impacts associated with transportation projects in the Butte District. The Easton Ranch site was selected after an extensive search of potential wetland and stream restoration sites by MDT within the Shields River Valley in cooperation with personnel from the Park County Conservation District (PCCD) and the US Department of Agriculture (USDA) Natural Resource Conservation Service Center (NRCS) in Livingston.

Construction entailed the excavation of a series of wetland cells and a flood channel that bisects the 34 acre mitigation area. The primary source of wetland hydrology is groundwater supplemented by surface water during high flows associated with the Shields River. An existing irrigation diversion and delivery system was maintained to provide water to the upgradient northeast corner of the site. Revegetation tasks included planting cuttings and containerized shrubs, seeding wetland herbaceous species within the excavated wetland areas, and transplanting wetland plants and soils from existing wetlands to excavated areas.

The wetland project was designed to increase flood storage, improve wildlife habitat, and restore riparian and wetland habitat impacted by past agricultural practices within the Shields River watershed.

The project objectives are listed below.

- Re-establish a previously existing relic floodplain channel and associated riparian and floodplain wetland areas.
- Create approximately 25 acres of emergent, scrub/shrub and riparian wetlands by replacing existing hay fields with a variety of wetland

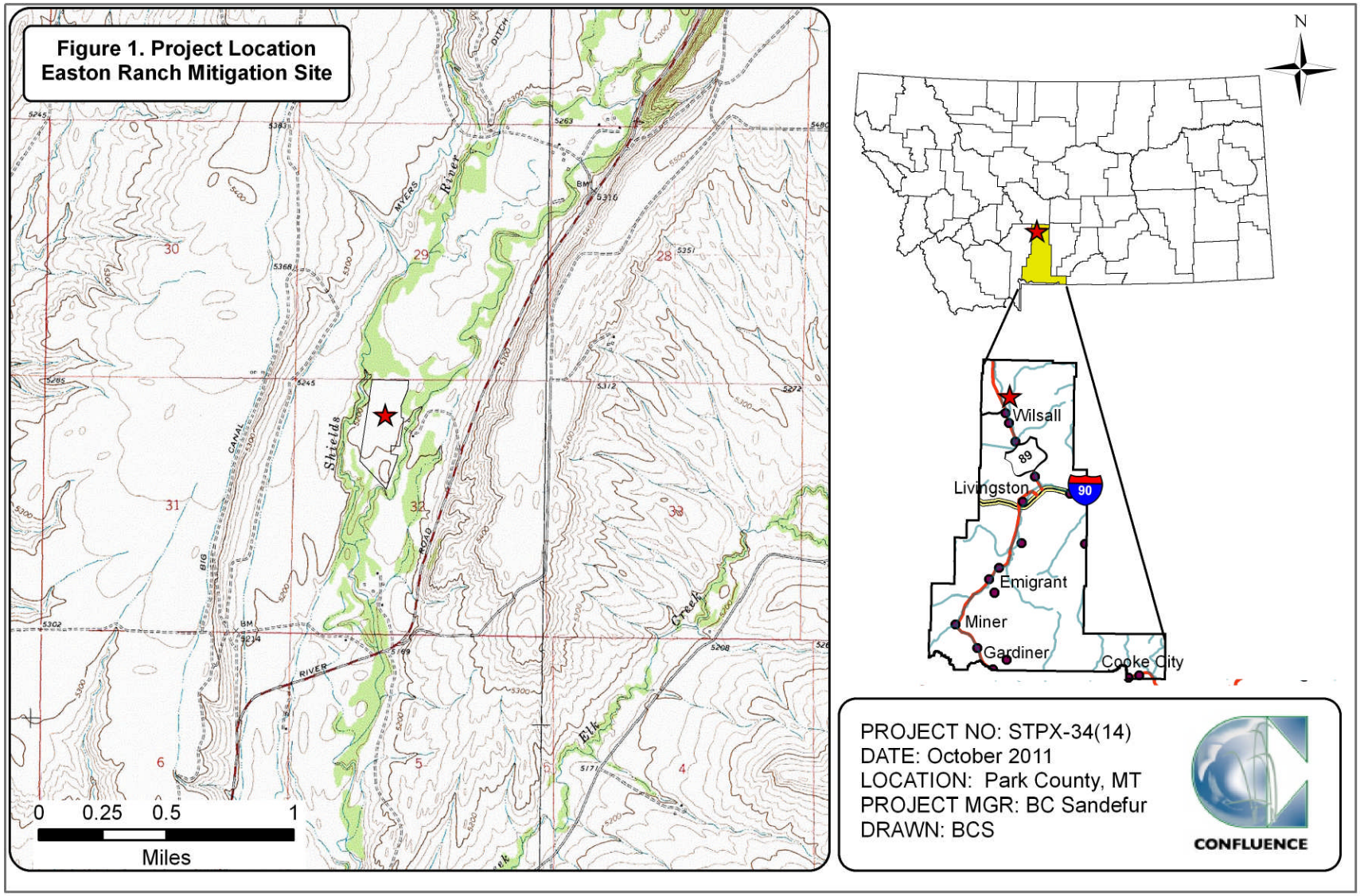


Figure 1. Project location of Easton Ranch Mitigation Site.

- communities that mimic habitats found in bio-reference wetland areas located north and south of the project.
- Re-establish hydrology to approximately 1.56 acres of drained wetlands in the northern portion of the site. Preserve 1.1 acres of existing scrub/shrub, forested, and palustine emergent communities at several locations within the project area.
- Mimic old meander scars and relic flood channels within the wetland mitigation site.
- Improve water storage capacity and increase the amount of floodplain area across the site.
- Increase the amount of wildlife habitat in this reach of the Shields River.

The project credit ratios approved by the USACE are shown in Table 1.

Table 1. Wetland Credit Determination.

Proposed Mitigation Features	Compensatory Mitigation Type	USACE Mitigation Ratios	Acres	Final Credit Estimate (Acres)
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	1.10	0.275
Establish a 50-foot wide upland buffer.	Upland Buffer	5:1	6.43	1.29
Project Impacts	Debit	--	--	(0.67)
Total	**Total**			27.41

The USACE approved performance standards are listed below.

1. **Wetland Characteristics**: All restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *2010 Regional Supplement to the Corps of Engineers Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010).
    a) **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual.
        (i) Soil saturation will be present for at least 12.5 percent of the growing season.

(ii) Groundwater wells will be left undisturbed within the site for the purpose of monitoring groundwater elevations during the growing season.

(iii) Depressional wetlands excavated into the upland areas will be monitored to determine if groundwater hydrology is filling sites and establishing vegetation communities.

(iv) Hydrologic success will also require that the constructed stream channel be stable in the wetlands.

b) **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service (NRCS) definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Wetland Manual. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success is achieved.

c) **Hydrophytic Vegetation Success** will be achieved through the delineation of developing wetlands utilizing the technical guidelines established in the 1987 Wetland Manual and the 2010 Regional Supplement. The following concept of "dominance", as defined in the 1987 Manual, will be applied during future routine wetland determinations in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines).*"

i. **Woody Plants** – Trees and shrubs are to be installed at various locations to provide structural diversity within the site at the direction of the MDT Reclamation Specialist. Survival of woody plant species planted within the site will be evaluated to determine survival rates and success of the planting each year of the monitoring period. Success of these planted species will be determined by stem counts each year to determine survival rates of the various planted woody species and will also include the evaluation of naturally recruited woody plant species within the site. *"Scrub/shrub wetland habitat will be achieved where 30 percent absolute cover by cuttings, planted and volunteer woody plants is reached within the defined monitoring period or the site is showing signs of progression (e.g. by approximating stem densities and estimating future canopy coverage, or using other appropriate methods) towards that goal at the end of the defined monitoring period."*

ii. **Herbaceous Plants** – At the conclusion of the monitoring period, ocular coverage of desirable hydrophytic vegetation (wetland plants listed as OBL, FACW and FAC) will be at least 80 percent. A wetland seed mix was prepared for this site that included tufted hairgrass (*Deschampsia cespitosa*), beaked sedge (*Carex utriculata*), Baltic rush (*Juncus balticus*), American sloughgrass (*Beckmannia syzigachne*), American mannagrass (*Glyceria grandis*), bluejoint reedgrass (*Calamagrostis canadensis*)

2. **Wetland Acreage Development** will provide 34.04 acres of emergent and scrub/shrub wetlands within the project site (Table 1 and Project Plan Sheet, Appendix D).
    a) Emergent wetlands will comprise approximately 70 to 75 percent of the site.
    b) Scrub/shrub wetland and riparian areas will comprise 15 to 20 percent of the site primarily along the proposed stream corridor and between created wetlands.
    c) Open water will comprise approximately less than 5 percent of the total wetland area within the site after final monitoring.

3. **Floodplain Channel Restoration Success** will be evaluated in terms of revegetation and bank stability success.
    a) The floodplain channel corridor will be considered stable when banks are vegetated with a majority of deep-rooting riparian and wetland plant species.
    b) Bank pins will be established at appropriate locations along the new relic floodplain channel to monitor channel stability and to measure channel movement.
    c) Bank stability success will be evaluated by utilizing the bio-reference reaches to the north and south of the project area as comparisons due to their relatively undisturbed and vegetated mixture of woody and herbaceous riparian and wetland plant species.
    d) Vegetation transects will be monitored along the relic floodplain channel corridor to determine root stability indices of the riparian and wetland plant species as it develops.

4. **Bank Stabilization Success** along the Shields River in the northwestern corner of the site will be evaluated in terms of revegetation and bank stability success.
    a) Bank stability will be achieved when the banks are vegetated with a majority of deep-rooting riparian and wetland plant species.
    b) This area will be visually inspected and photo documented for incorporation into the annual monitoring reports to outline the success of the bank stabilization.

c) If annual monitoring determines that the banks are eroding, the USACE and Fish, Wildlife, and Parks (FWP) will be contacted to coordinate a field meeting for joint evaluation and consultation on remediation.

5. **Upland Buffer Success** will be achieved when the noxious weeds do not exceed 10 percent of cover within the buffer areas on site. Any area within the creditable buffer zone disturbed by project construction must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.

6. **Weed Control** will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site, and control measures based upon the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of State Listed Noxious weed species within the site. The MDT will manage the wetland conservation easement area to meet a goal of having less than 5 percent absolute cover of state listed noxious weed species across the site.

7. **Fencing** of the proposed mitigation site has been installed along the easement boundaries to protect the integrity of the wetland from disturbance that may be detrimental to the site. Fencing installed along the perimeter of the site has been designed to be "wildlife friendly" to allow for wildlife movement into and out of the wetland complex.

8. **Monitoring** of this MDT mitigation site will be based upon the MDT standard monitoring protocols utilized for all MDT wetland mitigation sites for a minimum period of five years or longer as determined by the US Army Corps, Montana Regulatory Office's review of annual monitoring reports for the site and whether or not the site has met the wetland success criteria.

2. METHODS

The second year of monitoring was completed on July 14, 2011. Information for the Mitigation Monitoring Form and Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity sites were located with a global positioning system (GPS) as shown on Figure 2 (Appendix A). Information collected included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird and wildlife use documentation, photographic documentation, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

The presence of hydrological indicators as outlined on the Wetland Data Form was assessed at four data points established within the project area. The hydrologic indicators were evaluated according to features observed during the

site visit. The data were recorded on the electronic Wetland Data Form (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

Technical criteria for wetland hydrology guidelines have been established as "permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (12.5 percent of the growing season) during the growing season" (USACE 2010). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered jurisdictional wetlands. The growing season is defined for purposes of this report as the number of days 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 growing season recorded for the predominant soil map unit, Meadowcreek series (155A), averages 80 days (USDA 2010). Areas defined as wetlands would require 10 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data was recorded on the delineation data form (Appendix B).

2.2. Vegetation

The boundaries of the dominant vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2011 aerial photograph. 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 to10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B). Community types were named based on the predominant vegetation species that characterized each mapped polygon (Figure 3, Appendix).

Temporal changes in vegetation will be evaluated through annual assessments of static belt transects established in June 2010 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along three vegetation belt transects (T-1, T-2, T-3) approximately 10 feet wide and 1072, 1333, and 733 feet long, respectively (Figure 2, Appendix A). Transects two and three traverse the floodplain channel corridor and banks to provide an assessment of root stability indices of the developing riparian and wetland plant species (Figure 2, Appendix A).

The transect locations were recorded with a resource-grade GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated using the same values and cover ranges used for the polygon data on the aerial photograph (Figure 3, Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The survival of woody species installed onsite was recorded during monitoring. Survival rates will be evaluated annually. The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "**X**", "▲", or "■" representing 0 to 0.1 acre, .1 to 1 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.

2.3. Soil

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

2.4. Wetland Delineation

Waters of the U.S. including special aquatic sites and jurisdictional wetlands were delineated throughout the project area in accordance with criteria established in the 1987 Manual and the 2010 Regional Supplement. The technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology described in the 2010 Regional Supplement must be satisfied to delineate a representative area as jurisdictional. 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 on-site Determination Method (Environmental Laboratory 1987) was used to delineate jurisdictional areas within the project boundaries. The information was recorded electronically on the Wetland Data Form (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the 2011 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 Mitigation 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 species list of wildlife observed during the annual monitoring periods was compiled.

2.6. Functional Assessment

The 2008 MDT Montana Wetland Assessment Method (Berglund and McEldowney 2008) was used to evaluate functions and values on the site in 2010. This method provides an objective means of assigning wetlands an overall rating and provides regulators a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008). Field data for this assessment were collected during the site visit. Wetland Assessment Forms were completed for three assessment areas (AA) (Appendix B).

2.7. Photo Documentation

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

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2011 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The GPS data were subsequently exported into GIS and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph, then digitized. Site features and survey points that were mapped included fence boundaries, photographic points, transect endpoints, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

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

3. RESULTS

3.1. Hydrology

Climate data from the meteorological station at Wilsall 8 ENE, Montana (249023), recorded an average annual precipitation rate of 20.23 inches from April 1957 to December 2010 (WRCC 2010). The annual precipitation rate recorded in 2010 was 24.15 inches. A rate of 10.02 and 13.88 inches was

recorded from January to July 2009 and 2010, respectively. A rate of 9.73 inches was recorded form January to May 2011 (NCDC 2011). There was no data available for June 2011. The 53 year average for the same time period was 13.36 inches.

The irrigation diversion system located upgradient of the wetland cells was closed during the July 2011 investigation. Approximately five percent of the site was inundated with surface water from spring runoff at depths ranging from 0 to 3 feet. The average depth was 0.6 feet and the depth at the emergent vegetation/open water boundary was 0.5 feet. Most of the depressions in the north half of the site were saturated. The created depressions in the south half were inundated during the July investigation. Algal mats, surface soil cracks, sediment deposits, drift deposits, water-stained leaves, inundation visible on aerial imagery, geomorphic position, and the FAC-neutral test provided additional evidence of wetland hydrology.

Four data points were sampled to determine the wetland/upland boundaries. Data points E-1 and E-3 were located in areas that met the wetland criteria. Wetland hydrology indicators at E-1, located within a created wetland cell, included a high water table, saturation at 4 inches below the ground surface (bgs), sediment deposits, algal mat or crust, sparsely vegetated concave surface, water-stained leaves, drainage patterns, geomorphic position, and the FAC-neutral test. Hydrological indicators at E-3 were a high water table at 12 inches bgs, saturation at 10 inches bgs, drift deposits, surface soil cracks, inundation visible on aerial imagery, geomorphic position, and FAC-Neutral test.

The 2011 spring runoff levels and duration were high as a result of an above-average snowpack in the mountains and spring precipitation. The constructed flood channel through the mitigation site was activated for the first time since construction during the early part of the 2011 growing season. Fluvial geomorphic processes resulted in the development of scour holes, riffles, and point bars. Sediment deposits, watermarks, and driftlines were observed along the entire length of the flood swale. Supplemental photos 1 though 3 illustrate some scour holes and driftlines within the flood channel and are shown on page C-8 (Appendix C). No areas of bank erosion were encountered along the constructed channel. The east bank of the Shields River along the northwest corner of the Easton mitigation site remained stable through the 2011 runoff event. The large angular riprap placed on top of the coir-wrapped soil lifts eroded and exposed the soil lifts. The structural integrity of the lifts was intact following the high flows. Fine-grain deposits accumulated on the lifts as flood waters receded. The 2011 flood flows resulted in the formation of a wider base-flow channel and a slight westward shift of the west bank, away from the site. Photo points 4 and 5 on pages C-2 and C-3 show the Shields River in the northwest corner of the site in 2010 and 2011.

3.2. Vegetation

Monitoring year 2011 marked the second year of monitoring on the Easton Ranch wetland mitigation site. One hundred and three plant species have been

observed site wide since 2010. Vegetation plant communities were identified by plant composition and dominance, topography, and hydrology. The communities and individual species are shown on the Monitoring Form in Appendix B and the communities are defined on Figure 3 in Appendix A.

Vegetation community types named for the dominant species based on percent cover were Type 1 – *Phleum pratense/Poa pratensis* Upland; Type 3 – *Carex* spp. Wetland; Type 4 – *Salix drummondiana* Wetland; Type 5 – *Populus trichocarpa* Wetland; Type 6 – *Beckmannia syzigachne* Wetland; Type 7 – Aquatic macrophytes, Type 8 – *Bromus* spp./*Trifolium* spp. Upland, and Type 9 – *Beckmannia syzigachne*/Bare Ground Wetland (Figure 3, Appendix A). The lists of dominant species are presented below in descending order of abundance.

Upland community Type 1 – *Phleum pratense/Poa pratensis* was identified in the higher elevation upland areas that surround the constructed wetland cells and channel (Figure 3, Appendix A). The community was dominated by herbaceous species including common timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), smooth brome, (*Bromus inermis*), caraway (*Carum carvi*), white clover (*Trifolium repens*), red clover (*Trifolium pratense),* Western wheatgrass (*Agropyron smithii*), and California brome (*Bromus carinatus*).

Wetland community Type 3 – *Carex* species *(*spp.) encompassed pre-existing wetlands located at the north and west edges of the site. The community was dominated by Nebraska sedge (*Carex nebrascensis*), beaked sedge (*Carex utriculata*), clustered field sedge (*Carex praegracilis*), field horsetail (*Equisetum arvense*), Kentucky bluegrass, sandbar willow (*Salix exigua*), American sloughgrass (*Beckmannia syzigachne*), and small-fruited bulrush (*Scirpus microcarpus*).

Wetland community Type 4 – *Salix drummondiana* was identified in a small area located in the northwest corner of the site near the bank of the Shields River. The area encompassed a pre-existing wetland dominated by Drummond willow (*Salix drummondiana*), Western wheatgrass, Nebraska sedge, Bebb willow (*Salix bebbiana*), Nebraska sedge, tall mannagrass (*Glyceria grandis*), prickly currant (*Ribes lacustre*), American sloughgrass, orchard grass (*Dactylis glomerata*), and stinging nettle (*Urtica dioica*).

Community Type 5 – *Populus trichocarpa* was a pre-existing forested, scrub/shrub wetland south of the construction area. The vegetation community was dominated by black cottonwood (*Populus trichocarpa*), smooth brome, Bebb willow, caraway, Kentucky bluegrass, beaked sedge, small-fruited bulrush, and Pacific willow (*Salix lasiandra*).

Wetland community Type 6 – *Beckmannia syzigachne* characterized the constructed depressions and floodplain channel. Approximately 80 percent of the lowest contours of the wetland cells were unvegetated bare ground, inundated with 1 to 30 inches of water during the investigation. The community type was dominated by American sloughgrass, fowl mannagrass (*Glyceria*

striata), caraway, field horsetail, yellow sweet clover (*Melilotus officinalis*), white clover, meadow foxtail (*Alopecurus pratensis*), tall mannagrass, three-stamen rush (*Juncus ensifolius*), Kentucky bluegrass, and red clover.

Wetland community Type 7 – Aquatic Macrophytes was found in the largest open water depression located near the south boundary. The wetland was classified as an aquatic bed community in 2011, generally defined as a wetland vegetation class dominated by plants "that grow principally on or below the surface of the water for most of the growing season in almost all years (Cowardin et al. 1979)."

The Montana Natural Heritage Program (MTNHP) website further defines the Palustrine Aquatic Bed Class (PAB) as having aquatic plants at greater than 30 percent cover and water depths of greater than 0.5 m (and less than 2 meters) (MTNHP 2011). The dominant species were water milfoil (*Myriophyllum sp*.), wigeon-grass (*Ruppia maritima*), waterweed (*Elodea sp.)*, and green algae.

Upland community Type 8 – *Bromus* spp./*Trifolium* spp. characterized the upland areas within the excavated footprint that were dominated by white goosefoot (Type 2 - *Chenopodium album* upland) in 2010. Fringed brome (*Bromus ciliatus*), smooth brome, California brome, common timothy, yellow sweet clover, white clover, and red clover dominated the species.

Wetland community Type 9 – *Beckmannia syzigachne*/Bare Ground was identified in depressions that were inundated during the investigation and dominated by greater than 50 percent bare ground and American sloughgrass, with trace cover levels of tall mannagrass, three-stamen rush, caraway, and toad rush (*Juncus bufonius*). The depressions were no longer inundated by late August 2011, according to MDT and aerial photography.

There were signs of recent scour and sediment deposition in the constructed flood channel (Appendix C). Some of the deeper scoured depressions were inundated during the July 2011 investigation. The percent cover of vegetation on the constructed channel banks was highly variable. Transect 2 was established north to south, crossing the west end of the constructed channel between intervals 120 feet and 170 feet. The vegetation in the channel interval was characterized by Community Type 6 consisting of American sloughgrass, tufted hairgrass (*Deschampsia cespitosa*), field horsetail, slender rush (*Juncus tenuis*), toad rush, Kentucky bluegrass, and Bebb willow. American sloughgrass, white and red clover, and yellow sweet clover dominated the cover on the banks in a majority of the rest of the channel. The channel segment at the northwest corner of the site abuts a pre-existing wetland (Community 3) that contains a high percentage of sedge species and lower cover levels of sandbar willow and bulrush. Sedge, willow, rush, and bulrush species have high plant stability ratings (greater than 6 on a 1 to 10 scale) (Berglund and McEldowny 2008). The streambank vegetation cover is still developing and currently provides low to moderate bank stability based on the lack of plants with high stability ratings on a majority of the channel length.

Table 2. Vegetation species observed in 2011 at the Easton Ranch Wetland Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 9 INDICATOR STATUS[1]
Achillea millefolium	yarrow,common	FACU
Agropyron repens	quackgrass	FACU
Agropyron smithii	**wheatgrass,western**	**FACU**
Agrostis stolonifera	bentgrass,spreading	FAC+
Algae, green	**algae, green**	**NL**
Alisma gramineum	water-plantain,narrow-leaf	OBL
Alnus incana	alder,speckled	FACW
Alopecurus geniculatus	foxtail,meadow	FACW+
Alopecurus pratensis	**foxtail,meadow**	**FACW**
Amaranthus retroflexus	amaranth,red-root	FACU+
Beckmannia syzigachne	sloughgrass,American	OBL
Brassica kaber	wild mustard	NL
Bromus carinatus	**California brome**	**NL**
Bromus ciliatus	brome,fringed	FAC+
Bromus inermis	smooth brome	NL
Bromus japonicus	brome,Japanese	FACU
Bromus marginatus	mountain brome	NL
Bromus tectorum	**cheatgrass**	**NL**
Calamagrostis canadensis	reedgrass,blue-joint	FACW+
Carduus nutans	**musk thistle**	**NL**
Carex aquatilis	sedge,water	OBL
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex rostrata	sedge,beaked	OBL
Carex utriculata*	**beaked sedge**	**OBL**
Carum carvi	caraway	NL
Cassiope mertensiana	**bell-heather,western**	**FACU+**
Chenopodium album	goosefoot,white	FAC
Chenopodium leptophyllum	goosefoot,narrow-leaf	FACU
Cirsium arvense	thistle, Canada	FACU+
Cirsium douglasii	**thistle,Douglas'**	**OBL**
Cirsium vulgare	thistle,bull	FACU
Convolvulus arvensis	field bindweed	NL
Cornus stolonifera	dogwood,red-osier	FACW
Cynoglossum officinale	**Houndstongue**	**NL**

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

Table 2. (Continued). Vegetation species observed in 2011 at the Easton Ranch Wetland Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 9 INDICATOR STATUS[1]
Dactylis glomerata	grass,orchard	FACU
Deschampsia cespitosa	**hairgrass,tufted**	**FACW**
Descurainia sophia	common tansymustard	NL
Dracocephalum sp.	**dragonhead**	**NL**
Eleocharis palustris	**spikerush,creeping**	**OBL**
Elodea sp.	**waterweed**	**NL**
Epilobium ciliatum	willow-herb,hairy	FACW-
Equisetum arvense	horsetail,field	FAC
Equisetum hyemale	horsetail,rough	FACW
Festuca pratensis	**fescue,meadow**	**FACU+**
Glyceria elata	**grass,tall manna**	**FACW+**
Glyceria grandis	American mannagrass	NL
Glyceria striata	grass,fowl manna	OBL
Helianthus annuus	sunflower,common	FACU+
Hordeum jubatum	**barley,fox-tail**	**FAC+**
Juncus balticus	**rush, Baltic**	**OBL**
Juncus bufonius	rush,toad	FACW+
Juncus effusus	rush,soft	FACW+
Juncus ensifolius	**rush,three-stamen**	**FACW**
Juncus nevadensis	**rush,Sierra**	**FACW**
Juncus sp.		**NL**
Juncus tenuis	rush,slender	FAC
Lappula occidentalis	flatspine stickseed	NL
Larix occidentalis	larch,western	FACU+
Lycopus asper	bugleweed,rough	OBL
Medicago lupulina	medic,black	FAC
Medicago sativa	**alfalfa**	**NL**
Melilotus officinalis	sweetclover,yellow	FACU
Mentha arvensis	mint,field	FAC
Mimulus guttatus	monkey-flower,common large	OBL
Myriophyllum sp.	**water milfoil**	**NL**
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy, common	FACU
Plantago major	plantain,common	FAC+
Poa pratensis	bluegrass,Kentucky	FACU+
Polypogon monspeliensis	grass,annual rabbit-foot	FACW+
Populus angustifolia	cotton-wood,narrow-leaf	FACW
*Populus tremuloides**	quaking aspen	FAC+
Populus trichocarpa*	**black cottonwood**	**FAC**
Potentilla fruticosa	**cinquefoil,shrubby**	**FAC-**
Potentilla gracilis	cinquefoil,northwest	FAC

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

Table 2. (Continued). Vegetation species observed in 2011 at the Easton Ranch Wetland Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 9 INDICATOR STATUS[1]
Prunus virginiana	**cherry,choke**	**FACU**
Rhamnus alnifolia	buckthorn,alder-leaf	FACU
Ribes lacustre	**currant,prickly**	**FAC+**
Rosa woodsii	**rose, Woods**	**FACU**
Rumex crispus	dock,curly	FACW
Ruppia maritima	**widgeon-grass**	**OBL**
Salix bebbiana	**willow, Bebb**	**FACW**
Salix drummondiana	willow, Drummond	FACW
Salix exigua	willow,sandbar	OBL
Salix lasiandra	**willow,pacific**	**FACW+**
Scirpus microcarpus	bulrush,small-fruit	OBL
Scirpus pallidus	bulrush,cloaked	OBL
Scutellaria galericulata	**skullcap,hooded**	**OBL**
Scutellaria lateriflora	**skullcap,blue**	**FACW+**
Sisymbrium altissimum	mustard,tall tumble	FACU-
Sisyrinchium idahoense	**blue-eye-grass,Idaho**	**FACW**
Stellaria graminea	starwort,lesser	FAC-
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Trifolium hybridum	**clover,alsike**	**FACU+**
Trifolium pratense	clover,red	FACU
Trifolium repens	clover,white	FACU+
Trifolium spp.		**NL**
Triglochin maritimum	arrow-grass,seaside	OBL
Typha latifolia	cattail,broad-leaf	OBL
Urtica dioica	**nettle,stinging**	**FAC+**

[1]Region 9 (Northwest) (Reed 1988).
New species identified in 2011 are listed in **bold**.

The vegetation cover on three transects was measured at the Easton Ranch Mitigation Site in 2011 (Figure 2, Appendix A). The data recorded on Transect 1 (Monitoring Forms, Appendix B) are summarized in tabular and graphical formats in Table 3 and Chart 1 and Chart 2, respectively. The transect ends were photographed (Page C-4 in Appendix C). Transect 1 extends 1,072 feet from south to north across several constructed cells located east of the constructed channel. The transect intervals alternated between upland communities Types 1 and 8 and wetland community Types 6 and 9. Hydrophytic vegetation communities dominated 17 percent of Transect 1 in 2011, down from 28 percent in 2010. The aerial photograph (Figures 2 and 3) shows that the surface water observed in the depressions in July 2011 had evaporated by late August 2011. The broadly fluctuating water levels may slow the development of the hydrophytic vegetation cover within the depressions.

Table 3. Data summary for Transect 1 in 2011 at the Easton Ranch Wetland Mitigation Site.

Vegetation Community Transitions along Transect	11	11
Vegetation Communities along Transect	3	4
Hydrophytic Vegetation Communities along Transect	1	2
Total Vegetative Species	33	38
Total Hydrophytic Species	15	19
Total Upland Species	18	19
Estimated % Total Vegetative Cover	65	70
% Transect Length Comprising Hydrophytic Vegetation Communities	28	17
% Transect Length Comprising Upland Vegetation Communities	70	83
% Transect Length Comprising Unvegetated Open Water	2.5	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0

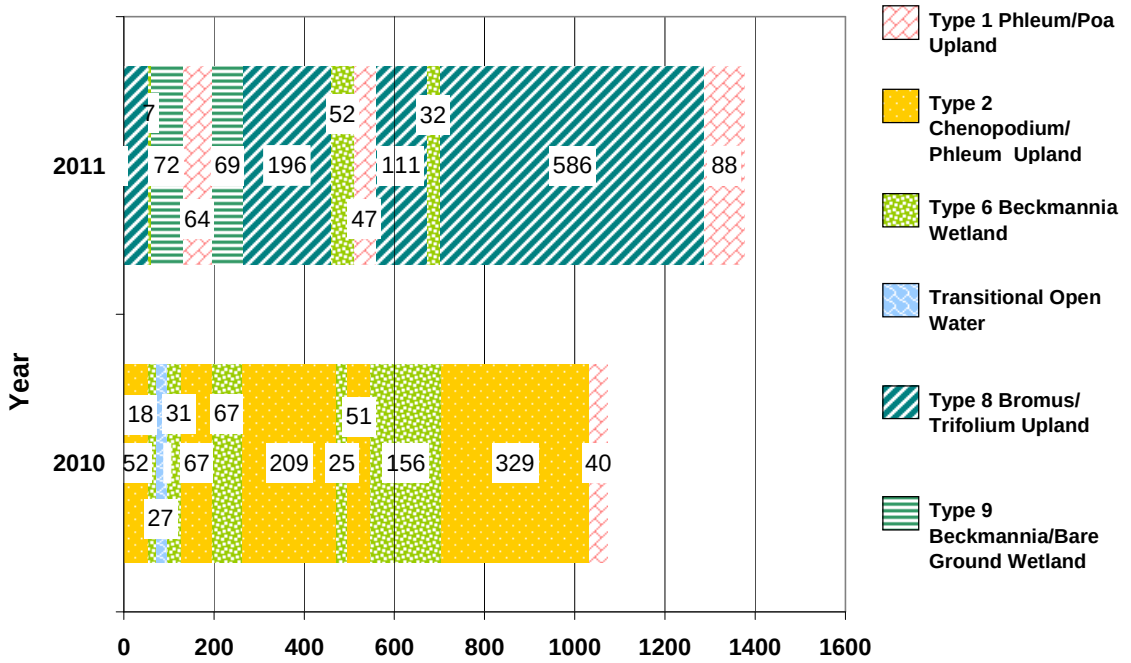


Chart 1. Transect map showing community types on Transect 1 in 2011 from start (0 feet) to finish (1376 feet in 2011 and 1072 feet in 2010) at Easton Ranch.

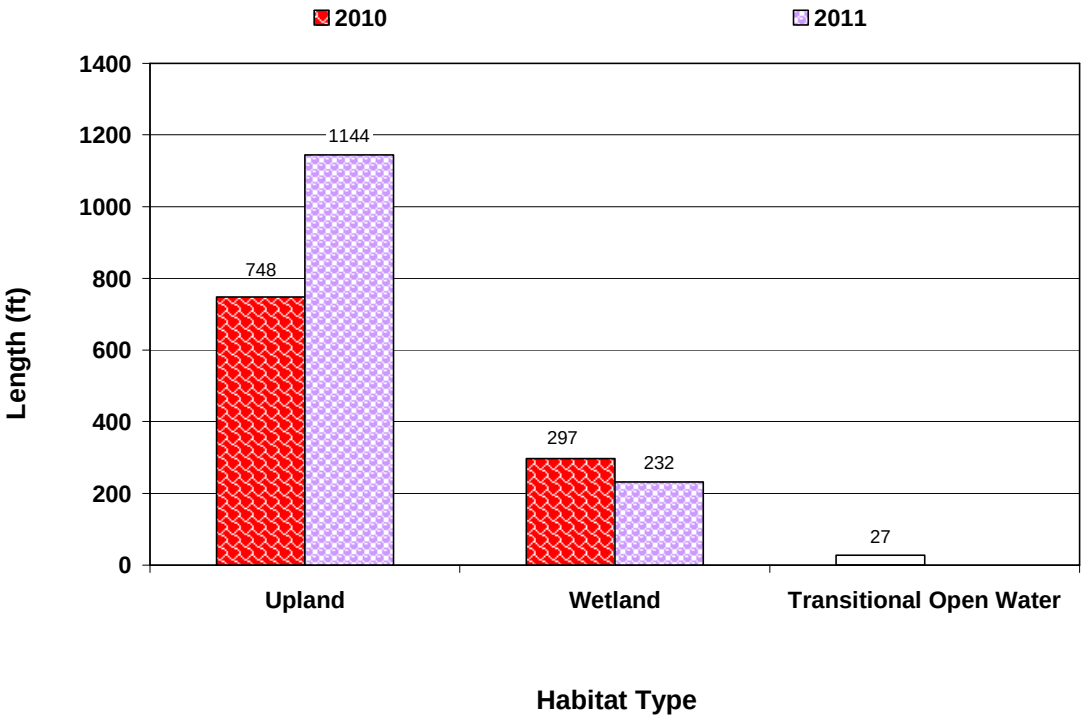


Chart 2. Length of habitat types within Transect 1 in 2011 at Easton Ranch.

Data collected on Transect 2 (Monitoring Form, Appendix B) were summarized in tabular and graphic formats (Table 5, Charts 3 and 4, respectively). The endpoints of Transect 2 were photographed (Page C-5 in Appendix C). Hydrophytic vegetation communities dominated 41 percent of Transect 2 in 2011, up slightly from 38.7 percent in 2010. Type 2 – *Chenopodium* upland was replaced by Type 8 – *Bromus/Trifolium* upland in 2011.

Table 4. Data summary for Transect 2 in 2011 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011
Transect Length (feet)	**1333**	**1333**
Vegetation Community Transitions along Transect	11	8
Vegetation Communities along Transect	4	4
Hydrophytic Vegetation Communities along Transect	2	2
Total Vegetative Species	35	38
Total Hydrophytic Species	17	22
Total Upland Species	18	16
Estimated % Total Vegetative Cover	65	75
% Transect Length Comprising Hydrophytic Vegetation Communities	38.7	41.0
% Transect Length Comprising Upland Vegetation Communities	61.3	59.0
% Transect Length Comprising Unvegetated Open Water	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0

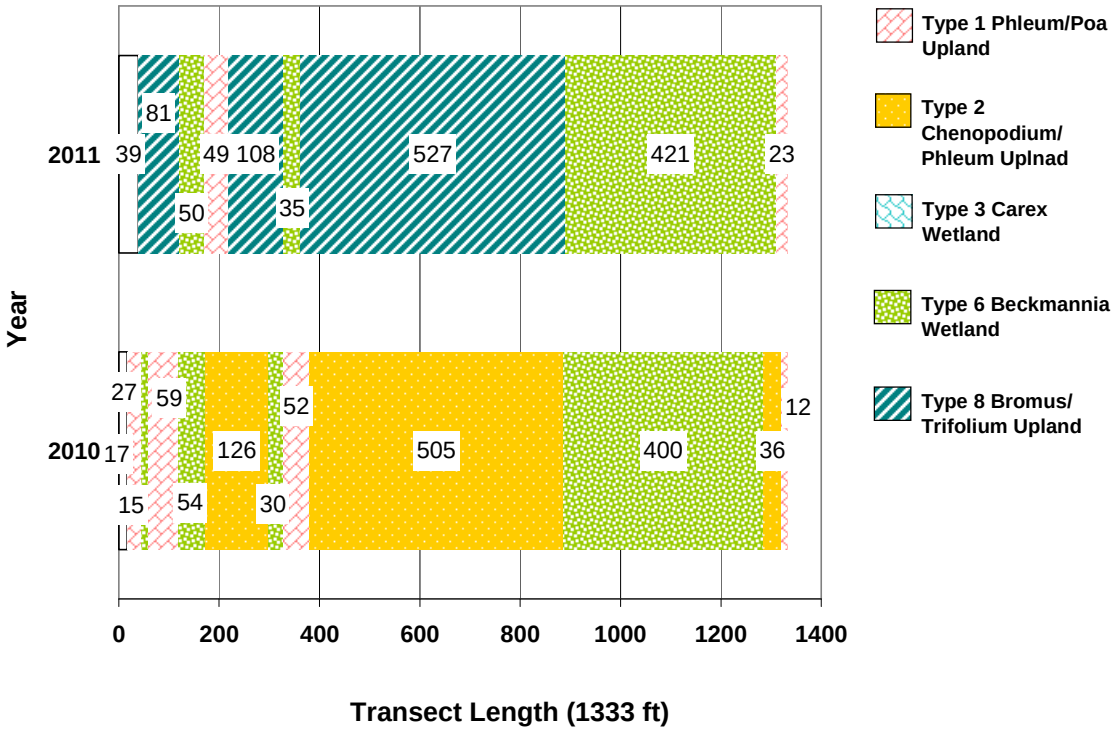


Chart 3. Transect maps showing community types on Transect 2 from start (0 feet) to finish (1,333 feet) at Easton Ranch.

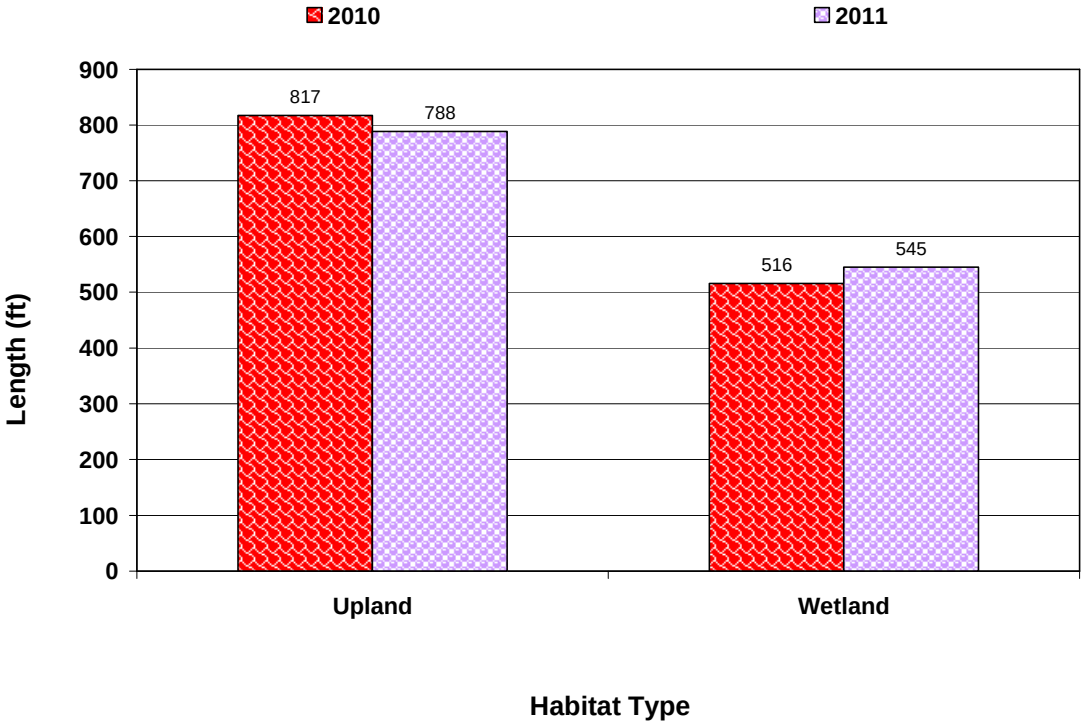


Chart 4. Length of habitat types within Transect 2 in 2011 at Easton Ranch.

Transect 3 data (Monitoring Form, Appendix B) were summarized in tabular and graphic formats (Table 5 and Charts 5 and 6, respectively). The endpoints of Transect 3 were photographed (Page C-3 in Appendix C).

Table 5. Data summary for Transect 3 in 2011 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011
Transect Length (feet)	**751**	**751**
Vegetation Community Transitions along Transect	11	9
Vegetation Communities along Transect	3	3
Hydrophytic Vegetation Communities along Transect	1	1
Total Vegetative Species	24	35
Total Hydrophytic Species	11	17
Total Upland Species	13	18
Estimated % Total Vegetative Cover	65	70
% Transect Length Comprising Hydrophytic Vegetation Communities	45	50
% Transect Length Comprising Upland Vegetation Communities	55	50
% Transect Length Comprising Unvegetated Open Water	0	0
% Transect Length Comprising Bare Substrate	0	0

Transect 3 was established west to east across the constructed cells and channel in the south half of the site (Figure 2, Appendix A). This transect

crosses the constructed floodplain channel between station 270 feet and 284 feet. The channel crossing was characterized by a dominance of field horsetail, American sloughgrass, and clover spp. The transect intervals intercepted wetland community Type 6 and upland community Types 1 and 8. Hydrophytic vegetation dominated 50 percent of Transect 3 in 2011, up 5 percent from 2010. The elevation is slightly lower in the south half of the site, resulting in higher overall groundwater levels.

Thirteen separate infestations of Canada thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified in uplands primarily within the site perimeter (Figure 3). The infestations ranged in area from less than 0.1 acre to between 0.1 and 1.0 acre. The cover classes ranged from low (1 to 5 percent cover) to moderate (5 to 25 percent cover). Isolated Canada thistle plants were observed in communities 1 and 3. Approximately 1.5 acres of Canada thistle were sprayed in late summer of 2011.

Six infestations of houndstongue (*Cynoglossum officinale*) were observed primarily in the north half of the site. The size of the infestations was less than 0.1 acres and the cover class was trace. The weed was not targeted for spraying in 2011.

Several hundred cuttings and containerized materials were planted along the constructed flood channel to increase root stability. The plants that were thriving in 2011 exhibited moderate to excellent vigor. Approximately 8 red-osier dogwood (*Cornus stolonifera*), 6 sandbar willow, 20 speckled alder (*Alnus incana*), and 10 willow cuttings were identified. The final plant quantities and locations were not available.

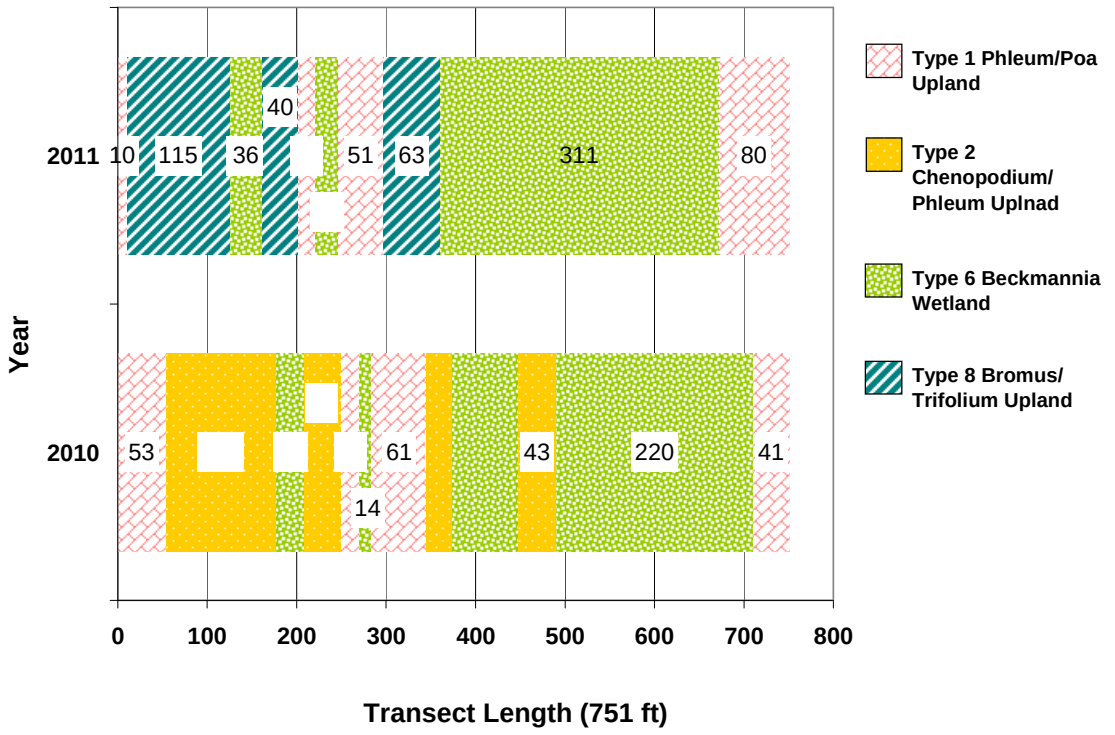


Chart 5. Transect maps showing community types on Transect 3 in 2011 from start (0 feet) to finish (751 feet) at Easton Ranch.

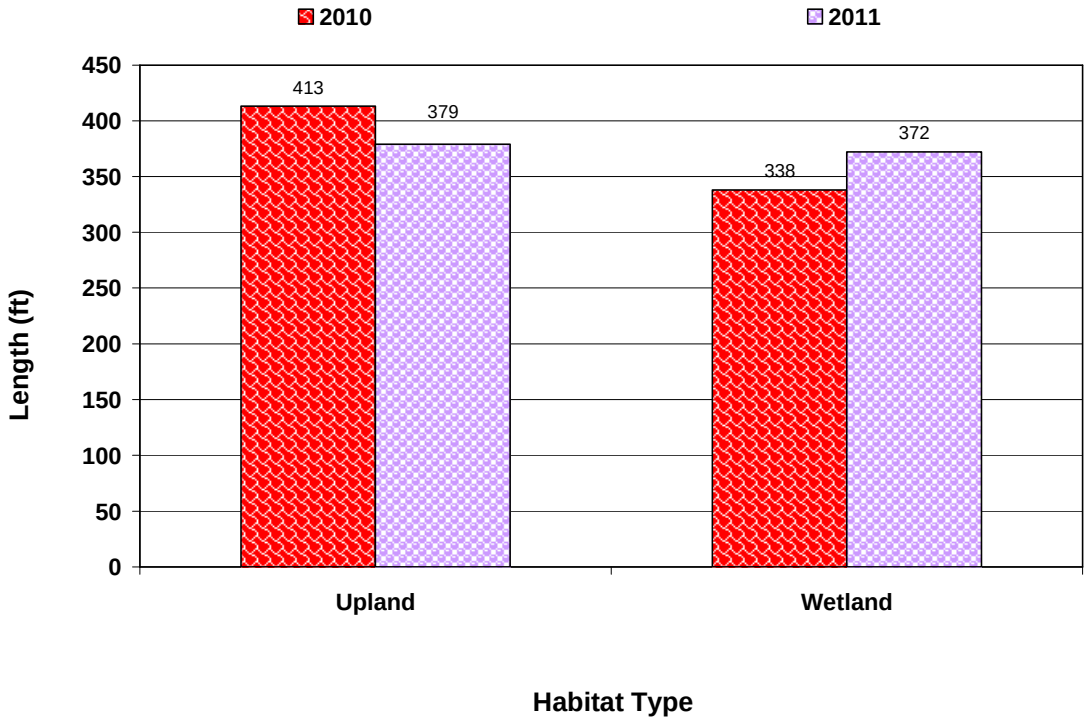


Chart 6. Length of habitat types within Transect 3 in 2011 at Easton Ranch.

3.3. Soil

The project site was mapped in the *Park County Soil Survey* (USDA 2010) within the Meadowcreek and rarely flooded-Nesda complexes, found on 0 to 2 percent slopes (155A). The Meadowcreek series is a somewhat poorly drained clay loam soil located on floodplains within valleys. The map unit is listed on the Montana Hydric soil list and is classified as a frigid Fluvaquentic Haplustoll. The Nesda loam (600B) is mapped in a small area at the south end of the project. The loam is a well-drained, frigid Fluventic Haplustoll that is listed on the Montana hydric soil list.

Soil test pits were excavated at four locations, all within the Meadowcreek series (E-1 through E-4, Figure 2, Appendix A). Data point E-1 was located in a shallow open water depression. Soil pit E-2 was located approximately 1.5 feet higher in elevation than E-1. Data point E-3 was located in Community 9 at the edge of an open water depression and E-4 was located 1.0 foot higher than E-3. The soil profile at E-1 revealed a sandy loam (5Y 3/1) with redoximorphic concentrations (7.5 YR 3/4/) in 10 percent of the matrix. The redox dark surface provided a positive indication of hydric soil. The profile at E-2 revealed a sandy loam (5 Y 4/1) with redoximorphic concentrations (10 YR 4/6) within the matrix. The redox dark surface was a hydric soil indicator. The soil color and texture indicated mixing during construction. The hydric soil features were interpreted to be relict based on geomorphic position and the absence of hydrophytic vegetation and wetland hydrology indicators. Data point E-3 exhibited a sandy loam (10 YR 5/2) with redox concentrations (7.5 YR 4/4) in the matrix. The hydric soil indicator was a redox dark surface. The soil profile at E-4 was a clay loam (10 YR 3/4) with redox depletions (10 YR 4/2). The description did not meet the hydric soil criteria. The soil profiles in the test pits did not generally correlate with the map unit.

3.4. Wetland Delineation

Four data points were used to define the vegetation, soil, and hydrology of site wetlands (E-1 to E-4, Figure 2, Appendix A and USACE Wetland Forms, Appendix B). The total wetland acreage, including pre-existing wetland, was 11.64 acres in 2011, an increase of 0.11 acres since 2010 (Table 6). The delineation mapped 1.10 acres of pre-existing emergent and shrub/scrub wetland within the mitigation boundaries (Figure 3, Appendix A). The pre-existing wetlands were originally defined during the baseline investigation completed in August 2001 (MDT 2008). The net wetland acreage of 10.54 acres includes 1.45 acres of the re-established flood channel (Community 6, Figure 3, Appendix A). Uplands account for 21.87 acres of the mitigation site. This value is expected to decrease as additional wetlands develop within the site.

Table 6. Total wetland acres delineated in August 2011 at Easton Ranch.

Habitat	2001 (acres)	2010 (acres)	2011 (acres)
Pre-existing Wetland Area	1.10	1.10	1.10
Created Wetland Area	---	10.43	10.54
Total Wetland Habitat	**1.10**	**11.53**	**11.64**

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2010 to 2011 is presented in Table 7 (Appendix B). Bird species identified by Confluence staff in 2011 included the American wigeon, bank swallow, belted kingfisher, black-billed magpie, mallard, red-tailed hawk, red-winged blackbird, sandhill crane, spotted sandpiper, tree swallow, and yellow warbler. Several Columbia spotted frogs, a moose, a white-footed mouse, and three white-tailed deer were viewed onsite. Coyote and raccoon tracks were noted. Additional species observed by MDT staff on July 8 and September 26, 2011 were noted below with an asterisk.

Table 7. Wildlife species observed within Easton Ranch Mitigation Site in 2011.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Columbia spotted frog*	***Rana luteiventris***
Woodhouse's Toad*	***Bufo woodhousii***
MAMMAL	
Coyote	***Canis latrans***
Meadow Vole*	***Microtus pennsylvanicus***
Moose*	***Alces americanus***
Raccoon*	***Procyon lotor***
Richardson's Ground Squirrel*	***Spermophilus richardsonii***
Striped Skunk	*Mephitis mephitis*
White-footed Mouse	***Peromyscus leucopus***
White-tailed Deer*	***Odocoileus virginianus***
REPTILE	
Plains Gartersnake	*Thamnophis radix*

Species identified in 2011 are listed in **bold** type.
* Denotes species identified by MDT in 2011.

Table 7 (continued). Wildlife species observed within Easton Ranch Mitigation Site in 2011.

COMMON NAME	SCIENTIFIC NAME
BIRD	
American Crow*	***Corvus brachyrhynchos***
American Goldfinch	*Spinus tristus*
American Robin*	***Turdus migratorius***
American Kestrel*	***Falco sparverius***
American Wigeon	***Anas americana***
Bald Eagle*	***Haliaeetus leucocephalus***
Bank Swallow	***Riparia riparia***
Belted Kingfisher	***Megaceryle alcyon***
Black-billed Magpie*	***Pica hudsonia***
Canada Goose	*Branta canadensis*
Cedar Waxwing	*Bombycilla cedrorum*
Eastern Kingbird	*Tyrannus tyrannus*
Golden Eagle	*Aquila chrysaetos*
Gray Catbird	*Dumetella carolinensis*
Great Horned Owl	*Bubo virginianus*
House Wren*	***Troglodytes aedon***
Killdeer*	***Charadrius vociferus***
Lesser Yellowlegs	*Tringa flavipes*
Mallard*	***Anas platyrhynchos***
Mountain Bluebird	*Sialia currucoides*
Mourning Dove	*Zenaida macroura*
Northern Flicker	*Colaptes auratus*
Northern Harrier	*Circus cyaneus*
Osprey*	***Pandion haliaetus***
Red-tailed Hawk*	***Buteo jamaicensis***
Red-winged Blackbird	***Agelaius phoeniceus***
Sandhill Crane*	***Grus canadensis***
Song Sparrow*	***Melospiza melodia***
Spotted Sandpiper*	***Actitis macularius***
Tree Swallow*	***Tachycineta bicolor***
Vesper Sparrow*	***Pooecetes gramineus***
Western Bluebird*	***Sialia mexicana***
Western Meadowlark*	***Sturnella neglecta***
Willet	*Tringa semipalmata*
Wilson's Snipe*	***Gallinago delicata***
Yellow-rumped Warbler*	***Dendroica coronata***
Yellow Warbler*	***Dendroica petechia***

Species identified in 2011 are listed in **bold** type.
* Denotes species identified by MDT in 2011.

3.6. Functional Assessment

The project was separated into three assessment areas (AA) (Table 8). The functional assessments of the constructed wetland cells, constructed channel, and existing emergent and shrub-scrub wetlands were completed using the 2008 MDT Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008) (Appendix B). The Creation AA encompassed 9.09 acres of constructed palustrine, emergent wetland cells. The Restoration AA consisted of 1.45-acres of re-established flood channel that currently meets the wetland criteria. The 1.1-acre Preservation AA encompassed the existing forested, shrub/scrub and palustrine emergent wetlands.

The Creation AA was rated as a Category III wetland in 2011 with 57.5 percent of the total possible points, an increase of 5 percent since 2010. The ratings were high for short and long term surface water storage, production export/food chain support, and groundwater discharge/recharge and moderate for MTNHP species habitat, general wildlife habitat, flood attenuation, and sediment/nutrient/toxicant removal. The ratings are expected to improve as the AA transitions from high to low disturbance and continues to develop wetland habitat. The Restoration AA (flood channel) received a Category III rating with 59.5 percent of the total possible points, up from 49.5 percent in 2010. Ratings were excellent for production export/food chain support and high for sediment/nutrient/toxicant removal and moderate for MTNHP species habitat, general wildlife habitat, flood attenuation, short and long term surface water storage, sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge. The existing wetland within the Preservation AA was rated as a Category II with 77.2 percent, an increase from 73.9 percent in 2010. The presence of emergent, scrub/shrub, and forested wetlands types increased the structural diversity ratings. Ratings were high for flood attenuation, general wildlife habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, and groundwater discharge/recharge.

Table 8. Functions and Values of Easton Ranch Wetlands.

Function and Value Parameters from the 2008 MDT Montana Wetland Assessment Method	2010 Creation	2011 Creation	2010 Restoration	2011 Restoration	2010 Preservation	2011 Preservation
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.1)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Mod (0.5)	Mod (0.7)	Low (0.3)	Mod (0.7)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.5)	Mod (0.5)	Mod (0.6)	Exc (1.0)	High (0.9)
Short and Long Term Surface Water Storage	High (0.9)	High (0.8)	Mod (0.6)	Mod (0.6)	High (0.8)	High (0.8)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Low (0.2)	Low (0.2)	Mod (0.6)	Mod (0.6)	NA	NA
Production Export/ Food Chain Support	Mod (0.5)	High (0.8)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Exc (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	Mod (0.7)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.3)	Low (0.2)	Low (0.3)	Mod (0.6)	Mod (0.6)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.5)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**5.25 / 10**	**5.75 / 10**	**4.95 / 10**	**5.95 / 10**	**6.65 / 9**	**6.95 / 9**
% of Possible Score Achieved	**52.5%**	**57.5%**	**49.5%**	**59.5%**	**73.9%**	**77.2%**
Overall Category	**III**	**III**	**III**	**III**	**II**	**II**
Acreage of Assessed Aquatic Habitats within Easement (ac)	**8.98**	**9.09**	**1.45**	**1.45**	**1.1**	**1.1**
Functional Units (acreage x actual points)	**47.15**	**52.27**	**7.18**	**8.63**	**7.32**	**7.65**

3.7. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7; Figure 2, Appendix A) in 2010 and 2011 are shown on pages C-1 to C-2 of Appendix C**.** Panoramas of photo points PP-2 to PP-5 are included on pages C-6 and C-7 of Appendix C. Transect end points are shown on pages C-4 and C-6 of Appendix C. Photos of the data points are included on page C-8. Photo points 4 and 5 on pages C-2 and C-3 show the Shields River in the northwest corner of the site in 2010 and 2011.

3.8. Maintenance Needs

The diversion structure was closed during the July 2011 investigation. Six bird-boxes were installed at the site between 2010 and 2011. One of the boxes was occupied. The fences were intact. No maintenance is required on site structures.

Thirteen separate infestations of Canada thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified in uplands around the site (Figure 3). The infestations ranged in area from less than 0.1 acre to 0.1 to 1.0 acre. The cover classes ranged from low (1 to 5 percent cover) to moderate (5 to 25 percent cover). Isolated Canada thistle plants were observed in communities 1 and 3. Approximately 1.5 acres of Canada thistle were sprayed in late summer of 2011. Six infestations of houndstongue (*Cynoglossum officinale*), a Priority 2B weed, were observed primarily in the north half of the site. The size of the infestations was less than 0.1 acres and the cover class was trace. The weed was not targeted for spraying in 2011.

3.9. Current Credit Summary

Table 9 summarizes the current wetland credits based on the USACE approved credit ratios (MDT 2008) and the wetland delineation completed in July 2011. Proposed mitigation included the creation of 24.95 acres of palustrine, emergent and shrub/scrub wetlands, the re-establishment of a 1.56-acre flood channel, the preservation of 1.10 acres of pre-existing wetland, and the maintenance of 6.43 acres of upland buffer. Proposed wetland credits for the project site totaled 27.40 credit acres, which accounted for 0.67 acres of project impacts.

The 2011 delineation identified a total of 11.64 acres of wetland with the project boundary. The restored channel encompassed 1.45 acres of riverine palustrine wetland. Approximately 9.09 acres of emergent wetland developed within the constructed cells. The pre-existing wetland, which included portions of Community 3 and all of Communities 4 and 7, encompassed 1.1 acres. Uplands accounted for 21.87 acres of the 33.51 acre site. The uplands are expected to decrease with continued wetland development within the project area. The current 50 foot upland buffer calculated for this site totals 11.97 acres. However, since this value is expected to decrease with continued wetland development the expected 50 foot upland buffer at full wetland development (6.43 acres) was used to calculate credit totals. Applying the approved USACE Mitigation ratios to each mitigation feature, a total of 11.44 acres of credit was realized in 2011 (Table 9). This total includes the reduction 0.67 acres as a result of project impacts.

The areas delineated as wetlands met the three criteria for hydrology, vegetation, and soil. A majority of the site was inundated or saturated within 12 inches of the ground surface in July 2011. The soil profile at the wetland data points exhibited positive indicators of hydric soil. The herbaceous cover of hydrophytic vegetation in portions of Community 6 is approximately 70 to 75 percent. The percent cover of bare ground decreased notably from 2010 to 2011. The vegetation cover of the channel is still in the development stage although it increased notably in 2011. The channel cross-section was stable in 2011, although there was evidence of sediment deposition and scour within the channel cross-section. Weed management is ongoing. The Canada thistle infestations were sprayed in 2011. The weeds do not currently exceed 10 percent of cover in the upland buffer. The fencing around the site was intact and in good condition and grazing has been excluded from the mitigation area.

Table 9. Summary of wetland credits as of 2011.

Proposed Mitigation Features	Compensatory Mitigation Type	USACE Mitigation Ratios	Final Credit Acreages	Proposed Final Wetland Credits (Acres)	2010 Wetland Acreages	2010 Credit Acres	2011 Wetland Acreages	2011 Credit Acres
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95	7.78	7.78	9.09	9.09
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56	1.45	1.45	1.45	1.45
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	1.10	0.28	1.10	0.28	1.10	0.28
Establish a 50-foot wide upland buffer.	Upland Buffer	5:1	6.43	1.29	6.43*	1.29	6.43*	1.29
Project Impacts			-0.67	-0.67	-0.67	-0.67	-0.67	-0.67
Total				**27.41**		**10.12**		**11.44**

*Current upland buffer calculated to be 11.97ac and is expected to decrease as wetland areas expand within mitigation boundary. Value presented in this table (6.43ac) represents the expected extent of upland buffer once maximum wetland acreage is achieved.

4. REFERENCES

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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

Figure 2: 2011 Monitoring Activity Locations

PP2
PP1
T-1 Finish
E-2
E-1
VegTran1
T-1 Start
T-3 Finish
PP7
T-2 Start
PP3
PP4A
PP4B
PP5
VegTran2
E-4
E-3
VegTran3
Shields River
T-2 Finish
T-3 Start
PP6

Legend

- Vegetation Transect
- Monitoring Limits
- Data Points
- Photo Points
- Bird Box

Base Photography Date: August 17, 2011

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

LOCATION: Park Co., MT

PROJECT NO: NH-STPP 5(39)

FILE: Easton/Monitor2011.mxd

Project Name: Easton Ranch Wetland Mitigation

Drawing Title: 2011 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 15, 2011

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -



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

LOCATION: Park Co., MT

PROJECT NO: STPX-0034(14)

FILE: Easton/Veg2011.mxd

Project Name
EASTON RANCH
WETLAND MITIGATION
Drawing Title
2011 MAPPED SITE FEATURES

DRAWN	CHECKED	APPROVED
BCS	BV	JU

SCALE: Noted

Drawn: July 13, 2011

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure
3

REV -

Appendix B

2011 MDT Wetland Mitigation Site Monitoring Form
2011 USACE Wetland Determination Data Form
2011 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Easton Ranch Assessment Date/Time 7/14/2011 7:39:44 AM

Person(s) conducting the assessment: S. Frazier, L. Soderquist

Weather: Partly cloudy w/ late pm thunders Location: Easton Ranch Mitigation Site

MDT District: Butte Milepost: 0

Legal Description: T 4N R 9E Section(s) NW 1/4 Sec 32

Initial Evaluation Date: 8/25/2010 Monitoring Year: 2 #Visits in Year: 1

Size of Evaluation Area: 34 (acres)

Land use surrounding wetland:

Agriculture (hay) to the east; undeveloped riparian corridor and herbaceous uplands to north, south, and west.

HYDROLOGY

Surface Water Source: High groundwater; overbank flow from Shields River

Inundation: ☑ Average Depth: 0.6 **(ft)** Range of Depths: 0-3 **(ft)**

Percent of assessment area under inundation: 5 %

Depth at emergent vegetation-open water boundary: 0.5 **(ft)**

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

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

Recent scour and sediment deposition in created flood channel. Portions were inundated during site visit on 7/14/2011. Algal mats, surface cracks, water staining, drift deposits, sediment deposits, and high water table all suggest seasonal inundation in wetland component of created wetland cells.

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
No wells	

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:

With the exception of Veg Community 5, which contains small areas of inundation, all inundated areas are situated in excavated depressions within the created wetland AA. Most of the depressions on the northern half of the created wetland AA are saturated but not inundated, while those in the southern half are all inundated.

VEGETATION COMMUNITIES

Site Easton 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:** Phleum pratense / Poa pratensis **Acres** 8.44

Species	Cover class	Species	Cover class
Agropyron repens	1	Agropyron smithii	3
Alnus incana	0	Alopecurus pratensis	2
Brassica kaber	1	Bromus carinatus	3
Bromus inermis	3	Bromus tectorum	1
Carduus nutans	1	Carex nebrascensis	1
Carum carvi	3	Cirsium arvense	0
Dactylis glomerata	1	Dracocephalum sp.	0
Equisetum hyemale	1	Festuca pratensis	2
Hordeum jubatum	1	Medicago lupulina	1
Medicago sativa	2	Melilotus officinalis	2
Phleum pratense	5	Poa pratensis	4
Populus tremuloides*	0	Taraxacum officinale	0
Taraxacum officinale	2	Thlaspi arvense	0
Trifolium pratense	2	Trifolium repens	3
Trifolium spp.	3		

Comments:

Community # 3 **Community Type:** Carex spp. / **Acres** 0.46

Species	Cover class	Species	Cover class
Agropyron repens	0	Beckmannia syzigachne	2
Carex nebrascensis	5	Carex praegracilis	1
Carex utriculata*	3	Cirsium arvense	1
Equisetum arvense	2	Juncus balticus	1
Mentha arvensis	0	Phalaris arundinacea	1
Phleum pratense	1	Plantago major	1
Poa pratensis	2	Salix exigua	2
Scirpus microcarpus	2	Sisyrinchium idahoense	0
Taraxacum officinale	1	Trifolium repens	0

Comments:

Community # 4 **Community Type:** Salix drummondiana / **Acres** 0.1

Species	Cover class	Species	Cover class
Agropyron smithii	4	Beckmannia syzigachne	2
Carex nebrascensis	3	Carex praegracilis	1
Cirsium douglasii	0	Dactylis glomerata	2
Glyceria grandis	2	Mentha arvensis	1
Phleum pratense	1	Poa pratensis	1
Ribes lacustre	2	Rosa woodsii	1
Salix bebbiana	0	Salix drummondiana	4
Scirpus microcarpus	2	Urtica dioica	2

Comments:

Community # 5 **Community Type:** Populus trichocarpa* / **Acres** 0.76

Species	Cover class	Species	Cover class
Agropyron smithii	5	Beckmannia syzigachne	0
Bromus inermis	4	Carex nebrascensis	1
Carex utriculata*	2	Carum carvi	3
Cirsium douglasii	0	Mentha arvensis	1
Phleum pratense	1	Poa pratensis	3
Populus trichocarpa*	5	Ribes lacustre	1
Salix bebbiana	3	Salix lasiandra	2
Scirpus microcarpus	2	Thlaspi arvense	0
Urtica dioica	0		

Comments:

Community # 6 **Community Type:** Beckmannia syzigachne / **Acres** 8.64

Species	Cover class	Species	Cover class
Agropyron smithii	0	Alisma gramineum	1
Alnus incana	0	Alopecurus pratensis	2
Bare ground	3	Beckmannia syzigachne	5
Bromus inermis	1	Carex utriculata*	1
Carum carvi	2	Cynoglossum officinale	0
Deschampsia cespitosa	1	Eleocharis palustris	1
Equisetum arvense	2	Glyceria grandis	2
Glyceria striata	3	Juncus balticus	1
Juncus bufonius	1	Juncus ensifolius	2
Juncus nevadensis	1	Juncus spp.	1
Juncus tenuis	1	Medicago lupulina	1
Melilotus officinalis	2	Mentha arvensis	1
Mimulus guttatus	1	Phleum pratense	1
Plantago major	1	Poa pratensis	2
Potentilla fruticosa	0	Rumex crispus	0
Salix bebbiana	0	Salix exigua	0
Taraxacum officinale	0	Trifolium pratense	2
Trifolium repens	2	Typha latifolia	1

Comments:

Bare ground component of veg community 6 approaches 80% in the deepest portions of the created wetland cells, most of which appear to be inundated by 1-30 inches of groundwater during much of the growing season.

Community # 7 **Community Type:** Aquatic Macrophytes / Open Water **Acres** 0.68

Species	Cover class	Species	Cover class
Algae, green	3	Elodea spp.	1
Myriophyllum sp	3	Open water	5
Ruppia maritima	2		

Comments:

Community # 8 **Community Type:** Bromus spp. / Trifolium spp. **Acres** 13.43

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron smithii	3
Alisma gramineum	0	Alnus incana	0
Beckmannia syzigachne	2	Brassica kaber	0
Bromus carinatus	3	Bromus ciliatus	4
Bromus inermis	3	Bromus tectorum	1
Carduus nutans	0	Carex nebrascensis	1
Carum carvi	2	Cassiope mertensiana	2
Chenopodium album	0	Cirsium arvense	1
Cynoglossum officinale	0	Dactylis glomerata	1
Deschampsia cespitosa	0	Equisetum arvense	1
Equisetum hyemale	0	Festuca pratensis	1
Glyceria elata	1	Juncus balticus	1
Juncus tenuis	0	Medicago lupulina	1
Medicago sativa	1	Melilotus officinalis	3
Mentha arvensis	0	Mimulus guttatus	0
Phleum pratense	3	Plantago major	1
Poa pratensis	2	Potentilla fruticosa	1
Potentilla gracilis	0	Prunus virginiana	0
Rumex crispus	1	Salix exigua	1
Scutellaria lateriflora	1	Sisyrinchium idahoense	0
Taraxacum officinale	1	Trifolium pratense	3
Trifolium repens	3		

Comments:

Veg community 8 suceeded veg community 2 from 2010.

Community # 9 **Community Type:** Beckmannia syzigachne / Bare Ground **Acres** 1.01

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Bare ground	5
Beckmannia syzigachne	3	Carum carvi	1
Glyceria grandis	1	Juncus bufonius	1
Juncus ensifolius	1	Mimulus guttatus	0

Comments:

Total Vegetation Community Acreage **33.52**

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

VEGETATION TRANSECTS

Site: Easton Ranch Date: 7/14/2011 7:39:44 AM

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

Interval Data:

Ending Station 52 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Bromus carinatus	0	Bromus inermis	0
Carex nebrascensis	1	Carum carvi	2
Cirsium arvense	0	Deschampsia cespitosa	1
Festuca pratensis	1	Phleum pratense	1
Plantago major	1	Potentilla fruticosa	1
Scutellaria lateriflora	1	Trifolium pratense	2
Trifolium repens	2		

Ending Station 59 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	5	Glyceria grandis	1
Juncus balticus	0	Juncus spp.	1
Medicago lupulina	1	Phleum pratense	1

Ending Station 131 **Community Type:** Beckmannia syzigachne / Bare Ground

Species	Cover class	Species	Cover class
Bare ground	4	Beckmannia syzigachne	5
Carum carvi	1	Glyceria grandis	2
Juncus bufonius	1	Juncus ensifolius	1
Mimulus guttatus	1		

Ending Station 195 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Carum carvi	3	Medicago lupulina	1
Melilotus officinalis	0	Phleum pratense	5
Poa pratensis	2	Trifolium repens	2

Ending Station 264 **Community Type:** Beckmannia syzigachne / Bare Ground

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Bare ground	5
Beckmannia syzigachne	4	Juncus bufonius	1

Ending Station 460 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Agropyron smithii	2	Alopecurus pratensis	1
Beckmannia syzigachne	3	Bromus carinatus	2
Carduus nutans	0	Carum carvi	3
Cirsium arvense	0	Melilotus officinalis	3
Phleum pratense	2	Scutellaria lateriflora	1
Taraxacum officinale	1	Trifolium pratense	2
Trifolium repens	2		

Ending Station 512 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	1	Beckmannia syzigachne	3
Juncus ensifolius	2	Juncus spp.	4
Juncus tenuis	1	Melilotus officinalis	1
Trifolium pratense			

Ending Station 559 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agropyron smithii	2	Alopecurus pratensis	3
Carduus nutans	1	Carex nebrascensis	1
Carum carvi	1	Festuca pratensis	2
Medicago sativa	2	Phleum pratense	3
Poa pratensis	3	Trifolium pratense	2
Trifolium repens	2		

Ending Station 670 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Beckmannia syzigachne	1	Bromus carinatus	3
Bromus inermis	2	Carum carvi	1
Potentilla fruticosa	1	Rumex crispus	1
Scutellaria galericulata	1	Trifolium pratense	2
Trifolium repens	2		

Ending Station 702 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	1	Beckmannia syzigachne	5
Bromus inermis	1	Carex utriculata*	1
Carum carvi	2	Cynoglossum officinale	0
Mentha arvensis	1	Phleum pratense	1
Plantago major	1	Potentilla fruticosa	0
Rumex crispus	1	Trifolium pratense	0
Trifolium repens	2		

Ending Station 1288 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Beckmannia syzigachne	1	Bromus carinatus	3
Carduus nutans	0	Carum carvi	2
Cirsium arvense	0	Cynoglossum officinale	0
Cynoglossum officinale	1	Medicago lupulina	1
Melilotus officinalis	1	Plantago major	0
Scutellaria galericulata	1	Trifolium pratense	3
Trifolium repens	2		

Ending Station 1376 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agropyron smithii	2	Brassica kaber	1
Bromus carinatus	2	Bromus inermis	2
Carum carvi	1	Dactylis glomerata	1
Phleum pratense	5	Poa pratensis	4
Populus tremuloides*	0	Trifolium pratense	2
Trifolium repens	2		

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 180

Interval Data:

Ending Station 39 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Carex nebrascensis	3	Cirsium arvense	1
Poa pratensis	2	Salix exigua	2
Scirpus microcarpus	2	Sisyrinchium idahoense	0

Ending Station 120 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Alisma gramineum	0	Beckmannia syzigachne	2
Bromus inermis	3	Carex nebrascensis	2
Cirsium arvense	0	Equisetum arvense	0
Juncus balticus	1	Juncus tenuis	1
Medicago lupulina	1	Phleum pratense	1
Plantago major		Sisyrinchium idahoense	0
Taraxacum officinale	1	Trifolium pratense	2

Ending Station 170 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	5	Deschampsia cespitosa	1
Equisetum arvense	1	Juncus bufonius	1
Juncus tenuis	1	Poa pratensis	2
Salix bebbiana	0		

Ending Station 219 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Alnus incana	0	Carum carvi	1
Cirsium arvense	0	Phleum pratense	5
Poa pratensis	0	Taraxacum officinale	0
Trifolium pratense	2	Trifolium repens	1

Ending Station 327 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Agropyron smithii	0	Beckmannia syzigachne	0
Bromus inermis	1	Cirsium arvense	0
Equisetum arvense	1	Hordeum jubatum	1
Melilotus officinalis	1	Plantago major	1
Rumex crispus	1	Trifolium pratense	2

Ending Station 362 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	5	Equisetum arvense	2
Juncus ensifolius	1	Juncus tenuis	2
Plantago major	1	Poa pratensis	2
Trifolium pratense	1		

Ending Station 889 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Agropyron smithii	1	Brassica kaber	0
Bromus carinatus	2	Carduus nutans	0
Carum carvi	1	Chenopodium album	0
Cirsium arvense	1	Festuca pratensis	2
Glyceria elata	1	Medicago sativa	1
Melilotus officinalis	2	Mentha arvensis	0
Phleum pratense	2	Plantago major	1
Trifolium pratense	0		

Ending Station 1310 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	0	Beckmannia syzigachne	5
Carum carvi	2	Glyceria grandis	1
Juncus balticus	0	Juncus ensifolius	0
Juncus nevadensis	1	Juncus tenuis	0
Phleum pratense	2	Plantago major	1
Poa pratensis	0	Scirpus microcarpus	0
Trifolium pratense	2		

Ending Station 1333 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agropyron smithii	2	Bromus carinatus	5
Carduus nutans	0	Phleum pratense	2
Poa pratensis	0	Trifolium repens	2

Transect Notes:

Channel interval 120 to 170.

Transect Number: 3 **Compass Direction from Start:** 95

Interval Data:

Ending Station 10 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus carinatus	2	Carum carvi	2
Phleum pratense	4	Poa pratensis	3
Trifolium repens	2		

Ending Station 125 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Agropyron smithii	2	Beckmannia syzigachne	1
Bromus carinatus	3	Cassiope mertensiana	2
Cirsium arvense	0	Cynoglossum officinale	0
Equisetum arvense	0	Equisetum hyemale	1
Medicago lupulina	1	Melilotus officinalis	4
Phleum pratense	3	Plantago major	1
Trifolium pratense	2		

Ending Station 161 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alnus incana	0	Beckmannia syzigachne	5
Deschampsia cespitosa	1	Glyceria striata	1
Trifolium repens	2		

Ending Station 201 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Agropyron smithii	3	Bromus carinatus	0
Carum carvi	2	Melilotus officinalis	4
Phleum pratense	3	Trifolium pratense	2

Ending Station 221 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agropyron repens	1	Agropyron smithii	2
Bromus carinatus	5	Carum carvi	2
Dactylis glomerata	2	Medicago lupulina	1
Melilotus officinalis	3	Phleum pratense	4
Poa pratensis	0	Trifolium pratense	1

Ending Station 246 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	2	Carum carvi	0
Deschampsia cespitosa	0	Equisetum arvense	4
Medicago lupulina	1	Plantago major	1
Rumex crispus	1	Salix exigua	0
Trifolium pratense	3		

Ending Station 297 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agropyron smithii	1	Carduus nutans	0
Carum carvi	4	Melilotus officinalis	3
Phleum pratense	5	Poa pratensis	2
Trifolium pratense	4	Trifolium repens	3

Ending Station 360 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Beckmannia syzigachne	2	Bromus carinatus	3
Bromus inermis	2	Carum carvi	3
Dactylis glomerata	1	Medicago lupulina	2
Melilotus officinalis	3	Phleum pratense	2
Plantago major	2	Taraxacum officinale	1
Trifolium pratense	3	Trifolium repens	3

Ending Station 671 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agropyron smithii	0	Alisma gramineum	1
Beckmannia syzigachne	5	Carum carvi	3
Deschampsia cespitosa	1	Equisetum arvense	2
Glyceria grandis	3	Juncus balticus	2
Juncus bufonius	0	Juncus ensifolius	0
Juncus tenuis	1	Melilotus officinalis	3
Phleum pratense	1	Poa pratensis	1
Taraxacum officinale	0	Trifolium pratense	4

Ending Station 751 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	2	Carex utriculata*	0
Carum carvi	2	Cirsium douglasii	0
Equisetum arvense	1	Phleum pratense	3
Poa pratensis	1	Trifolium pratense	2

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Easton Ranch

Planting Type	#Planted	#Alive	Notes
Red-osier dogwood	250	8	100% survival for observed plantings; excellent vigor
Sandbar willow	250	5	90% survival for observed plantings; good vigor
Thinleaf alder	500	16	80% survival for observed plantings; mod. good vigor
Willow cuttings	200	9	90% survival for observed plantings; good vigor

Comments

No systematic sampling method was employed in evaluating planted woody vegetation survival. Survival was tallied as the site was traversed during monitoring activities. It is possible some stems have been browsed to ground level and overlooked.

Easton Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: _____

How many? 6

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Wigeon	1	FO	AB, MA
Bank Swallow	12	F, FO, N	MA, WM
Belted Kingfisher	1	F, FO	MA, OW
Black-billed Magpie	2	FO, L	WM
Mallard	2	F, FO	MA, OW
Red-tailed Hawk	2	FO	FO, WM
Red-winged Blackbird	4	L	MA
Sandhill Crane	1	L	UP, WM
Spotted Sandpiper	1	F, FO	AB, MF, OW
Tree Swallow	8	FO, N	FO, SS, WM
Yellow Warbler	2	FO	MA, SS

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
Columbia Spotted Frog	6	No	No	No	also several unknown tadpoles in south pond
Coyote		Yes	No	No	
Moose	1	No	No	No	
Raccoon		Yes	No	No	
Richardson's Ground Squirrel	1	No	No	No	
White-footed Mouse	1	No	No	No	
White-tailed Deer	3	No	No	No	numerous beds noted across site

Wildlife Comments:

Easton 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
8046			190	PP1, pano 8046-8054
8049			250	PP1
8053			300	PP1
8055			200	PP2, pano 8055-8058
8062			140	PP3, pano 8062-8065
8066			170	PP4A
8067			20	PP4B, or 8068
8076			40	PP5, pano 8069-8075
8080			0	PP6
8086			340	PP7
8091			5	Veg Tran 1, start
8095			180	Veg Tran 1, end
8099			90	E-3
8100			180	Veg Tran 2, start
8101			180	start of veg T-2
8102			40	E-4
8103			0	Veg Tran 2, end
8103				end of veg T-2
8106			95	Veg Tran 3, start
8108			265	Veg Tran 3, end

Comments:

Easton Ranch

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Functional Assessments

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

Functional Assessment Comments:

Maintenance

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

If yes, do they need to be repaired? 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? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 7/14/2011

Applicant/Owner: MDT | State: Montana | Sampling Point: E-1

Investigator(s): S. Frazier | Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E | Lat: 46.0592933333333 | Long: -110.638155 | Datum: WGS 84

Soil Map Unit Name: Meadowcreek-rarely flooded Nesda complex, 0-2% slopes | NWI classification: PEM

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Data point located in shallow depression within created wetland cell.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Beckmannia syzigachne	30	☑	OBL
2. Juncus tenuis	5	☐	FAC+
3. Juncus ensifolius	5	☐	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	40 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 60

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	40 (A)		55 (B)

Prevalence Index = B/A = 1.375

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
High percentage of bare ground at data point a combination of newly constructed site lacking permanent veg development and inundation during early growing season.

SOIL

Sampling Point: E-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Silt Loam	
4-11	5Y 3/1	90	7.5YR 3/4	10	C	M	Sandy Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☑ No ☐ Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 4

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 7/14/2011

Applicant/Owner: MDT | State: Montana | Sampling Point: E-2

Investigator(s): S. Frazier | Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E | Lat: 46.05938 | Long: -110.638123333333 | Datum: WGS 84

Soil Map Unit Name: Meadowcreek-rarely flooded Nesda complex, 0-2% slopes | NWI classification: Upland

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Data point located on nearly level surface approximately 1.5 feet above elevation of wetland data point E-1. Area previously mapped as Cheno/Phleum.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Bromus carinatus	30	☑	NO
2. Carum carvi	15	☑	NO
3. Phleum pratense	10	☐	FACU
4. Agropyron smithii	10	☐	FACU
5. Trifolium pratense	15	☑	FACU
6. Beckmannia syzigachne	5	☐	OBL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	85 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 25

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	40 (A)		145 (B)

Prevalence Index = B/A = 3.625

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:
Plant and hydro indicators suggest shift towards upland plant community.

SOIL

Sampling Point: E-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	95	10YR 4/4	5	C	M	Fine Sandy Loam	Redox features interpreted as relict.
3-10	5Y 4/1	80	10YR 4/6	20	C	M	Sandy Loam	Variable soil texture suggests extensive

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Soil color and texture indicates mixing during construction. Hydric soil features interpreted to be relict based on geomorphic position and the absense of hydrophytic vegetation and indicators of wetland hydrology. Coarseness of soils likely due to the alluvial nature of the landscape.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

Remarks:

No hydro indicators. Approx 1.5 ft above adjacent wetland data point

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 7/14/2011

Applicant/Owner: MDT | State: Montana | Sampling Point: E-3

Investigator(s): S. Frazier | Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E | Lat: 46.0588016666667 | Long: -110.640053333333 | Datum: WGS 84

Soil Map Unit Name: Meadowcreek-rarely flooded Nesda complex, 0-2% slopes | NWI classification: PEM

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Beckmannia syzigachne	80	☑	OBL
2. Glyceria grandis	20	☐	NO
3. Cornus stolonifera	2	☐	FACW
4. Juncus ensifolius	5	☐	FACW
5. Juncus bufonius	3	☐	FACW+
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	110 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		100 (B)

Prevalence Index = B/A = 1.11111

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: E-3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/1	95	10YR 5/4	5	C	M	Clay Loam	
8-14	10YR 5/2	90	7.5YR 4/4	10	C	M	Sandy Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☑ No ☐ Depth (inches): 12

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 7/14/2011

Applicant/Owner: MDT | State: Montana | Sampling Point: E-4

Investigator(s): S. Frazier | Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E | Lat: 46.0588266666667 | Long: -110.639738333333 | Datum: WGS 84

Soil Map Unit Name: Meadowcreek-rarely flooded Nesda complex, 0-2% slopes | NWI classification: PEM

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Hydric soils interpreted to be relict based geomorphic position and the absense of hydrophytic vegetation and wetland hydrology indicators.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Melilotus officinalis	50	☑	FACU
2. Bromus inermis	20	☑	NO
3. Agropyron smithii	5	☐	FACU
4. Phleum pratense	7	☐	FACU
5. Trifolium pratense	20	☑	FACU
6. Beckmannia syzigachne	5	☐	OBL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	107 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	82	x 4 =	328
UPL species	0	x 5 =	0
Column Totals:	87 (A)		333 (B)

Prevalence Index = B/A = 3.82759

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: E-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	95	10YR 4/4	5	C	M	Clay Loam	
4-12	10YR 3/4	85	10YR 4/2	15	D	M	Clay Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Redox features interpreted to be relict based on geomorphic position and the absense of wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

Remarks:

No hydro indicators present.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST{X-34(14) **Control#**

3. Evaluation Date 7/14/2011 **4. Evaluators** S. Frazier / L. Soderqui **5. Wetland/Site# (s)** Creation

6. Wetland Location(s): **T** 4N **R** 9E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10070003 **Watershed/County** Upper Yellowstone Watershed/Park County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 9.09

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 9.09

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Emergent Wetland	Excavated	Seasonal/Intermittant	80
Riverine	Emergent Wetland	Excavated	Seasonal/Intermittant	20

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)

Limited agriculture (hay) and few ranch structures to the east. Undeveloped riparian corridor and herbaceous uplands to north, south, and west. Three species of noxious weeds are present within the AA, but total cover does not exceed 1%. The AA is managed in a natural state, as are most of the lands within 500 feet of the AA.

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

Cirsium arvense; Carduus nutans; Cynoglossum officinale

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

The AA consists of four constructed wetland cells. The lowest contours of the wetland cells are seasonally inundated and have developed wetland characteristics. The higher elevations lack wetland characteristics and support upland plant communities. The cells are bordered by limited agriculture (hay) and an undeveloped riparian corridor. Wetlands in AA were reclassified as Riverine in 2011 based on proximity to and inferred surface and subsurface hydrologic connections with the adjacent Shields River channel.

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: The AA consists entirely of herbaceous uplands and palustrine emergent wetlands (PEM).

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	○ D ◉ S	Grizzly Bear (LT)
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: USFWS - 2011 county species list; MNHP verified in Park County

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	◉ D ○ S	Bald Eagle (S3)
Incidental habitat (list species)	◉ D ○ S	Golden Eagle (S3)
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: 2010 MWAM- MT NHP reports BE nest close to AA. BE observed in cottonwoods.

14C. General Wildlife Habitat Rating:

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

Moderate

Substantial (based on any of the following [check]):

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☑ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

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

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

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

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

Comments Moderate habitat rating is the result of moderate wildlife use and fairly substantial surface water ponding in the southern half of the AA.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

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

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

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

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

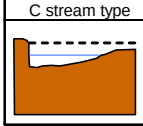
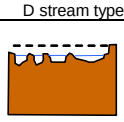
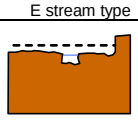
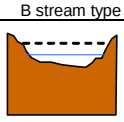
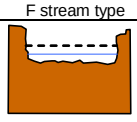
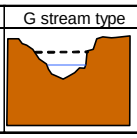
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

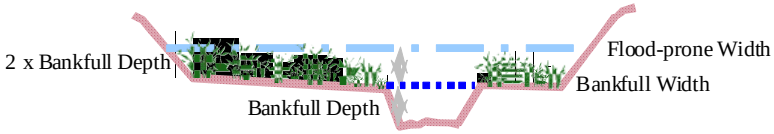
iii. Final Score and Rating: 0 NA **Comments:**

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

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

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

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



Floodrpone width 133 **/** **Bankfull width** 28 **=** **Entrenchment ratio** 4.75

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: AA receives overbank flows from Shields River.

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: (9.09 acre wetland) x (1 ft. max depth at highwater) = 9.09 acre-feet. Inundation levels decreased after site visit based on MDT and aerial photos.

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: Vegetation still developing within site.

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: Rating is for vegetation located around the fringe of created wetland depressions at southern end of AA that contain seasonal standing water.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .8H

Comments: Some perennial ponding in deepest depressions in the southern end of the created wetland cells suspected.

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

i. Discharge Indicators

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

ii. Recharge Indicators

- ☑ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

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

Comments: The site was saturated to the surface during the site visit.

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: common wetland type; low structural diversity; moderate disturbance (from 2010 wetland construction)

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:

The site has a new land owner. Permission will be required.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Creation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.909	☑
B. MT Natural Heritage Program Species Habitat	M	.6	1	5.454	☐
C. General Wildlife Habitat	M	.7	1	6.363	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	4.545	☐
F. Short and Long Term Surface Water Storage	H	.8	1	7.272	☑
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	6.363	☐
H. Sediment/Shoreline Stabilization	L	.2	1	1.818	☐
I. Production Export/Food Chain Support	H	.8	1	7.272	☐
J. Groundwater Discharge/Recharge	H	1	1	9.09	☑
K. Uniqueness	L	.3	1	2.727	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.4545	☐
Totals:		5.75	10	52.2675	
Percent of Possible Score			**57.5** %		

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

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

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

☑

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

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST(X-34(14) **Control#**

3. Evaluation Date 7/14/2011 **4. Evaluators** S. Frazier / L. Soderqui **5. Wetland/Site# (s)** Preservation

6. Wetland Location(s): T 4N **R** 9E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10070003 **Watershed/County** Upper Yellowstone Watershed/Park County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.1

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 1.1

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☐ **Mitigation Wetlands: post construction**

☑ **Other** Preserved PSS/PFO Habitat

10. Classification of Wetland and Aquatic Habitats in AA

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

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

AA consists of existing riverine PFO/PSS/PEM wetlands located adjacent to the created depressional wetlands and flood channel. AA and adjacent areas are managed in a natural state, so the disturbance regime is low.

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

Canadian thistle and houndstongue

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

AA consists of small areas of existing Riverine PFO/PSS/PEM wetlands located at the northernwest (near Shields River) and southcentral ends of the mitigation area. The existing PFO/PEM habitat located at the southern end receives direct hydrologic inputs from the created flood channel. Both wetland features are bordered by created wetlands and the Shields River riparian corridor. AA includes communities 3, 4, & 5.

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	Grizzly Bear
No usable habitat	▣ S	

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

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

Sources for documented use USFWS - 2011 county species list; MNHP verified in Park County

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	◉ D ○ S	Bald Eagle (S3)
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 2010 MWAM- MT NHP reported BE nest close to AA. BE observed in 2010 hunting from cottonwoods.

14C. General Wildlife Habitat Rating:

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

Moderate

Substantial (based on any of the following [check]):

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☑ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

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

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

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

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

Comments Moderate wildlife use based on observations of frogs, moose, mouse, and deer.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

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

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

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

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

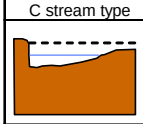
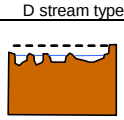
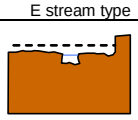
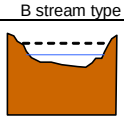
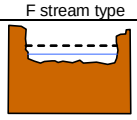
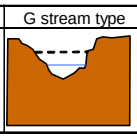
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

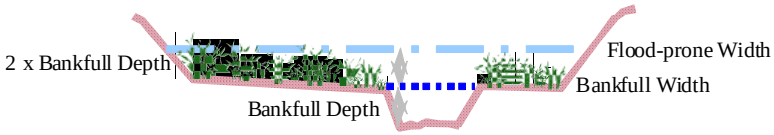
iii. Final Score and Rating: 0 NA **Comments:**

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

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

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

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



Floodrpone width 133 **/** **Bankfull width** 28 **=** **Entrenchment ratio** 4.75

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: Approx. 75 percent of the preservation AA contains forested and/or scrub/shrub wetland with surface water outlet to the south into relic isolated channel. The Shields River is slightly entrenched.

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: (1.10 acre of preserved wetland) x (approx. average of 1.0 ft. of inundation during high water) = 1.10 acre-feet

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: Wetland vegetation cover exceeds 70%. AA was ponded in 2011. AA contains no outlet.

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	.9	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8	.5M	.6M	.3	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .7M

Comments: There is a restricted surface water outlet to the south, continuation of relic flood channel.

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

i. Discharge Indicators

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

ii. Recharge Indicators

- ☑ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

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

Comments: AA was inundated in several areas during 2011 investigation.

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:

New landowner on site. Permission for access will be required.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Preservation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.11	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	0.66	☐
C. General Wildlife Habitat	H	.9	1	0.99	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	H	1	1	1.1	☑
F. Short and Long Term Surface Water Storage	H	.8	1	0.88	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.1	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☑
I. Production Export/Food Chain Support	M	.7	1	0.77	☐
J. Groundwater Discharge/Recharge	H	1	1	1.1	☐
K. Uniqueness	M	.6	1	0.66	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.055	☐
Totals:		6.75	9	7.425	
Percent of Possible Score			**75** %		

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

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

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

☐

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

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST(X-34(14) **Control#**

3. Evaluation Date 7/14/2011 **4. Evaluators** S. Frazier / L. Soderqui **5. Wetland/Site# (s)** Restoration

6. Wetland Location(s): T 4N **R** 9E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10070003 **Watershed/County** Upper Yellowstone Watershed/Park County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.45

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 1.45

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Emergent Wetland	Excavated	Seasonal/Intermittant	100

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)

Limited agriculture (hay) and few ranch structures to the east. Undeveloped riparian corridor and herbaceous uplands to north, south, and west. Three species of noxious weeds are present within the AA, but total cover does not exceed 1%. The AA is managed in a natural state, as are most of the lands within 500 feet of the AA. AA was constructed whin the last two years.

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

Canada thistle; houndstongue

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

The AA consists of one constructed secondary stream channel which bisects the mitigation area. The channel is active during high flow events, is seasonally inundated by shallow groundwater early in the growing season, and has developed wetland characteristics. The channel is bordered by created depressional wetland cells.

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: The AA consists entirely of palustrine emergent wetlands (PEM)

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	○ D ◉ S	Grizzly Bear (LT)
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: USFWS - 2011 county species list; MNHP verified in Park County

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	◉ D ○ S	Bald Eagle (S3)
Incidental habitat (list species)	◉ D ○ S	Golden Eagle(S3)
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: 2010 MWAM- MT NHP reports BE nest close to AA. BE observed in 2010 hunting from cottonwoods.

14C. General Wildlife Habitat Rating:

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

Moderate

Substantial (based on any of the following [check]):

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ☐ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☑ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

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

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

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

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

Comments Moderate habitat rating is the result of moderate wildlife use and intermittent surface water flow/ponding early in the growing season.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

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

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

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

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

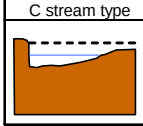
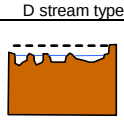
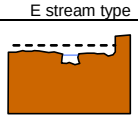
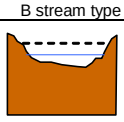
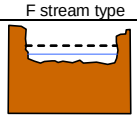
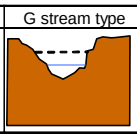
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

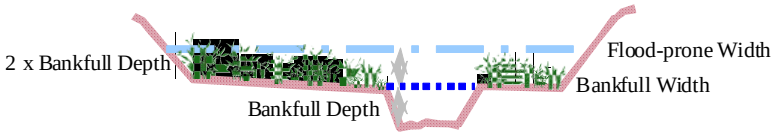
iii. Final Score and Rating: 0 NA **Comments:**

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

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

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

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



Floodrpone width 133 **/** **Bankfull width** 28 **=** **Entrenchment ratio** 4.75

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: Less than 25% of the restored channel contains forested or scrub/shrub vegetation classes. Outlet is restricted. Discharges to Comm.5. AA subject to overflow from Shields River and empties into old meanders of the Shields

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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: Recent scour and sediment deposition within created channel suggest seasonal/intermittent flooding/ponding. (1.45 acre of restoration) x (average 1 ft. ponding/flow depth at highwater) = 1.45 acre-feet

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: Cover in AA is greater than 70% and outlet is restricted by topography . There was evidence of ponding in 2011.

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: Channel has approximately 40-60% cover by grasslike species and intermittely captures flows from the Shields River. Portions of the channel also appear to pond shallow goundwater early in the growing season.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .7M

Comments: Channel is seasonally inundated and has an outlet at the southern end of the mitigation site.

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

i. Discharge Indicators

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

ii. Recharge Indicators

- ☑ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

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

Comments: Channel is intermittently inundated by shallow groundwater and high flows from the Shields River

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: Disturbance rated as moderate based on date of channel construction (2009 - 2 years prior to monitoring event)

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:

There is a new landowner on site. Permission for access will be required.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Restoration

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.145	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	0.87	☐
C. General Wildlife Habitat	M	.7	1	1.015	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	0.87	☑
F. Short and Long Term Surface Water Storage	M	.6	1	0.87	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.45	☑
H. Sediment/Shoreline Stabilization	M	.6	1	0.87	☐
I. Production Export/Food Chain Support	M	.7	1	1.015	☑
J. Groundwater Discharge/Recharge	M	.7	1	1.015	☑
K. Uniqueness	L	.3	1	0.435	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.0725	☐
Totals:		5.95	10	8.6275	
Percent of Possible Score			**59.5** %		

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

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

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

☑

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

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

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana



Photo Point 1 – *Photo 1*
Bearing: 190 Degrees
Location: East boundary
Taken in 2010



Photo Point 1 – *Photo 1*
Bearing: 190 Degrees
Location: East boundary
Taken in 2011



Photo Point 1 – *Photo 2*
Bearing: 250 Degrees
Location: East boundary
Taken in 2010



Photo Point 1 – *Photo 2*
Bearing: 250 Degrees
Location: East boundary
Taken in 2011



Photo Point 1 – *Photo 3*
Bearing: 300 Degrees
Location: East boundary
Taken in 2010



Photo Point 1 – *Photo 3*
Bearing: 300 Degrees
Location: East boundary
Taken in 2011



Photo Point 2 – *Photo 1*
Bearing: 200 Degrees
Location: NE corner of site
Taken in 2010



Photo Point 2 – *Photo 1*
Bearing: 200 Degrees
Location: NE corner of site
Taken in 2011



Photo Point 3 – *Photo 1*
Bearing: 140 Degrees
Location: NW corner of site
Taken in 2010



Photo Point 3 – *Photo 1*
Bearing: 140 Degrees
Location: NW corner of site
Taken in 2011



Photo Point 4A – *Photo 1*
Bearing: 170 Degrees
Location: Shields Bank-DS
Taken in 2010



Photo Point 4A – *Photo 1*
Bearing: 170 Degrees
Location: Shields Bank-DS
Taken in 2011



Photo Point 4B – *Photo 1*
Bearing: 20 Degrees
Location: Shields Bank-upstream
Taken in 2010



Photo Point 4B – *Photo 1*
Bearing: 20 Degrees
Location: Shields Bank-upstream
Taken in 2011



Photo Point 5 – *Photo 1*
Bearing: 105 Degrees
Location: Western boundary
Taken in 2010



Photo Point 5 – *Photo 1*
Bearing: 105 Degrees
Location: Western boundary
Taken in 2011



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2010



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2011



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees

Location: SE corner of site
Taken in 2010



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees

Location: SE corner of site
Taken in 2011



Veg Tran 1 – *Start*
Bearing: 5 Degrees

Location: Veg Com 2 foreground
Taken in 2010



Veg Tran 1 – *Start*
Bearing: 5 Degrees

Location: Veg Com 8 foreground
Taken in 2011



Veg Tran 1 – *End*
Bearing: 180 Degrees

Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 1 – *End*
Bearing: 180 Degrees

Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 2 – *Start*
Bearing: 180 Degrees

Location: Veg Com 3 foreground
Taken in 2010



Veg Tran 2 – *Start*
Bearing: 180 Degrees

Location: Veg Com 3 foreground
Taken in 2011



Veg Tran 2 – *End*
Bearing: 0 Degrees

Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 2 – *End*
Bearing: 0 Degrees

Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 3 – *Start*
Bearing: 95 Degrees

Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 3 – *Start*
Bearing: 95 Degrees

Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 3 – *End*
Bearing: 265 Degrees

Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 3 – *End*
Bearing: 265 Degrees

Location: Veg Com 1 foreground
Taken in 2011



Photo Point 2 – *Panorama*
Compass Bearing: 270-0 Degrees

Location: NE corner of site
Taken in 2010



Photo Point 2 – *Panorama*
Compass Bearing: 270-0 Degrees

Location: NE corner of site
Taken in 2011



Photo Point 3 – *Panorama*
Compass Bearing: 90-180 Degrees

Location: NW corner of site
Taken in 2010



Photo Point 3 – *Panorama*
Compass Bearing: 90-180 Degrees

Location: NW corner of site
Taken in 2011



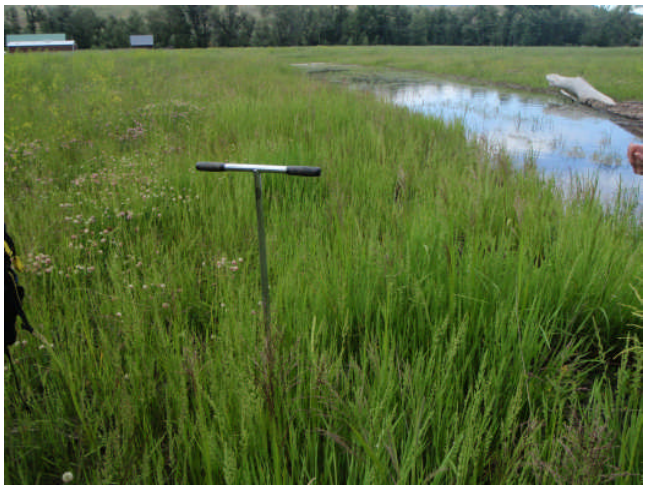
Photo Point 5 – *Panorama*
Compass Bearing: 30-180 Degrees

Location: Western boundary of site
Taken in 2010

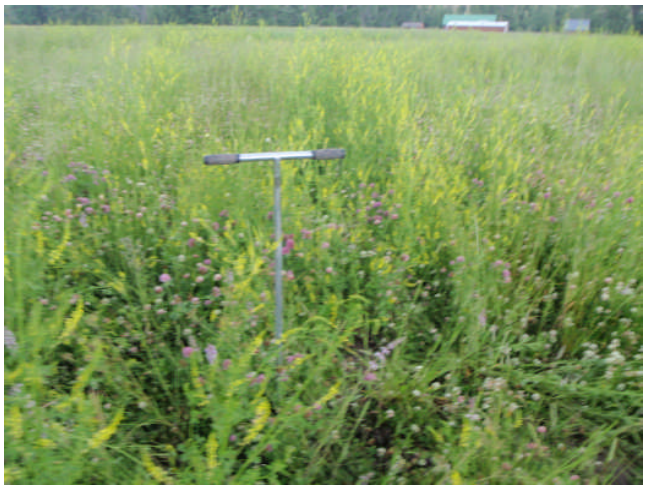


Photo Point 5 – *Panorama*
Compass Bearing: 30-180 Degrees

Location: Western boundary of site
Taken in 2011



Data Point: E-3 **Location:** Community 9
Bearing: 90 Degrees **Taken in 2011**



Data Point: E-4 **Location:** Community 9
Bearing: 40 Degrees **Taken in 2011**



Supplemental Photo 1 **Location:** Flood channel
Bearing: 0 Degree **Taken in 2011**



Supplemental Photo 2 **Location:** Flood channel
Bearing: 27 Degree **Taken in 2011**

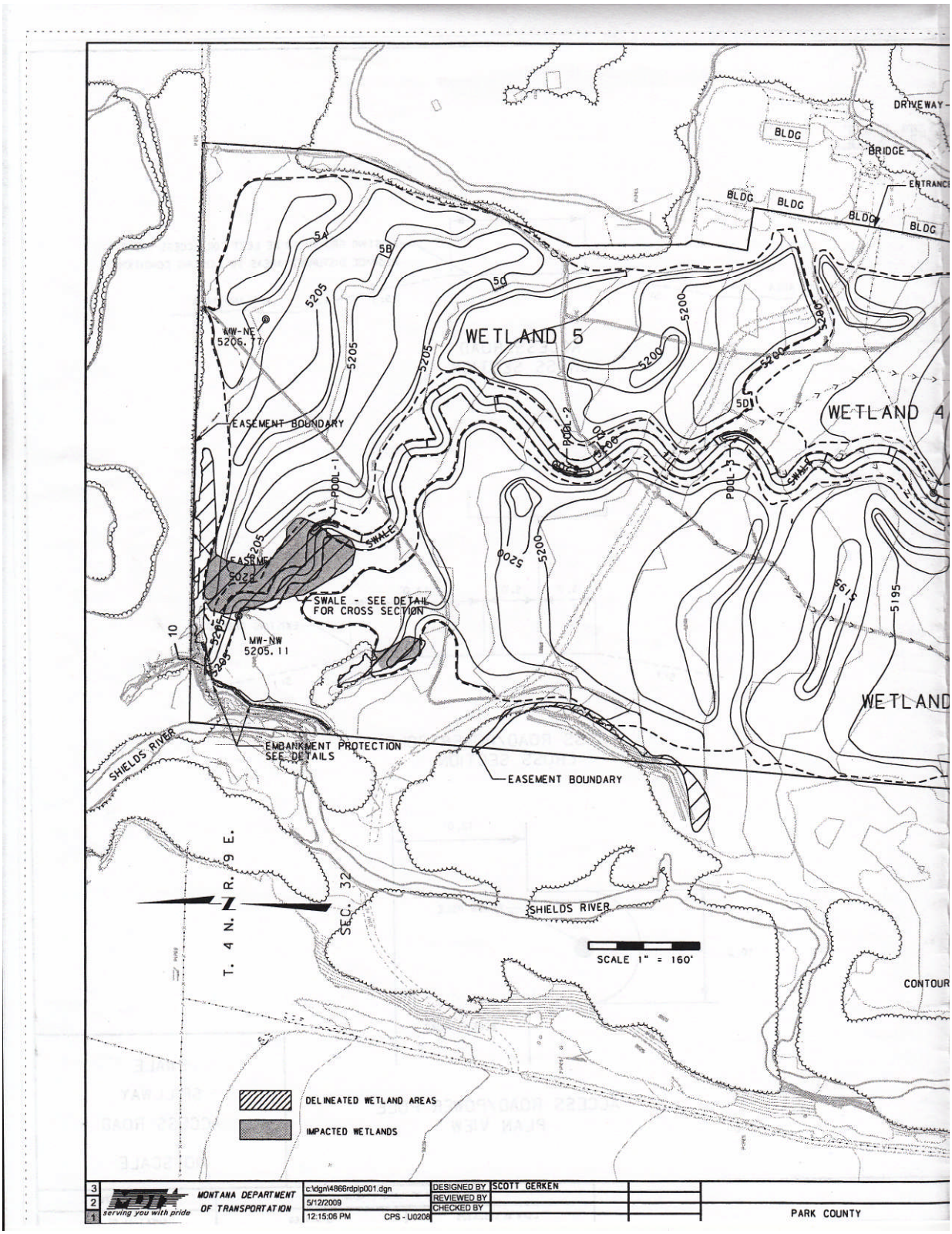


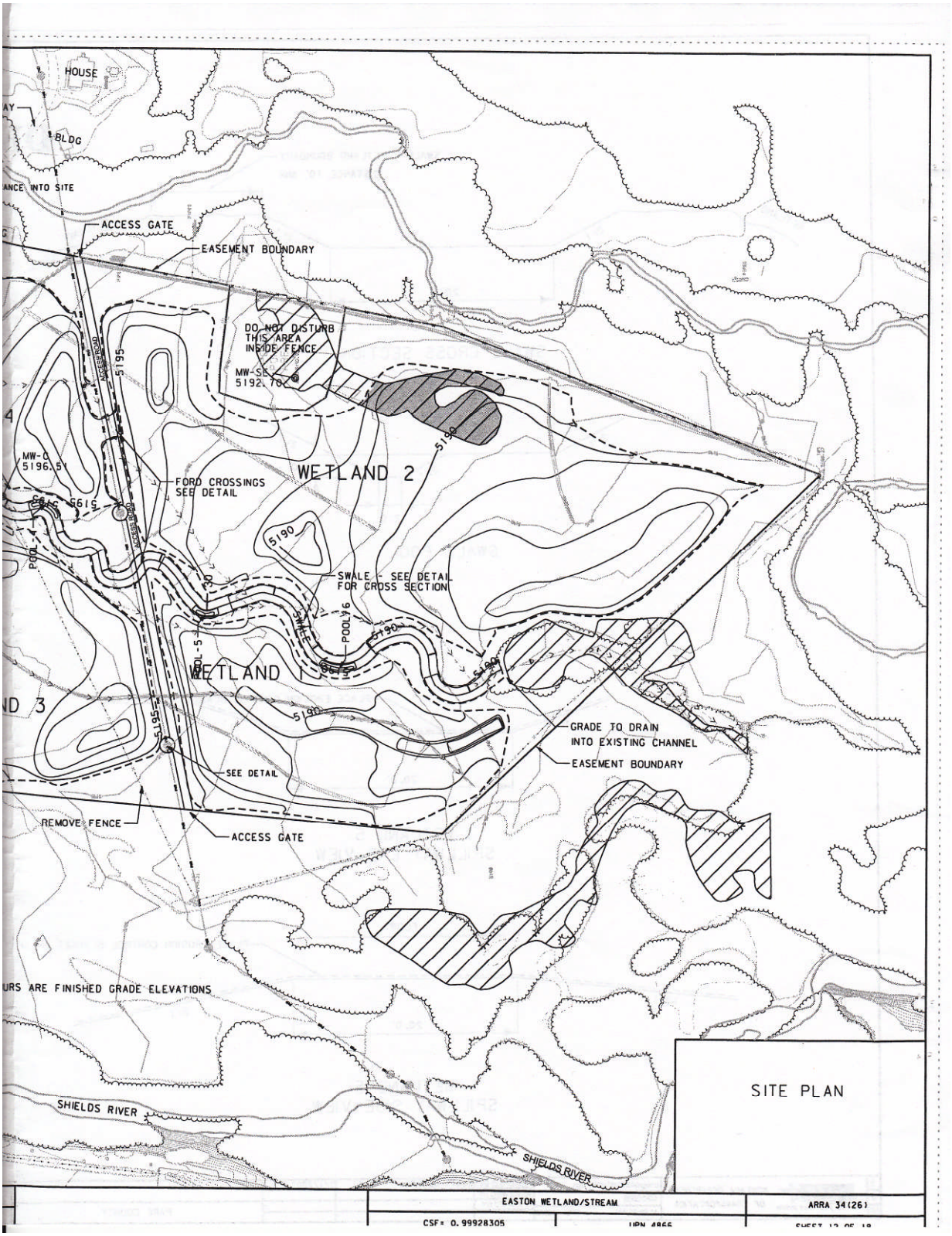
Supplemental Photo 3 **Location:** Flood channel
Bearing: 180 Degree **Taken in 2011**

Appendix D

Project Plan Sheets

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana


DRIVEWAY
BLDG
BRIDGE
ENTRANCE
BLDG
BLDG
BLDG
BLDG
WETLAND 5
WETLAND 4
WETLAND
MW-NE
5206.77
MW-NW
5205.11
EASEMENT BOUNDARY
POOL-1
POOL-2
POOL-3
SWALE
SWALE - SEE DETAIL FOR CROSS SECTION
EMBANKMENT PROTECTION SEE DETAILS
EASEMENT BOUNDARY
SHIELDS RIVER
SHIELDS RIVER
T. 4 N. R. 9 E.
SEC. 32
SCALE 1" = 160'
CONTOUR
DELINEATED WETLAND AREAS
IMPACTED WETLANDS
MONTANA DEPARTMENT OF TRANSPORTATION
serving you with pride
c:\dgn\4866rdplp001.dgn
5/12/2009
12:15:06 PM
CPS - U0208
DESIGNED BY SCOTT GERKEN
REVIEWED BY
CHECKED BY
PARK COUNTY


HOUSE
BLDG
ACCESS GATE
EASEMENT BOUNDARY
DO NOT DISTURB THIS AREA INSIDE FENCE
MW-5S 5192.70
MW-6 5196.5
FORD CROSSINGS SEE DETAIL
WETLAND 2
WETLAND 1
SWALE - SEE DETAIL FOR CROSS SECTION
GRADE TO DRAIN INTO EXISTING CHANNEL
EASEMENT BOUNDARY
SEE DETAIL
REMOVE FENCE
ACCESS GATE
SHIELDS RIVER
SHIELDS RIVER
SITE PLAN
EASTON WETLAND/STREAM
ARRA 34(26)