MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2013

Easton Ranch
Park County, Montana



Prepared for:

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December 2013

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Easton Ranch
Park County, Montana

MDT Project Number STPX-0034(14)
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1. INTRODUCTION

The 2013 Easton Ranch Wetland Mitigation Monitoring Report presents the results of the fourth 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 site is located approximately three miles east of US Highway 89 and four miles northeast of Wilsall (Figure 1). The wetland mitigation 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 2008 MDT Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms Western Mountains, Valleys, and Coast Region (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 Conservation District 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 from high flows associated with the Shields River. An existing irrigation diversion and delivery system was maintained to provide water to the eastern portion of the site in a flow through system. 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 include:

- Re-establish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas totaling 1.56 acres.

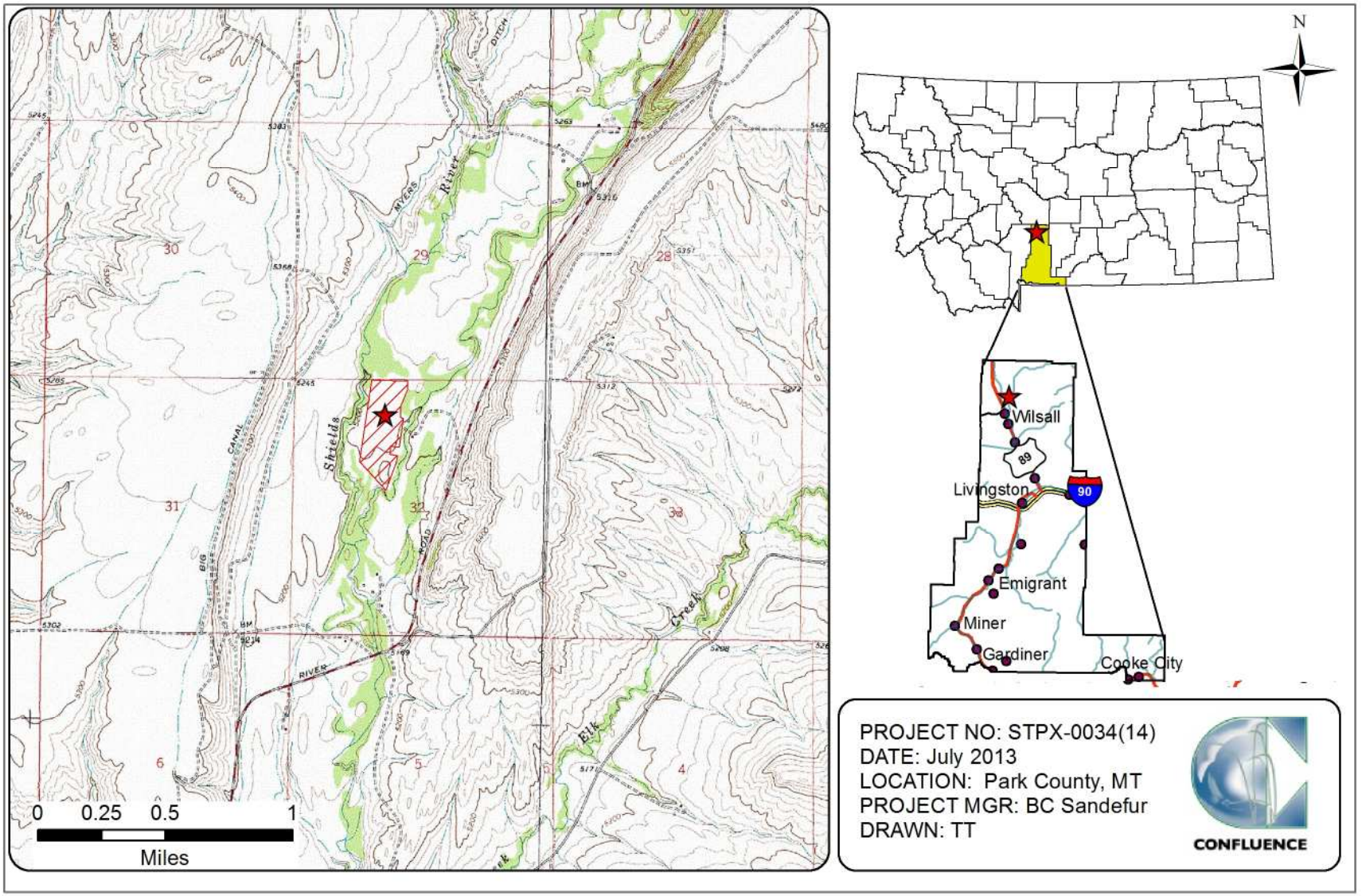


Figure 1. Project location of Easton Ranch Wetland Mitigation Site.

- Create approximately 25 acres of emergent, scrub/shrub and riparian wetlands by replacing existing hay fields with a variety of wetland communities that mimic habitats found in bio-reference wetland areas located north and south of the project.
- Preserve 1.1 acres of existing scrub/shrub, forested, and palustrine 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 for the Easton Ranch Wetland Mitigation Site.

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 4determine 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*), Northwest Territory sedge (*Carex utriculata*), Arctic rush (*Juncus arcticus*), American sloughgrass (*Beckmannia syzigachne*), American mannagrass (*Glyceria grandis*), and 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 fourth year of monitoring was completed on August 5, 2013. Information for the Mitigation Monitoring Form and Wetland Determination Data Form was entered electronically in the field on a 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 Determination 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

Determination Data Form (Appendix B). Hydrologic assessments allow evaluation of mitigation criteria 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 when there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). Temperature data recorded for the meteorological station at Wilsall 8 ENE, Montana (249023) has a median (5 years in 10) growing season length of 120 days. Areas defined as wetlands would require 15 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 were recorded on the Wetland Determination 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 2013 aerial photograph. Percent cover of dominant species within a community type was visually estimated and recorded using the following classes: 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 dominant vegetation species that characterized each mapped polygon (Figure 3, Appendix A).

Temporal changes in vegetation were 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 1376, 1333, and 751 feet long, respectively (Figure 2, Appendix A). Transects T-2 and T-3 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 2013 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 planted onsite was recorded during monitoring. Survival rates are evaluated annually. The Montana State Noxious Weed List (September 2010), prepared by the Montana Department of Agriculture, was used to categorize weeds identified within the site. The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "**x**", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1 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, 6 to 25 percent, and 26 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 and the 2010 Regional Supplement. A description of the soil profile, including hydric soil indicators when present, was recorded on the Wetland Determination Data Form for each profile (Appendix B).

2.4. 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 name and indicator status of plant species was derived from the Draft 2012 National Wetland Plant List (NWPL) (Lichvar and Kartesz. 2009). Previous years' reports used the 1988 National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). The 2012 NWPL scientific plant names were used in this report. Many common names used in the 2012 NWPL appear incomplete or erroneous. When used in this report, 2012 NWPL common names that appear to be incomplete or erroneous are provided with parenthetical clarification. For example, the common given name for the plant *Agrostis exarata* in the 2012 NWPL is "spiked bent". As this is likely an error, this species' common name would be reported here as "spiked bent (grass)". 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 Determination 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 2013 aerial photograph. Wetland areas were GPS surveyed and calculated using geographic information system (GIS) methods.

2.5. Wildlife

Observations of use by mammal, reptile, amphibian, and bird use 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 from 2010 through 2013 during the annual monitoring periods has been 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 from 2010 to 2013. 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 separate assessment areas (AA) within mitigation site (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 2013 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and presented in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included fence boundaries, photograph points, transect endpoints, wetland/upland boundaries, and wetland data points.

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 20.28 inches from April 1957 to April 2013 (Western Region Climate Center {WRCC} 2010). The recorded annual precipitation rate was 24.15 inches (2010), 18.03 inches (2011), and 16.34 inches (2012). The historic precipitation average from January to August was 15.06 inches. The precipitation totals for this same period was 17.56 inches (2010), 13.36 inches (2011), 12.41 inches (2012), and 7.35 inches (2013). This data indicates 2012 received 2.65 (18%) fewer inches and 2013 was 7.71 (51%) inches below the long-term average.

The irrigation diversion system located upgradient of the wetland cells was closed during the 2011, 2012, and 2013 investigations. The area was flood irrigated in June and July of 2013 when irrigation water was available. Approximately five percent of the site was inundated with surface water during the 2013 investigation at depths ranging from 0 to 1.5 feet. The average depth was 0.2 feet and the depth at the emergent vegetation/open water boundary was 0.5 feet. Inundated areas were located within the lowest contour of the excavated depressions. Unlike the 2011 monitoring event at this site, which revealed scour holes, sediment deposits, wrack lines, water marks, and other signs of recent inundation, there were no recent signs of overbank flooding from the Shields River or activation of the flood channel observed within the site in 2013.

Three data points were sampled to determine the wetland/upland boundaries. There were no hydrological indicators observed at E-1 or E-2. Data point E-3 was located in an area that met the wetland criteria. Wetland hydrology indicators at E-3, located within a created wetland cell, included saturation, inundation visible on aerial imagery, sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and FAC-Neutral test. The soil profile was saturated at 8 inches below ground surface. Additional hydrological indicators observed in various wetlands at the Easton Ranch site included sparsely vegetated concave surfaces, water-stained leaves, algal crust, soil cracks, and dry season water table. Site wide saturation and inundation levels were lower in 2013 versus 2011 and 2012, likely a result of lower regional precipitation rates and the absence of overbank flow from the Shields River.

The 2011 spring runoff levels and duration were high as a result of an above-average snowpack in the mountains and above average 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 initial development of scour holes,

riffles, and point bars. Surface water was not flowing in the channel during the August 2013 site visit. A few isolated scour pools were observed in the base of the constructed channel. No areas of bank erosion were noted.

3.2. Vegetation

Monitoring year 2013 marked the fourth year of monitoring on the Easton Ranch wetland mitigation site. One hundred and thirty two plant species have been observed site-wide since 2010 (Table 2). Vegetation plant communities were mapped and named by plant composition and dominance. The composition of each community is listed on the Mitigation Monitoring Form (Appendix B). The community boundaries are shown on Figure 3 in Appendix A.

Plant communities remained consistent from 2012 to 2013. Two upland and five wetland community types were observed on the site in 2013. The upland communities were Type 1 - *Phleum pratense/Poa pratensis* and Type 8 – *Bromus* spp./*Trifolium* spp. and the wetland communities include Type 3 – *Carex* spp., Type 4 – *Salix drummondiana*, Type 5 – *Populus balsamifera*, Type 6 – *Beckmannia syzigachne*, and Type 7 – Aquatic Macrophytes. These communities are discussed below.

Upland community Type 1 – *Phleum pratense/Poa pratensis* was identified on 9.04 acres of higher elevation 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*), orchard grass (*Dactylis glomerata*), yellow sweet-clover (*Melilotus officinalis*), and common dandelion (*Taraxacum officinale*). Of note, the indicator status of smooth brome and Kentucky bluegrass was changed from FACU to FAC on the 2012 NWPL.

Wetland community Type 3 – *Carex* species *(*spp.) encompassed 0.46 acres in the pre-existing emergent wetlands located at the north and southwest boundaries of the site. The community included a diverse mix of wetland species including Northwest Territory sedge (beaked sedge, *Carex utriculata*), leafy tussock sedge (*Carex aquatilis*), lamp rush (*Juncus effusus*), narrow-leaf willow (*Salix exigua*), and red-tinged bulrush (small-fruited bulrush, *Scirpus microcarpus*).

Table 2. Vegetation species observed from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Achillea millefolium	Common Yarrow	FACU
Agrostis gigantea	**Black Bent**	**FAC**
Agrostis stolonifera	Spreading Bent	FAC
Algae, green	Algae, green	NL
Alisma gramineum	Narrow-Leaf Water-Plantain	OBL
Alnus incana	Speckled Alder	FACW
Alopecurus geniculatus	Marsh Meadow-Foxtail	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Alyssum alyssoides	Pale Madwort	UPL
Amaranthus retroflexus	Red-Root	FACU
Avena fatua	Wild Oat	UPL
Bassia scoparia	Mexican-Fireweed	FAC
Beckmannia syzigachne	American Slough Grass	OBL
Brassica kaber	**Wild Mustard**	**UPL**
Bromus arvensis	Japanese Brome	UPL
Bromus carinatus	California Brome	UPL
Bromus ciliatus	Fringed Brome	FAC
Bromus inermis	Smooth Brome	FAC
Bromus tectorum	Cheatgrass	UPL
Calamagrostis canadensis	Bluejoint	FACW
Carduus nutans	Nodding Plumeless Thistle	UPL
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex nebrascensis	Nebraska Sedge	OBL
Carex praegracilis	Clustered Field Sedge	FACW
Carex rostrata	Swollen Beaked Sedge	OBL
Carex sp.	Sedge	NL
Carex stipata	**Stalk-Grain Sedge**	**OBL**
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	Lesser Bladder Sedge	OBL
Carum carvi	Caraway	FACU
Cassiope mertensiana	Western Moss-Heather	FACU
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium leptophyllum	Narrow-Leaf Goosefoot	FACU
Cirsium arvense	Canadian Thistle	FAC
Cirsium douglasii	Douglas' Thistle	OBL
Cirsium vulgare	Bull Thistle	FACU
Convolvulus arvensis	Field Bindweed	UPL
Cornus alba	Red Osier	FACW
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchard Grass	FACU
Dasiphora fruticosa	Golden-Hardhack	FAC
Deschampsia cespitosa	Tufted Hairgrass	FACW
Descurainia sophia	Herb Sophia	UPL
Dracocephalum sp.	Dragonhead	NL

[1]Draft 2012 NWPL.

New species identified in 2013 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Eleocharis palustris	Common Spike-Rush	OBL
Elodea sp.	Waterweed	NL
Elymus cinereus	**Basin Wild Rye**	**UPL**
Elymus repens	Creeping Wild Rye	FAC
Elymus sp.	Wild Rye	NL
Epilobium ciliatum	Fringed Willowherb	FACW
Equisetum arvense	Field Horsetail	FAC
Equisetum hyemale	Tall Scouring-Rush	FACW
Festuca arundinacea	**Tall fescue**	**FAC**
Festuca pratensis	Meadow Fescue	FACU
Fragaria virginiana	**Virginia Strawberry**	**FACU**
Galium palustre	Common Marsh Bedstraw	OBL
Geum macrophyllum	**Large-Leaf Avens**	**FAC**
Glyceria elata	Tall Manna Grass	FACW
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Glycyrrhiza lepidota	**American Licorice**	**FAC**
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FAC
Juncus arcticus	Arctic Rush	FACW
Juncus bufonius	Toad Rush	FACW
Juncus effusus	Lamp Rush	FACW
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus nevadensis	Sierran Rush	FACW
Juncus sp.	Rush	NL
Juncus tenuis	Lesser Poverty Rush	FAC
Juncus torreyi	Torrey's Rush	FACW
Lappula occidentalis	Flatspine stickseed	NL
Larix occidentalis	Western Larch	FACU
Lotus corniculatus	**Garden Bird's-Foot-Trefoil**	**FAC**
Leymus cinereus	Great Basin Lyme Grass	FAC
Lycopus asper	Rough Water-Horehound	OBL
Medicago lupulina	Black Medick	FACU
Medicago sativa	Alfalfa	UPL
Medicago sp.	Alfalfa	NL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL
Myriophyllum sp.	Water-Milfoil	NL
Pascopyrum smithii	Western-Wheat Grass	FACU
Persicaria lapathifolia	**Dock-Leaf Smartweed**	**FACW**
Persicaria maculosa	Lady's-Thumb	FACW
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FAC

[1]Draft 2012 NWPL.

New species identified in 2013 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Plantago major	Great Plantain	FAC
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus angustifolia	Narrow-Leaf Cottonwood	FACW
Populus balsamifera	Balsam Poplar	FAC
Populus tremuloides	Quaking Aspen	FACU
Potentilla gracilis	Graceful Cinquefoil	FAC
Prunus virginiana	Choke Cherry	FACU
Ranunculus sp.	Buttercup	NL
Rhamnus alnifolia	Alder-Leaf Buckthorn	FACW
Ribes lacustre	Bristly Black Gooseberry	FAC
Rosa woodsii	Woods' Rose	FACU
Rumex crispus	Curly Dock	FAC
Ruppia maritima	Beaked Ditch-Grass	OBL
Salix bebbiana	Gray Willow	FACW
Salix drummondiana	Drummond's Willow	FACW
Salix exigua	Narrow-Leaf Willow	FACW
Salix lasiandra	Pacific Willow	FACW
Salix lutea	Yellow Willow	OBL
Salix sp.	Willow	NL
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scirpus pallidus	Pale Bulrush	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Scutellaria lateriflora	Mad Dog Skullcap	FACW
Sinapis arvensis	Charlock Mustard	UPL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sisyrinchium idahoense	Idaho Blue-Eyed-Grass	FACW
Solidago canadensis	**Canadian Goldenrod**	**FACU**
Stellaria graminea	Grass-Leaf Starwort	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Penny-Cress	UPL
Tragopogon dubius	Yellow Salsify	UPL
Trifolium arvense	**Rabbitfoot Clover**	**UPL**
Trifolium hybridum	Alsike Clover	FAC
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FAC
Trifolium sp.	Clover	NL
Triglochin maritima	Seaside Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Verbascum thapsus	Great Mullein	FACU
Vicia americana	American Purple Vetch	FAC

[1]Draft 2012 NWPL.

New species identified in 2013 are bolded.

Wetland community Type 4 – *Salix drummondiana* was identified in a 0.14 acres area in the northwest corner of the site near the bank of the Shields River. The area encompassed a pre-existing scrub-shrub wetland. Dominant species included Drummond willow (*Salix drummondiana*), western-wheatgrass (*Pascopyrum smithii*, called *Agropryon* on 1988 list), and Nebraska sedge (*Carex nebrascensis*). Other wetland species identified in this community include American sloughgrass (*Beckmannia syzigachne),* bristly black gooseberry (*Ribes lacustre*), red-tinge bulrush, American mannagrass (*Glyceria grandis*), stinging nettle (*Urtica dioica*), orchard grass, and common Timothy.

Wetland community Type 5 – *Populus balsamifera* was a pre-existing undisturbed forested, scrub/shrub wetland located on 0.69 acres south of the construction area. The vegetation community was dominated by balsam poplar (*Populus balsamifera*), narrow-leaf cottonwood (*Populus angustifolia*), smooth brome, fowl mannagrass (*Glyceria striata)*, gray willow, red tinge bulrush, Pacific willow (*Salix lasiandra*), and blue skullcap (*Scutellaria lateriflora*).

Wetland community Type 6 – *Beckmannia syzigachne* characterized 10.19 acres of the constructed depressions and floodplain channel, an increase of 2.35 acres since 2011. The base elevation of a majority of the depressions in this community contained surface water or signs of recent inundation in 2012 and 2013. This diverse community type was dominated by American sloughgrass, fowl mannagrass, field meadow foxtail (*Alopecurus pratensis*), field horsetail (*Equisetum arvense)*, Arctic rush (*Juncus arcticus*) and lamp rush. Forty six other species were identified at five percent or less cover in this community. This community showed an increase in the quantity and coverage of *Juncus* species in 2013 and appears to be trending towards a *Juncus* community type.

Wetland community Type 7 – Aquatic Macrophytes was found in excavated depressions with the longest duration of surface water and support semi-permanent open water. Two depressions were identified as Aquatic Macrophytes community across the site and were located within the southern half of the site where a higher seasonal groundwater table is sustained. The community characterized approximately 0.92 acres of the site, a decrease of 0.15 acres from 2012. The wetland has been classified as an aquatic bed community since 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 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 green algae (protist), and American sloughgrass, with lower covers of water-milfoil (*Myriophyllum sp*.), American mannagrass, and beaked ditch-grass (*Ruppia maritima*).

Upland community Type 8 – *Bromus* spp./*Trifolium* spp. was identified on 12.07 acres of upland located within the excavated footprint. This community replaced Community Type 2 – *Chenopodium* spp./*Phleum pratense* in 2011 as primary colonizing species decreased dominance and more persistent, perennial plants increased in cover. The vegetation cover increased notably within this community in 2012 and 2013. This community decreased in size by 1.05 acres since 2012, primarily a result of the expansion of adjacent wetland habitat into the lower elevations of this community. The community was dominated by smooth brome, common Timothy, Kentucky bluegrass, and creeping wildrye (*Elymus* repens). Forty three other species were observed at five percent or less in this community.

In general, the site has continued to develop desirable hydrophytic vegetation since initial monitoring in 2010. Community Type 6 – *Beckmannia syzigachne*, continued to develop and increased in size to 10.19 acres in 2013. The overall percent cover of hydrophytic vegetation in the constructed floodplain continued to increase in 2013, improving soil stability and protection from erosion when the channel is activated during high flows in the Shields River.

Vegetation cover was measured along three transects at the Easton Ranch Mitigation Site in 2013 (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-6 in Appendix C). Transect T-1 extends 1,376 feet (1,072 feet in 2010 due to field error during survey) from south to north across several constructed cells east of the constructed channel. The transect intervals alternated between upland community Types 1 – *Phleum pratense/Poa pratensis* and 8 – *Bromus* spp./*Trifolium* spp. and wetland community Types 6 – *Beckmannia syzigachne* and 7 – Aquatic macrophytes. Hydrophytic vegetation communities comprised 17 percent of T-1 in 2013, a slight increase of 2.3 percent since 2012.

Table 3. Data summary for Transect 1 from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013
Transect Length (feet)	**1072**	**1376**	**1376**	**1376**
Vegetation Community Transitions along Transect	11	11	12	12
Vegetation Communities along Transect	3	4	4	4
Hydrophytic Vegetation Communities along Transect	1	2	2	2
Total Vegetative Species	33	18	34	44
Total Hydrophytic Species	15	19	20	29
Total Upland Species	18	19	14	15
Estimated % Total Vegetative Cover	65	70	80	85
% Transect Length Comprising Hydrophytic Vegetation Communities	28.0	17.0	14.7	17.0
% Transect Length Comprising Upland Vegetation Communities	70.0	83.0	82.5	83.0
% Transect Length Comprising Unvegetated Open Water	2.5	0.0	2.8	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0	0.0

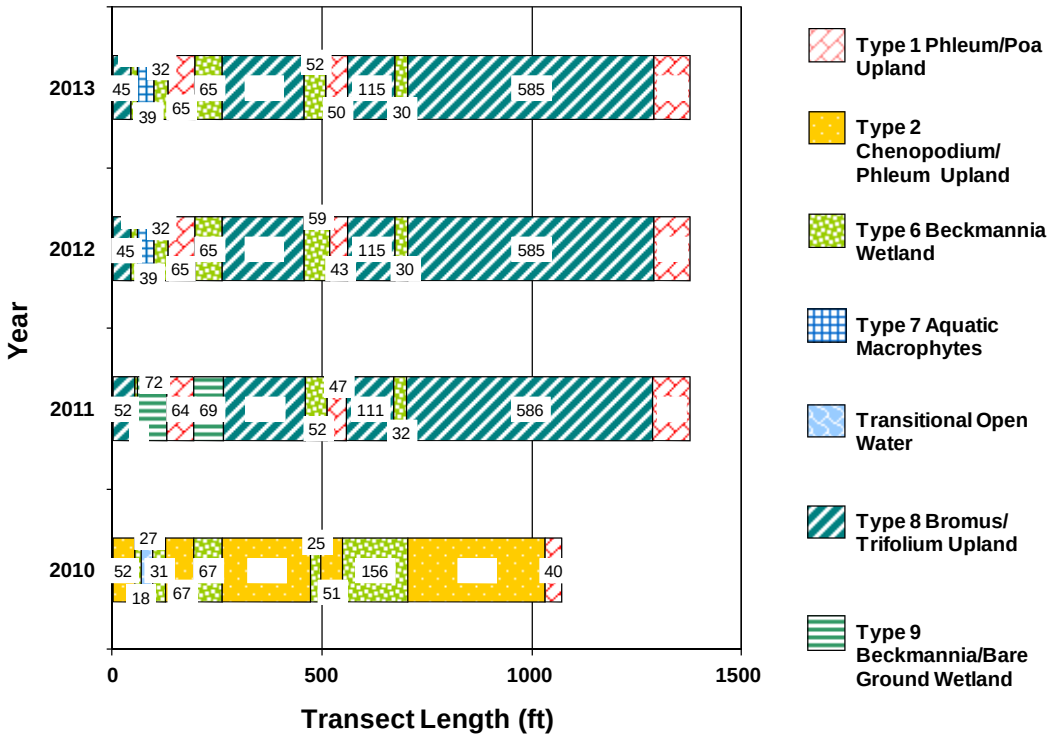


Chart 1. Transect maps showing community types on Transect T-1 from start (0 feet) to finish (1376 feet in 2011, 2012 and 2013 and 1072 feet in 2010) at the Easton Ranch Wetland Mitigation Site.

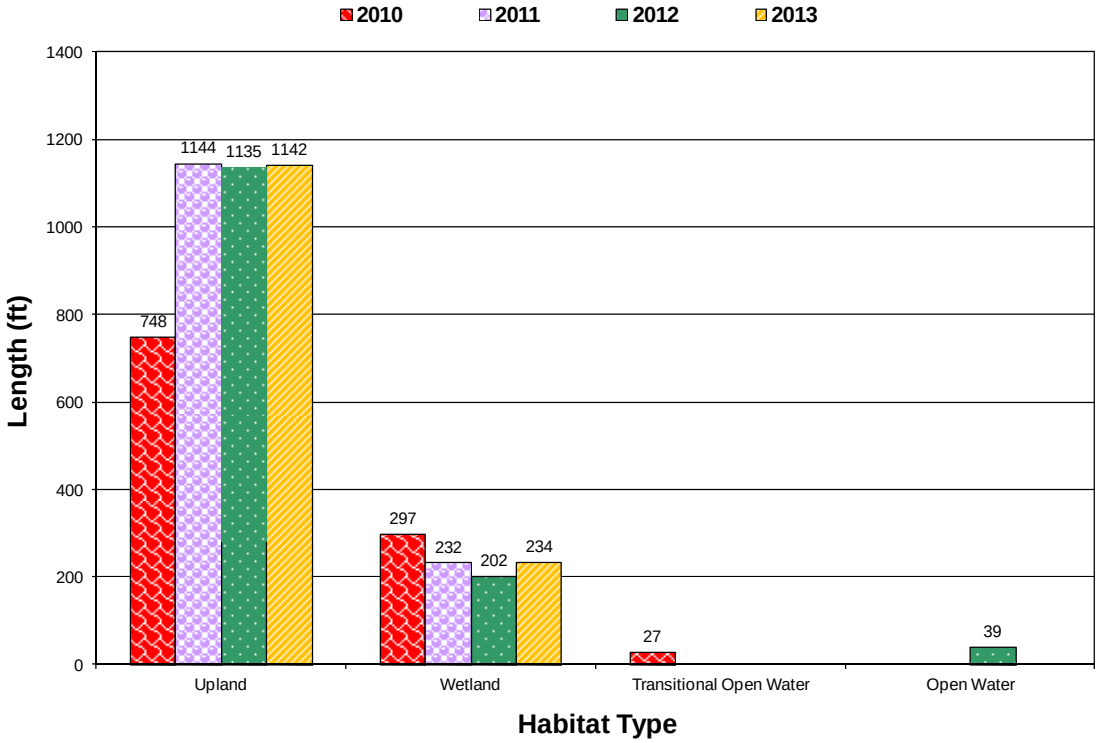


Chart 2. Length of habitat types within Transect T-1 from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Data collected on Transect T-2 (Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 4, Charts 3 and 4, respectively). The endpoints of Transect T-2 were photographed (Page C-7 in Appendix C). Wetland types 3 and 6 and upland types 1 and 8 were identified along this transect. Hydrophytic vegetation communities comprised 38.9 percent of T-2 in 2013, a slight decrease from 39.5 percent in 2012 and 41 percent in 2011. An increase of three hydrophytic species, for a total of 32 species, was documented along T-2 in 2013.

Table 4. Data summary for Transect T-2 from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Vegetation Community Transitions along Transect	11	8	7	7
Vegetation Communities along Transect	4	4	4	4
Hydrophytic Vegetation Communities along Transect	2	2	2	2
Total Vegetative Species	35	38	42	45
Total Hydrophytic Species	17	22	29	32
Total Upland Species	18	16	13	13
Estimated % Total Vegetative Cover	65	75	80	85
% Transect Length Comprising Hydrophytic Vegetation Communities	38.7	41.0	39.5	38.9
% Transect Length Comprising Upland Vegetation Communities	61.3	59.0	60.5	61.1
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0	0.0

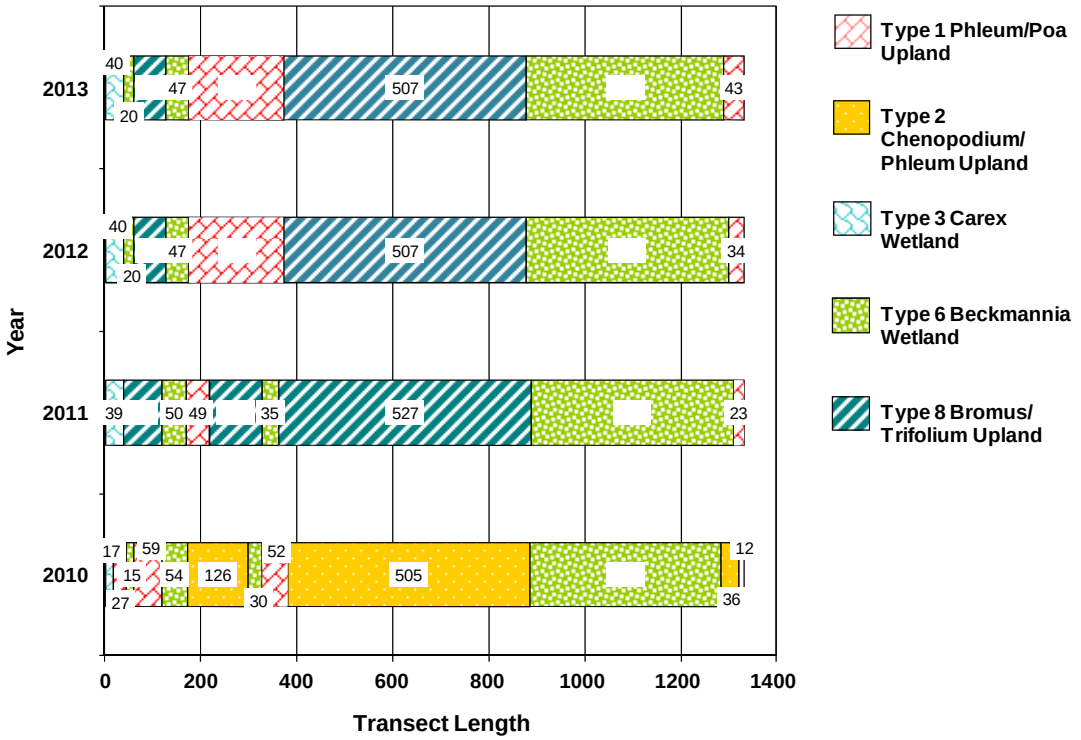


Chart 3. Transect maps showing community types on Transect T-2 from 2010 to 2013 from start (0 feet) to finish (1,333 feet) at the Easton Ranch Wetland Mitigation Site.

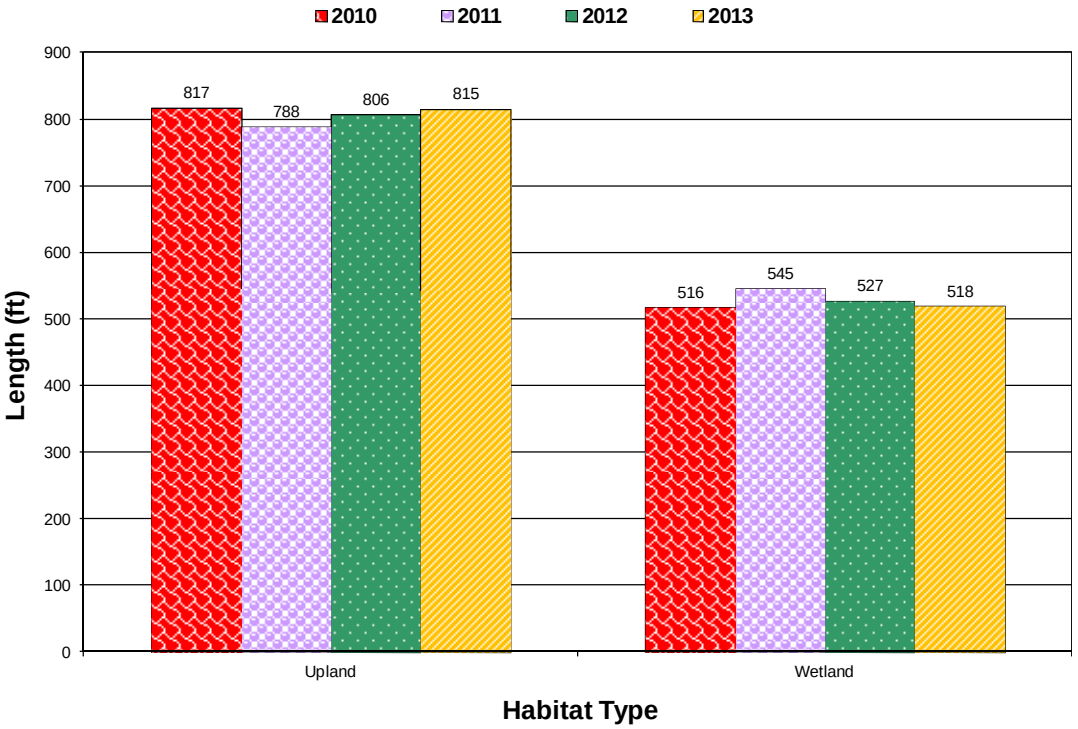


Chart 4. Length of habitat types within Transect T-2 from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Transect T-3 was established west to east across the constructed cells and channel in the south half of the site (Figure 2, Appendix A). Transect T-3 data (Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 5 and Charts 5 and 6, respectively). Photographs of the endpoints of Transect T-3 are located on Page C-8 in Appendix C. The transect intervals intercepted upland community Types 1 and 8 and wetland community Type 6. Hydrophytic vegetation comprised 48.9 percent of Transect T-3 in 2013, a slight decrease from 49.1 percent in 2012 and 50 percent in 2011. There were few changes between the transect data collected in 2013 versus 2012. The ground elevation is slightly lower in the south half of the site relative to overall groundwater levels and may contribute to the comparatively steady vegetation communities documented along T-3.

Table 5. Data summary for Transect T-3 from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013
Transect Length (feet)	**751**	**751**	**751**	**751**
Vegetation Community Transitions along Transect	11	9	9	8
Vegetation Communities along Transect	3	3	3	3
Hydrophytic Vegetation Communities along Transect	1	1	1	1
Total Vegetative Species	24	35	33	34
Total Hydrophytic Species	11	17	20	20
Total Upland Species	13	18	13	14
Estimated % Total Vegetative Cover	65	70	80	85
% Transect Length Comprising Hydrophytic Vegetation Communities	45.0	50.0	49.1	48.9
% Transect Length Comprising Upland Vegetation Communities	55.0	50.0	50.9	51.1
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0	0.0

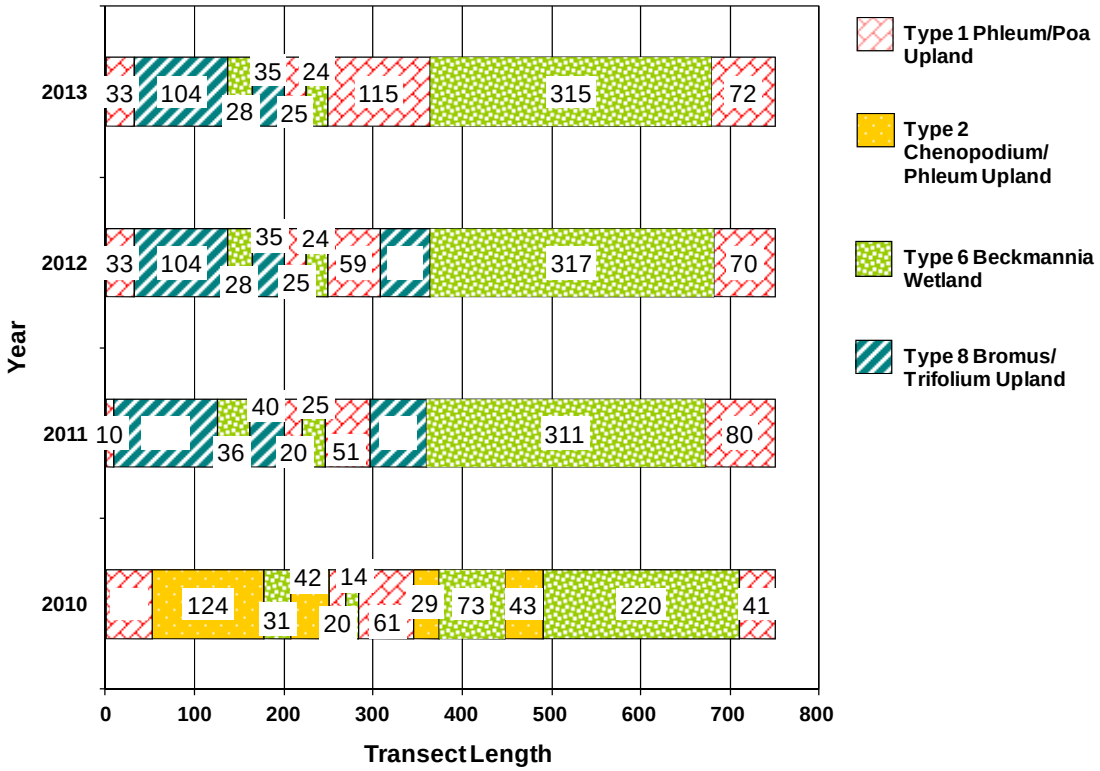


Chart 5. Transect maps showing community types on Transect T-3 from 2010 to 2013 from start (0 feet) to finish (751 feet) at the Easton Ranch Wetland Mitigation Site.

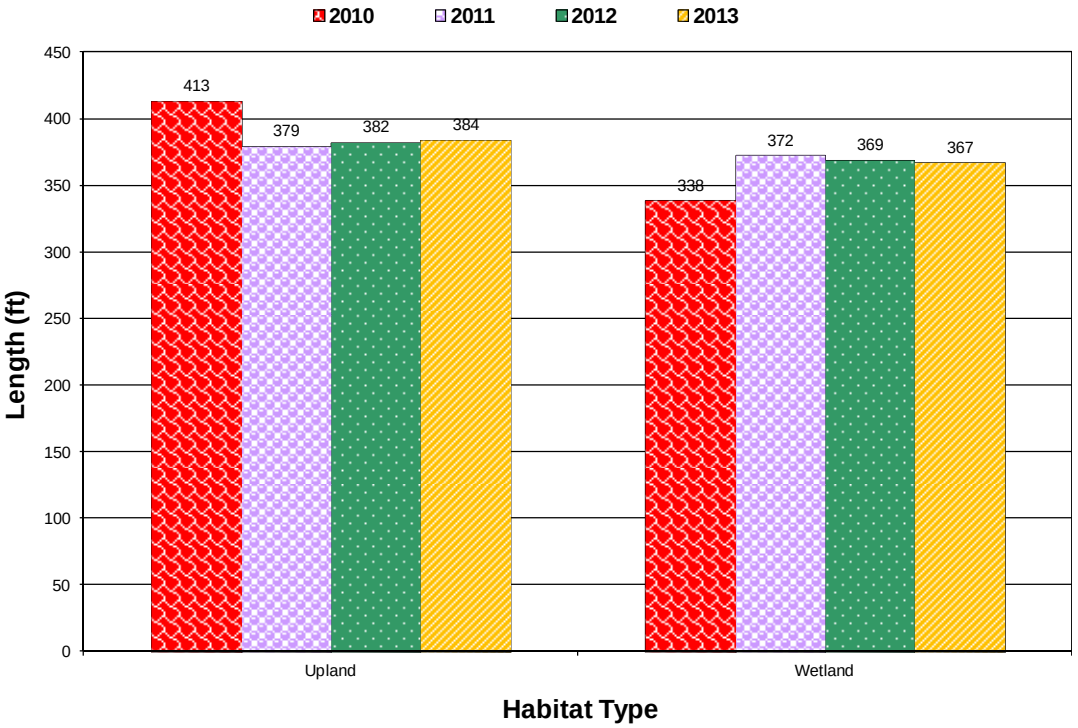


Chart 6. Length of habitat types within Transect T-3 from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Thirteen infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified on site, primarily in uplands and along the site perimeter (Figure 3). The infestations ranged in area from less than 0.1 acres to between 0.1 and 1.0 acre. The cover classes ranged from a trace (less than 1 percent) to moderate (6 to 25 percent) cover. Canadian thistle was observed in communities 1, 3, 5, 6, and 8. Six infestations of houndstongue (gypsy-flower, *Cynoglossum officinale*) were observed primarily along the west perimeter, with one infestation along the east perimeter. The size of the infestations was less than 0.1 acres with a trace (less than one percent) to five percent cover.

Several hundred cuttings and containerized vegetative materials were planted along the constructed flood channel to increase root stability. The plants that were thriving in 2012 exhibited moderate to good vigor during the 2013 site visit. Approximately 10 red-osier dogwood (*Cornus alba*), 30 sandbar willow, 26 thin-leaf alder, and 40 willow cuttings were identified as surviving in 2013. There was an increase in the amount of woody volunteer species, primarily quaking aspen (*Populus tremuloides*) along the northern and southern project boundaries in 2013.

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 three locations, all within what was originally mapped as the Meadowcreek series (E-1 through E-3, Figure 2, Appendix A). Data points E-1 and E-2 were located within Community 8 in upland areas excavated in the north half of the site. Data point E-3 was located in a shallow constructed wetland depression in Community 6. The soil profile at E-1 revealed a brown silt loam (10YR 5/3) with 3 percent dark yellowish brown (10YR 4/6) redoximorphic concentrations in the matrix. This soil did not meet the hydric criteria. The profile at E-2 revealed a brown (10 YR 5/3) friable, silt loam. There were no hydric soil indicators observed in this profile. Data point E-3 exhibited a very dark gray loam (10 YR 3/1) with twenty percent strong brown (7.5 YR 5/8) redox concentrations in the matrix. The soil met the criteria for depleted matrix (F3) and classification as hydric soil. The soil profiles in the test pits did not generally correlate with the map unit, likely as a result of mixing that occurred during construction.

3.4. Wetland Delineation

Three data points were used to support the wetland boundary (E-1 to E-3, Figure 2, Appendix A and Wetland Determination Data Forms, Appendix B). Data point E-3 was located in community Type 6 in the western portion of the site near an excavated depression that qualified as a wetland. Data points E-1 and E-2 were located on the eastern and western boundaries of the site and characterized the upland conditions where the ground surface was lowered during construction of the mitigation site. The total wetland acreage, including pre-existing wetland, was 12.40 acres in 2013, an increase of 0.76 acres since 2012 (Table 6). The delineation mapped 1.10 acres of pre-existing emergent and shrub/scrub wetland within the mitigation boundaries in 2013 (Figure 3, Appendix A). The pre-existing wetlands were originally defined during the baseline investigation completed in August 2001 (MDT 2008). The 2013 delineated wetland acres include 1.56 acres of the re-established flood channel (Community 6, Figure 3, Appendix A) and 9.74 acres of created wetland. Uplands account for 21.11 acres of the mitigation site. Water from the irrigation system at the northeast boundary had been diverted to the site during June and July, prior to the August 2013 visit. However, the frequency and duration of surface and ground water does not appear to be sufficient to support a dominance of hydrophytic plants in a majority of the excavated area. The density of the vegetation cover in the depressions characterized by Community 6 (wetland) continued to increase in 2013.

Table 6. Total wetland acres delineated from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

Habitat	2001 (acres)	2010 (acres)	2011 (acres)	2012 (acres)	2013 (acres)
Pre-existing Wetland Area	1.10	1.10	1.10	1.10	1.10
Created Wetland Area	---	10.43	10.54	10.54	11.30
Total Wetland Habitat	**1.10**	**11.53**	**11.64**	**11.64**	**12.40**

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2010 to 2013 is presented in Table 7. Nine bird species were identified in 2013, including one new species, Turkey vulture *(Cathartes aura*). The behaviors and habitats of all birds observed in 2013 are listed on the Mitigation Monitoring Form (Appendix B). A moose (*Alces americanus*) and deer (*Odocoilous*) tracks were observed on site in 2013.

Table 7. Wildlife species observed from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Columbia Spotted Frog	*Rana luteiventris*
Woodhouse's Toad	*Bufo woodhousii*
MAMMAL	
Coyote	*Canis latrans*
Deer Mouse	*Peromyscus maniculatus*
Long-tailed Vole	*Microtus longicaudus*
Meadow Vole	*Microtus pennsylvanicus*
Moose	***Alces americanus***
Porcupine	*Erethizon dorsatum*
Pronghorn Antelope	*Antilocapra americana*
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*
BIRD	
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Spinus tristus*
American Kestrel	*Falco sparverius*
American Robin	***Turdus migratorius***
American Wigeon	*Anas americana*
Bald Eagle	*Haliaeetus leucocephalus*
Band-tailed Pigeon	*Patagioenas fasciata*
Bank Swallow	*Riparia riparia*
Belted Kingfisher	*Megaceryle alcyon*
Black-billed Magpie	*Pica hudsonia*
Black-capped Chickadee	*Poecile atricapillus*
Canada Goose	*Branta canadensis*
Cedar Waxwing	*Bombycilla cedrorum*
Eastern Kingbird	*Tyrannus tyrannus*
Golden Eagle	***Aquila chrysaetos***

Species identified in 2013 are listed in **bold** type.

Table 7 (continued). Wildlife species observed from 2010 to 2013 at the Easton Ranch Wetland Mitigation Site.

COMMON NAME	SCIENTIFIC NAME
BIRD	
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***
Turkey Vulture	***Cathartes aura***
Vesper Sparrow	*Pooecetes gramineus*
Western Bluebird	*Sialia mexicana*
Western Meadowlark	*Sturnella neglecta*
Willet	*Tringa semipalmata*
Wilson's Snipe	*Gallinago delicata*
Yellow Warbler	***Dendroica petechia***
Yellow-rumped Warbler	*Dendroica coronata*

Species identified in 2013 are listed in **bold** type.

3.6. Functional Assessment

The 2008 MDT Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008) was used to evaluate three assessment areas (AA) (Table 8 and Appendix B). The AAs were separated by Creation, Restoration, and Preservation areas of the mitigation site and are discussed below.

The Creation AA encompassed 9.74 acres of constructed palustrine, emergent wetland cells and has generated 56.01 functional units. The overall rating for the Creation AA remained at a Category III wetland characterized by low disturbance in 2013. The ratings were high for short and long term surface water storage, sediment/nutrient/toxicant removal, and production export/food chain support. The number of units and acreage are expected to increase as some areas of upland in the excavated areas (Community 8) transition to wetland habitat, provided sufficient wetland hydrology exists within the site.

Table 8. Functions and Values of the Easton Ranch Wetland Mitigation Site from 2010 to 2013.

Function and Value Parameters from the 2008 MDT Montana Wetland Assessment Method	2010 Creation	2010 Restoration	2010 Preservation	2011 Creation	2011 Restoration	2011 Preservation	2012 Creation	2012 Restoration	2012 Preservation	2013 Creation	2013 Restoration	2013 Preservation
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)
General Wildlife Habitat	Mod (0.5)	Low (0.3)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.5)	Exc (1.0)	Mod (0.5)	Mod (0.6)	High (0.9)	Mod (0.5)	Mod (0.6)	Mod (0.6)	Mod (0.5)	Mod (0.6)	High (0.9)
Short and Long Term Surface Water Storage	High (0.9)	Mod (0.6)	High (0.8)	High (0.8)	Mod (0.6)	High (0.8)	High (0.8)	Mod (0.6)	High (0.8)	High (0.8)	Mod (0.6)	High (0.8)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.6)	High (1.0)	Mod (0.7)	High (1.0)	High (1.0)	High (0.9)	High (1.0)	High (1.0)	High (0.9)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Low (0.2)	Mod (0.6)	NA	Low (0.2)	Mod (0.6)	NA	Mod (0.6)	Mod (0.6)	NA	Mod (0.6)	High (0.9)	NA
Production Export/ Food Chain Support	Mod (0.5)	Mod (0.5)	Mod (0.7)	High (0.8)	Mod (0.7)	Exc (1.0)	High (0.8)	Mod (0.7)	Exc (1.0)	High (0.8)	Mod (0.7)	Exc (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	Mod (0.7)	High (1.0)	Mod (0.7)	Mod (0.7)	High (1.0)	Mod (0.7)	Mod (0.7)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Mod (0.6)	Low (0.3)	Low (0.3)	Mod (0.6)	Mod (0.4)	Mod (0.4)	Mod (0.6)	Mod (0.4)	Mod (0.4)	Mod (0.6)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**5.25 / 10**	**4.95 / 10**	**6.65 / 9**	**5.75 / 10**	**5.95 / 10**	**6.95 / 9**	**5.75 / 10**	**5.65 / 10**	**6.25 / 9**	**5.75 / 10**	**5.95 / 10**	**6.55 / 9**
% of Possible Score Achieved	**52.5%**	**49.5%**	**73.9%**	**57.5%**	**59.5%**	**77.2%**	**57.5%**	**56.5%**	**69.4%**	**57.5%**	**59.5%**	**72.8%**
Overall Category	**III**	**III**	**II**	**III**	**III**	**II**	**III**	**III**	**II**	**III**	**III**	**II**
Acreage of Assessed Aquatic Habitats within Easement	**8.98**	**1.45**	**1.1**	**9.09**	**1.45**	**1.1**	**9.09**	**1.45**	**1.1**	**9.74**	**1.56**	**1.1**
Functional Units (acreage x actual points)	**47.15**	**7.18**	**7.32**	**52.27**	**8.63**	**7.65**	**52.27**	**8.19**	**6.88**	**56.01**	**9.28**	**7.21**

The Restoration AA consisted of 1.56 acres of re-established flood channel. The Restoration AA (flood channel) received a Category III rating with 59.5 percent of the total possible points, a slight increase from 56.5 in 2012. There was an increase from moderate to high rating for sediment/shoreline stabilization. Ratings were high for sediment/nutrient/toxicant removal and moderate for general wildlife habitat, flood attenuation, short and long term surface water storage, production export/food chain support, groundwater discharge/recharge, and uniqueness. The Restoration AA achieved a total of 9.28 functional units in 2013, an increase of 1.09 units from 2012.

The 1.1 acre Preservation AA encompassed the existing forested, shrub/scrub and palustrine emergent wetlands. The existing wetland within the Preservation AA was rated as Category II with 72.8 percent of the possible points. The presence of emergent, scrub/shrub, and forested wetlands types increased the structural diversity and flood attenuation ratings. Ratings were high for general wildlife habitat, flood attenuation, short and long term surface water storage, sediment/nutrient/toxicant removal, and groundwater discharge/recharge and excellent for production export/food chain support. The Preservation AA scored a total of 7.21 functional units is 2013.

3.7. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7; Figure 2, Appendix A) from 2010, 2012 and 2013 are shown on pages C-1 to C-5 of Appendix C**.** Transect end points are shown on pages C-6 to C-8 of Appendix C. Panoramas of photo points PP-2 to PP-5 are included on pages C-9 to C-11 of Appendix C. Photos of the data points are included on page C-12. Photo points 4A and 4B on pages C-4 and C-5 show the Shields River just outside the northwest corner of the project area from 2010, 2012 and 2013.

3.8. Maintenance Needs

The irrigation diversion structure was closed during the July 2011, June 2012 and August 2013 site investigations. It is recommended that water be diverted into the site during the early growing season to promote increased development of hydric soils and hydrophytic vegetation within the site. Nine bird-boxes were installed at the site between 2010 and 2013. Four of the bird boxes were occupied. All fences were intact. No maintenance was required for the man-made structures.

Thirteen infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified primarily around the site perimeter (Figure 3). The infestations ranged in area from less than 0.1 acres to between 0.1 and 1.0 acre. The cover classes ranged from a trace (<1.0 percent) to moderate (6 to 25 percent) cover. Canadian thistle was observed in communities 1, 3, 5, 6, and 8. Six infestations of houndstongue (gypsy-flower, *Cynoglossum officinale*) were observed primarily in the north half of the site. The size of the infestations was less than 0.1 acres with a trace (<1.0 percent) to low (1 to 5 percent) cover. MDT

has an on-going weed control program that assesses and employs weed-control measures within their wetland mitigation sites on a yearly basis.

The east bank of the Shields River along the northwest corner of the Easton mitigation site remained stable through the 2011 runoff event. The structural integrity of the coir-wrapped soil lifts was intact following 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. A debris jam was removed from the channel and several downed trees were removed from the riparian cottonwood forest during the early part of 2012. Photo points 4A and 4B on pages C-2 and C-3 show the banks of the Shields River in the northwest corner of the site from 2010, 2102 and 2013.

3.9. Current Credit Summary

Table 9 summarizes the current estimated wetland credits based on the USACE approved credit ratios (MDT 2008) and the wetland delineation completed in August 2013. 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 27.41 credit acres, which accounted for 0.67 acres of impacts associated with the construction of the mitigation wetland.

The 2013 delineation identified a total of 12.40 acres of wetlands within the project boundary. Approximately 9.74 acres of emergent wetland has developed to date within the constructed cells. The restored channel encompassed 1.56 acres of riverine emergent wetland. The pre-existing wetland, which included portions of communities 3, 4 and 7, encompassed 1.1 acres. Uplands accounted for 21.11 acres of the 33.51 acre site. The current 50-foot upland buffer calculated for this site totals 11.97 acres. Since this value is expected to decrease with continued wetland development, the expected 50 foot upland buffer at full wetland development (6.43 acres) has been used to calculate credit totals. Applying the approved USACE Mitigation ratios to each mitigation feature, a total of 12.19 acres of credit were estimated in 2013 (Table 9).

Table 9. Summary of wetland credits at the Easton Ranch Wetland Mitigation Site from 2010 to 2013.

Proposed Mitigation Features	Compensatory Mitigation Type	USACE Mitigation Ratios	Final Credit Acreages	Proposed Final Wetland Credits (Acres)	2010 Wetland Acreages	2010 Estimated Credit (Acres)	2011 Wetland Acreages	2011 Estimated Credit (Acres)	2012 Wetland Acreages	2012 Estimated Credit (Acres)	2013 Wetland Acreages	2013 Credit Estimated (Acres)
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95	7.78	7.78	9.09	9.09	9.09	9.09	9.74	9.74
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56	1.45	1.45	1.45	1.45	1.45	1.45	1.56	1.56
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	1.10	0.28	1.10	0.28	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	6.43*	1.29	6.43*	1.29
Project Impacts			-0.67	-0.67	-0.67	-0.67	-0.67	-0.67	-0.67	-0.67	-0.67	-0.67
Total				**27.41**		**10.12**		**11.44**		**11.44**		**12.19**

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

While a majority of the site was inundated or saturated within 12 inches of the ground surface in July 2011, a decrease in surface and ground water levels at the site was observed in 2012 and 2013. Several of the excavated depressions that contained surface water in 2011 were dry in 2012 and 2013, limiting the potential expansion of wetland acreage within the site (see photo sheets). Decreased water levels were observed on site in 2012 and 2013 and are likely due to a decrease in precipitation during those years. In 2012 and 2013, precipitation was 18% and 51%, respectively, below the long term average.

The Easton Ranch wetland mitigation site has shown continued progress towards achieving goals and performance standards established for this project. Table 10 summarizes the mitigation goals for the Easton Ranch site. Table 11 summarizes the USACE-approved performance standards for this site. The site has achieved five of the six goals for the Easton Ranch wetland mitigation site. Although the site had developed nearly 10 acres of wetland habitat, this value falls short of the 25 acres identified as a target. Existing wetlands within the site have been satisfactorily preserved. The excavated depressions throughout the floodplain function as relic meander scars, storing surface water during periods of high flow within the Shields River. These depressional wetlands have improved the water storage capacity of the floodplain. The constructed floodplain channel was activated during the 2011 spring runoff and resulted in development of scour holes, riffles, and point bars through natural fluvial geomorphic processes. No bank erosion has been identified along the constructed channel through the course of yearly monitoring. The establishment of hydrophytic vegetation communities, preservation of existing scrub-shrub, forested, and emergent wetlands, and wildlife-friendly fencing around the site have improved wildlife habitat within the Easton Ranch wetland mitigation site.

The cuttings, containerized plants, and volunteer species are still developing within the site. Approximately 106 live woody stems were observed in 2013. The stems have not yet achieved enough growth to allow quantification of absolute planted woody vegetation cover site wide. The herbaceous cover of hydrophytic vegetation in a majority of the site is approximately 85 to 90 percent. The percent cover of bare ground has decreased notably across the site from 2010 to 2013. Vegetation cover throughout a majority of the excavated areas targeted for wetland development not identified as wetland in 2013 was dominated by upland plants and will require an increased duration of wetland hydrology to develop into a wetland community. The vegetation cover in the constructed floodplain channel increased in 2013. This channel was not activated during the 2012 or 2013 spring runoff within the Shields River. This channel cross-section was stable and included dominant plants species (rushes, sedges, and American slough grass) with high root stability indices. Weed management is ongoing. 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 10. Summary of mitigation goals for Easton Ranch wetland mitigation site.

Mitigation Goal for Easton Ranch	Goal Achieved Y/N	Discussion
Re-establish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas totaling 1.56 acres.	Y	A 1.56-acre floodplain channel was excavated through the site. This channel was activated during peak spring runoff in 2011 with fluvial geomorphic processes resulting in scour holes, riffles, and point bars. No areas of bank erosion along this channel have developed and appears to be functioning as designed. Wetland vegetation has established within the footprint of the channel.
Create approximately 25 acres of emergent, scrub/shrub and riparian wetlands by replacing existing hay fields with a variety of wetland communities that mimic habitats found in bio-reference wetland areas located north and south of the project.	N	A total of 9.74 acres of wetland habitat has been created at this site to date.
Preserve 1.1 acres of existing scrub/shrub, forested, and palustrine emergent communities at several locations within the project area.	Y	The 1.1 acres of existing scrub/shrub, forested, and palustrine emergent wetland communities have been preserved, livestock grazing has been eliminated, and the areas continue to exhibit wetland hydrology.
Mimic old meander scars and relic flood channels within the wetland mitigation site.	Y	Several depressional wetland areas have been constructed across the mitigation site and function as relic meander scars.
Improve water storage capacity and increase the amount of floodplain area across the site.	Y	Several depressional wetland areas have been constructed across the mitigation site and have increased the water storage capacity of the floodplain.
Increase the amount of wildlife habitat in this reach of the Shields River.	Y	Wildlife habitat has been improved and protected by excluding livestock grazing and promoting the establishment of wetland vegetation.

The summary of performance standards listed in Table 11 indicates this site has not achieved the full suite of success criteria established in the mitigation plan for the Easton Ranch wetland mitigation site. All wetlands delineated within this site in 2013 met the USACE three parameter criteria for hydrology, vegetation, and soils. Groundwater wells established within the site during baseline evaluation were removed during construction. Trees and shrubs have been planted throughout the mitigation site and natural recruitment of aspen, willows, and cottonwoods have been documented. The anticipated 34.04 acres of wetland development has not occurred to date. In general, the percentages of wetland habitat type fall outside the identified success criteria. The floodplain channel is considered stable and successfully restored. The bank stability of the Shields River in the northwestern corner of the site has been considered marginal as the vegetation established along the banks primarily consist of upland pasture grasses lacking deep-binding roots. The upland buffer has developed greater than 50 percent cover by non-weed species and noxious weed cover is less than 10 percent. This 2013 wetland mitigation monitoring report represents the fourth year of post-construction monitoring at this site.

Table 11. Summary of performance standards and success criteria for Easton Ranch wetland mitigation site.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	Meet the three parameter criteria for hydrology, vegetation, and soils as outlined in the 1987 Wetland Delineation Manual and 2010 Mountains, Valleys, Coast Region.	Y	Areas identified as wetland habitat within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation present for at least 12.5 percent of the growing season.	Y	Areas identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of growing season.
	Groundwater wells will be left undisturbed within the site for the purpose of monitoring groundwater elevations during the growing season.	N	No groundwater wells remain on site.
	Groundwater is filling the depressional wetlands excavated into the upland areas of the site.	Y	Indicators of groundwater filling the depressional wetlands include sparsely vegetated concave surfaces, saturation to the surface and inundation.
	Constructed stream channel is stable.	Y	The constructed floodplain channel is stable with no bank erosion identified throughout the mitigation area.
Hydric Soil	Hydric soil conditions present or appear to be forming.	Y	Hydric soil characteristics, including redoximorphic concentrations and depleted matrix, have developed throughout a majority of the constructed wetlands.
	Soil is sufficiently stable to prevent erosion.	Y	Disturbed soil is stable and does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover has continued to develop across disturbed soils.
Hydrophytic Vegetation	Achieved when wetlands delineated as hydrophytic utilizing techincal guidelines.	Y	Areas identified as wetland habitat within the mitigation site support a prevelance of hydrophytic vegetation (OBL, FACW, and FAC).
Woody Plants	Trees and shrubs will be installed and survival will be assessed; no specific survival criteria established.	Y	Trees and shrubs have been planted throughout the mitigation sites and are assessed during each yearly monitoring visit. Approximatley 6.7 percent of the wetland areas identified within the site are dominated by woody vegetation. Planted woody species continue to survive and develop along the constructed flood channel. Natural recruitement of aspen, willows, and cottonwoods within the site continue to establish.
Herbaceous Plants	At least 80 percent of ocular vegetation coverage by desirable hydrophytic vegetation.	Y	Desirable hydrophytic vegetation consist of greater than 80 percent of total vegetation cover within delineated wetlands.
Wetland Acreage Development	Provide 34.04 acres of emergent and scrub/shrub wetlands within mitigationa area.	N	A total of 12.40 acres of emergent, scrub/shrub and forested wetlands are present within mitigation site. This total includes 9.74 acres of created wetland, 1.56 acres of restored wetland, and 1.10 acres of preserved wetland.
	Emergent wetland habitat will be 70-75% of mitigation wetland.	N	Emergent wetland habitat comprises approximately 86% of total wetland areas delineated in 2013.
	Scrub/shrub wetland habitat will be 15-20% of wetland area.	N	Scrub/shrub wetland habitat comprises approximately 7% of total wetland areas delineated in 2013.
	Open water will be <5% of wetland area.	N	Open water/aquatic macrophyte habitat comrpises approximately 7% of total wetland areas delineated in 2013. Open water areas are seasonal and fluctuate throughout the growing season.
Floodplain Channel Restoration	Considered stable when banks are vegetated with a majority of deep-rooting riparian and wetland plant species	Y	Streambanks along the constructed channel are vegetated with a diversity of deep-rooting and wetland plant species.
	Bank stability will be evaluated by reference reach comparison.	Y	Banks within the constructed floodplain channel are stable and compare to reference reach conditions with no signs of erosion or channel movement.
	Vegetation transect across the floodplain will be monitored.	Y	Vegetation transect across the floodplain has been monitoired yearly and supports a prevalence of species with a root stability index greater than 6.
Bank Stabilization (Shields River)	Area visually inspected and photo documented.	Y	The results of annual inspection and photo documentation along the Shields River in the northwestern corner of the site are presented in the mitigation monitoring reports.
	Stability achieved when the banks are vegetated with a majority of dep-rooting riparian and wetland plant species.	N	The banks of the Shields River are generally dominated by upland pasture grasses. Soil lifts and the rock toe installed along the bank are intact.
Upland Buffer	Noxious weeds do not exceed 10 percent cover within upland buffer area.	Y	Noxious weed cover is less than 10 percent within the upland buffer.
	Any area disturbed within creditable buffer zone must have at least 50 percent aerial cover of non-weed species by end of monitoring period.	Y	Disturbed areas have established greater than 50 percent cover by non-weed species.
Weed Control	Less than 5 percent absolute cover of state-listed noxious weed species across the site.	Y	State-listed noxious weed species across the site is less than 5 percent absolute cover.
Fencing	Install wildlife-friendly fencing along the easement boundaries.	Y	Wildlife-friendly fencing has been installed around the easement boundaries and is in good condition.
Monitoring	Monitor the site for a minimum period of five years or longer as determined by the US Army Corps.	N	On-going monitoring of this site has extended for 4 years.

4. REFERENCES

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Appendix A

Project Area Maps – Figures 2 and 3

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

Figure 2: 2013 Monitoring Activity Locations



Legend

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

Base Photography Date: July 15, 2013

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/Monitor2013.mxd

Project Name
Easton Ranch Wetland Mitigation

Drawing Title
2013 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	Brie	LU

SCALE: Noted

Drawn: September 6, 2012

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 2

REV -

Figure 3: 2013 Mapped Site Features

N

0 125 250 500

Noxious Weeds
Cynoglossum officinale
Cirsium arvense
Infestation Size
X = <0.1 acre
▲ = 0.1 to 1 acre
■ = 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (6-25% cover)

Vegetation Community Types
1 Phleum pratense/Poa pratensis
3 Carex spp.
4 Salix drummondiana
5 Populus balsamifera
6 Beckmannia syzigachne
7 Aquatic Macrophytes
8 Bromus spp./Trifolium spp.

Legend
Monitoring Limits
Wetland Limits
Vegetation Communities
Base Photography Date: July 15, 2013

Acreages

Project Area	33.51 acres
Gross Wetland	12.40 acres
Pre-existing Wetland	1.10 acres
Net Wetlands	11.30 acres
Uplands	21.11 acres

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

LOCATION: Park Co., MT
PROJECT NO: STPX-0034(14)
FILE: Easton/Veg2013.mxd

Project Name
EASTON RANCH
WETLAND MITIGATION

Drawing Title
2013 MAPPED SITE FEATURES

DRAWN	CHECKED	APPROVED
BCS	Brie	LU

SCALE: Noted
Drawn: September 6, 2012
PROJ MGR: B Sandefur

CONFLUENCE consulting Incorporated

Figure 3

REV -

Appendix B

2013 MDT Wetland Mitigation Site Monitoring Form
2013 USACE Wetland Determination Data Form
2013 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 8/5/2013 9:19:09 AM

Person(s) conducting the assessment: B Schultz; B Sandefur

Weather: Sunny, warm, no recent precip Location: Easton Ranch Mitigation Site

MDT District: Butte Milepost: NA

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

Initial Evaluation Date: 8/25/2010 Monitoring Year: 4 #Visits in Year: 1

Size of Evaluation Area: 34 (acres)

Land use surrounding wetland:

Agriculture (hay) to the east; undeveloped riparian corridor to the west, and herbaceous scrub/shrub wetland to the north and south.

HYDROLOGY

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

Inundation: ☑ Average Depth: 0.2 **(ft)** Range of Depths: 0-1.5 **(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: No

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

Drift and sediment deposits from previous year, water-stained leaves, soil cracks, drainage patterns, algal crust, sparsely vegetated surface, dry-season water table, geomorphic postion, FAC-neutral

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:

Areas of inundation within excavated depressions (created wetland AA). No signs of overbank flooding in 2013. Irrigation water had been turned into the site in June/July, prior to site visit. Site was drier in 2013 than in previous years with some signs of previous surface inundation during spring.

VEGETATION COMMUNITIES

Site Easton Ranch

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

Community # 1 **Community Type:** Phleum pratense / Poa pratensis **Acres** 9.04

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Alopecurus pratensis	0
Alyssum alyssoides	0	Bare Ground	0
Bromus carinatus	0	Bromus inermis	3
Carum carvi	1	Cirsium arvense	0
Cirsium vulgare	0	Cynoglossum officinale	0
Dactylis glomerata	1	Elymus cinereus	0
Elymus repens	0	Equisetum arvense	0
Equisetum hyemale	0	Festuca arundinacea	0
Juncus arcticus	0	Lotus corniculatus	1
Medicago lupulina	0	Melilotus officinalis	1
Phleum pratense	5	Poa pratensis	3
Populus tremuloides	1	Potentilla gracilis	0
Ranunculus sp.	0	Salix exigua	0
Taraxacum officinale	1	Thlaspi arvense	0
Trifolium pratense	0		

Comments:

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

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Carex aquatilis	2
Carex nebrascensis	0	Carex utriculata	5
Cirsium arvense	0	Juncus effusus	1
Medicago lupulina	0	Mentha arvensis	0
Phleum pratense	0	Populus tremuloides	0
Salix exigua	1	Scirpus microcarpus	1
Trifolium pratense	0		

Comments:

Community # 4 **Community Type:** Salix drummondiana / **Acres** 0.14

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

Comments:

Community # 5 **Community Type:** Populus balsamifera / **Acres** 0.69

Species	Cover class	Species	Cover class
Bromus inermis	2	Cirsium arvense	1
Glyceria striata	2	Populus angustifolia	4
Populus balsamifera	4	Salix bebbiana	2
Salix lasiandra	2	Scirpus microcarpus	2
Scutellaria lateriflora	2		

Comments:

Community # 6 **Community Type:** Beckmannia syzigachne / **Acres** 10.19

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Algae, green	0
Alisma gramineum	1	Alnus incana	0
Alopecurus pratensis	2	Bare Ground	0
Beckmannia syzigachne	3	Brassica kaber	1
Bromus carinatus	0	Carex aquatilis	0
Carex sp.	0	Carex stipata	1
Carex utriculata	0	Carum carvi	1
Cirsium arvense	0	Cynoglossum officinale	0
Epilobium ciliatum	0	Equisetum arvense	2
Equisetum hyemale	0	Festuca arundinacea	0
Fragaria virginiana	0	Geum macrophyllum	0
Glyceria grandis	1	Glyceria striata	3
Hordeum jubatum	0	Juncus arcticus	2
Juncus effusus	2	Juncus ensifolius	0
Juncus torreyi	1	Lotus corniculatus	0
Lycopus asper	0	Medicago lupulina	0
Melilotus officinalis	0	Mentha arvensis	1
Phleum pratense	1	Plantago major	1
Poa palustris	1	Poa pratensis	0
Populus angustifolia	0	Potentilla gracilis	0
Rumex crispus	1	Salix bebbiana	0
Salix exigua	0	Salix lutea	0
Salix sp.	0	Scirpus microcarpus	0
Taraxacum officinale	1	Thlaspi arvense	0
Trifolium pratense	0	Trifolium repens	1
Typha latifolia	1	Vicia americana	0

Comments:

Community # 7 **Community Type:** Aquatic macrophytes / **Acres** 0.92

Species	Cover class	Species	Cover class
Algae, green	1	Alisma gramineum	0
Beckmannia syzigachne	1	Glyceria grandis	0
Juncus ensifolius	0	Myriophyllum sp.	0
Rumex crispus	0	Ruppia maritima	0

Comments:

Community # 8 **Community Type:** Bromus spp. / Trifolium spp. **Acres** 12.07

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	0
Bare Ground	0	Brassica kaber	0
Bromus arvensis	1	Bromus carinatus	0
Bromus inermis	4	Bromus tectorum	1
Carex aquatilis	0	Carex utriculata	0
Carum carvi	1	Cirsium arvense	0
Cirsium vulgare	0	Cynoglossum officinale	0
Dactylis glomerata	0	Deschampsia cespitosa	0
Elymus cinereus	0	Elymus repens	2
Epilobium ciliatum	0	Equisetum arvense	0
Equisetum hyemale	0	Festuca pratensis	0
Fragaria virginiana	0	Glyceria grandis	0
Glycyrrhiza lepidota	0	Hordeum jubatum	0
Juncus arcticus	0	Juncus effusus	0
Lotus corniculatus	1	Lycopus asper	0
Melilotus officinalis	0	Persicaria lapathifolia	0
Phleum pratense	4	Plantago major	0
Poa pratensis	3	Populus angustifolia	0
Populus balsamifera	0	Potentilla gracilis	0
Rumex crispus	0	Salix lutea	0
Solidago canadensis	0	Taraxacum officinale	0
Thlaspi arvense	0	Trifolium arvense	0
Trifolium pratense	0	Trifolium repens	0
Vicia americana	0		

Comments:

Total Vegetation Community Acreage **33.51**

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

VEGETATION TRANSECTS

Site: Easton Ranch Date: 8/5/2013 9:19:09 AM

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

Interval Data:

Ending Station 45 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Bromus inermis	3	Carum carvi	1
Cirsium arvense	0	Deschampsia cespitosa	1
Melilotus officinalis	5	Phleum pratense	3
Plantago major	0	Trifolium pratense	2

Ending Station 61 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Beckmannia syzigachne	4
Juncus arcticus	2	Juncus effusus	3
Juncus ensifolius	1	Phleum pratense	0
Salix lutea	0		

Ending Station 100 **Community Type:** Aquatic macrophytes /

Species	Cover class	Species	Cover class
Algae, green	3	Alisma gramineum	2
Beckmannia syzigachne	1	Glyceria grandis	0
Juncus ensifolius	0	Myriophyllum sp.	2
Rumex crispus	1	Ruppia maritima	2

Ending Station 132 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	1	Carex sp.	1
Glyceria grandis	2	Juncus arcticus	2
Juncus effusus	3	Juncus ensifolius	3
Lotus corniculatus	0	Phleum pratense	0
Trifolium pratense	1		

Ending Station 197 **Community Type:** Phleum pratense / Poa pratensis

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

Ending Station 262 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	0	Alopecurus pratensis	2
Beckmannia syzigachne	2	Glyceria grandis	1
Juncus effusus		Juncus ensifolius	1
Melilotus officinalis	3	Phleum pratense	1
Plantago major	0	Poa pratensis	1
Taraxacum officinale	2	Trifolium pratense	2
Typha latifolia	1		

Ending Station 458 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Agrostis gigantea		Bromus inermis	1
Carum carvi	1	Cirsium arvense	0
Cirsium vulgare	0	Dactylis glomerata	1
Elymus cinereus	1	Equisetum hyemale	0
Fragaria virginiana	0	Glyceria grandis	0
Lotus corniculatus	1	Lycopus asper	0
Melilotus officinalis	5	Phleum pratense	3
Poa pratensis	1	Rumex crispus	0
Taraxacum officinale	1	Trifolium pratense	3
Trifolium repens	1		

Ending Station 510 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	4	Juncus arcticus	2
Juncus ensifolius	1	Lycopus asper	0
Melilotus officinalis	2	Mentha arvensis	0
Phleum pratense	1	Trifolium pratense	1

Ending Station 560 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	1
Carum carvi	1	Cirsium arvense	0
Melilotus officinalis	4	Phleum pratense	2
Taraxacum officinale	1		

Ending Station 675 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alopecurus pratensis	2
Carex aquatilis	0	Carum carvi	1
Elymus repens	1	Equisetum hyemale	1
Glycyrrhiza lepidota	0	Hordeum jubatum	1
Juncus effusus	0	Lycopus asper	0
Plantago major	1	Salix lutea	0
Trifolium pratense	2		

Ending Station 705 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alnus incana	1
Beckmannia syzigachne	2	Carex aquatilis	1
Cirsium arvense	0	Fragaria virginiana	0
Juncus arcticus	1	Juncus ensifolius	1
Lotus corniculatus	1	Plantago major	1
Rumex crispus	1	Salix sp.	1
Taraxacum officinale	0		

Ending Station 1290 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Bare Ground	2	Bare Ground	1
Brassica kaber	0	Bromus inermis	2
Carum carvi	2	Cirsium arvense	0
Cirsium vulgare	0	Elymus cinereus	1
Elymus repens	1	Equisetum arvense	0
Equisetum hyemale	0	Hordeum jubatum	0
Juncus arcticus	1	Lotus corniculatus	1
Melilotus officinalis	4	Phleum pratense	3
Poa pratensis	4	Potentilla gracilis	0
Rumex crispus	1	Taraxacum officinale	0
Trifolium pratense	3	Trifolium repens	2

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

Species	Cover class	Species	Cover class
Carum carvi	1	Cirsium arvense	0
Cynoglossum officinale	0	Elymus repens	2
Lotus corniculatus	1	Melilotus officinalis	1
Phleum pratense	5	Poa pratensis	4
Populus tremuloides	1	Taraxacum officinale	1
Trifolium pratense	2		

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 185

Interval Data:

Ending Station 40 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Carex nebrascensis	1
Carex utriculata	4	Cirsium arvense	0
Juncus effusus	1	Medicago lupulina	0
Mentha arvensis	0	Phleum pratense	1
Salix exigua	1	Scirpus microcarpus	1
Trifolium pratense	2		

Ending Station 60 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	4	Carex utriculata	1
Glyceria grandis	3	Juncus ensifolius	2
Medicago lupulina	0	Mentha arvensis	0
Salix lutea	1	Trifolium pratense	2

Ending Station 128 **Community Type:** Bromus inermis / Trifolium pratense

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Bromus inermis	2
Bromus inermis	3	Carex utriculata	0
Cirsium arvense	0	Equisetum hyemale	0
Lotus corniculatus	0	Melilotus officinalis	3
Persicaria lapathifolia	0	Phleum pratense	2
Poa pratensis	3	Taraxacum officinale	1

Ending Station 175 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alnus incana	0
Beckmannia syzigachne	2	Juncus effusus	3
Lotus corniculatus	1	Melilotus officinalis	1
Phleum pratense	2	Salix lutea	0
Trifolium pratense	3		

Ending Station 372 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	3	Carum carvi	1
Cirsium arvense	0	Equisetum hyemale	0
Lotus corniculatus	1	Phleum pratense	5
Poa pratensis	4	Potentilla gracilis	0
Ranunculus sp.	0	Taraxacum officinale	1

Ending Station 879 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Bare Ground	1	Bromus carinatus	0
Bromus inermis	4	Carum carvi	1
Cirsium arvense	0	Cirsium vulgare	0
Cynoglossum officinale	0	Elymus cinereus	0
Elymus repens	1	Equisetum hyemale	0
Hordeum jubatum	1	Melilotus officinalis	1
Phleum pratense	4	Solidago canadensis	0
Taraxacum officinale	1	Thlaspi arvense	0
Trifolium pratense	2	Vicia americana	0

Ending Station 1290 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alisma gramineum	1
Bare Ground	1	Beckmannia syzigachne	4
Carex aquatilis	1	Carex utriculata	1
Carum carvi	1	Epilobium ciliatum	0
Equisetum hyemale	1	Festuca arundinacea	1
Geum macrophyllum	0	Glyceria grandis	1
Hordeum jubatum	0	Juncus arcticus	1
Juncus effusus	1	Lotus corniculatus	1
Melilotus officinalis	1	Mentha arvensis	0
Plantago major	1	Poa pratensis	2
Populus angustifolia	0	Salix lutea	1
Scirpus microcarpus	0	Taraxacum officinale	1
Trifolium pratense	1	Trifolium repens	1

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

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bromus inermis	2
Elymus repens	2	Festuca arundinacea	1
Thlaspi arvense	1		

Transect Notes:

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

Interval Data:

Ending Station 33 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bare Ground	2
Bromus inermis	2	Carum carvi	1
Cirsium arvense	0	Cirsium vulgare	0
Cynoglossum officinale	0	Elymus cinereus	1
Equisetum arvense	1	Phleum pratense	1

Ending Station 137 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Bare Ground	1	Carum carvi	1
Cirsium arvense	0	Cirsium vulgare	1
Melilotus officinalis	4	Phleum pratense	2
Rumex crispus	0	Salix lutea	0
Trifolium arvense	1		

Ending Station 165 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Carum carvi	1
Juncus arcticus	2	Juncus effusus	2
Melilotus officinalis	3	Phleum pratense	2
Salix sp.	1	Taraxacum officinale	1
Trifolium pratense	1		

Ending Station 200 **Community Type:** Bromus inermis / Trifolium spp.

Species	Cover class	Species	Cover class
Carum carvi	2	Festuca pratensis	1
Lotus corniculatus	1	Melilotus officinalis	4
Poa pratensis	2	Rumex crispus	0
Trifolium pratense	2		

Ending Station 225 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Carum carvi	2	Dactylis glomerata	2
Elymus repens	3	Phleum pratense	3
Poa pratensis	2	Trifolium pratense	2

Ending Station 249 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Carum carvi	2	Equisetum arvense	1
Equisetum hyemale	2	Phleum pratense	1
Rumex crispus	1	Salix sp.	1
Taraxacum officinale	1		

Ending Station 364 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus carinatus	1	Carum carvi	2
Cirsium arvense	0	Dactylis glomerata	1
Elymus repens	2	Equisetum arvense	1
Lotus corniculatus	2	Phleum pratense	4
Poa pratensis	3	Trifolium pratense	2

Ending Station 679 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	0
Carex utriculata	1	Equisetum hyemale	1
Juncus arcticus	3	Juncus effusus	2
Juncus ensifolius	1	Melilotus officinalis	1
Mentha arvensis	0	Phleum pratense	2
Potentilla gracilis	0	Rumex crispus	0
Scirpus microcarpus	0	Taraxacum officinale	1
Trifolium pratense	2	Typha latifolia	0

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

Species	Cover class	Species	Cover class
Bromus inermis	2	Carum carvi	1
Cirsium arvense	0	Equisetum hyemale	1
Lotus corniculatus	2	Medicago lupulina	1
Melilotus officinalis	2	Phleum pratense	2
Taraxacum officinale	1	Trifolium pratense	1

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Easton Ranch

Planting Type	#Planted	#Alive	Notes
Red-osier dogwood	250	10	Moderate vigor for observed surviving plants
Sandbar willow	250	30	Good vigor on surviving plants
Thinleaf alder	500	26	Establishing plants along reconstructed flood channel
Willow cuttings	200	40	Moderate survival for observed cuttings

Comments

No systematic sampling method was employed in evaluating planted woody vegeation survival. Survival was tallied as the site was traversed during monitoring activities.

Easton Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: bird boxes

How many? 9

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Robin	3	F, N	FO, SS, UP, WM
Golden Eagle	1	F, FO	FO, UP
Gray Catbird	1	F	UP, WM
Red-tailed Hawk	1	F, FO	UP, WM
Sandhill Crane	2	F	WM
Song Sparrow	2	FO	UP, WM
Tree Swallow	5	F, FO	FO, OW, WM
Turkey Vulture	2	F, FO	UP, WM
Yellow Warbler	1	FO	UP

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Deer Sp.		Yes	No	No	
Moose	1	No	No	No	Adjacent to project boundary

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
967	46.057281	-110.638306	5	T-1, start
968	46.059727	-110.637505	190	PP-1
969	46.059727	-110.637505	250	PP-1
970	46.059727	-110.637505	300	PP-1
971	46.060627	-110.637779	185	T-1, end
972	46.061028	-110.637207	200	PP-2
972-74	46.061054	-110.637291	270	PP-2, pano
975	46.060993	-110.640121	170	PP-4a
976	46.060413	-110.640396	20	PP-4b
977-82	46.061188	-110.639847	100	PP-3, pano
983	46.06139	-110.639229	185	T-2, start
984-90	46.059883	-110.640404	90	PP-5
991	46.057594	-110.640343	0	T-2,end
992	46.056984	-110.640656	95	T-3, start
993	46.056175	-110.64048	0	PP-6
994	46.056114	-110.637924	265	T-3, end
995	46.055286	-110.639137	340	PP-7
996	46.058668333	-110.640118333		E-1w
997	46.05893666	-110.639868333		E-1u
998	46.06090666	-110.6373716666		E-2u

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 | City/County: Park Co. | Sampling Date: 8/5/2013

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

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

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

Subregion (LRR): LRR E | Lat: 46.05893666 | Long: -110.63986833 | Datum: WGS84

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:
DP in upland adjacent to E-3.

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: 5 ft)			
1. Phleum pratense	45	☑	FAC
2. Melilotus officinalis	30	☑	FACU
3. Cirsium arvense	3	☐	FAC
4. Carum carvi	10	☐	FACU
5. Poa pratensis	10	☐	FAC
6. Fragaria virginiana	2	☐	FACU
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	58	x 3 =	174
FACU species	42	x 4 =	168
UPL species	0	x 5 =	0
Column Totals:	100 (A)		342 (B)

Prevalence Index = B/A = 3.42

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-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
0-12	10YR 5/3	97	10YR 4/6	3	C	M	Silt Loam	friable

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

Hydric Soil Indicators: (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 with redox concentraions being possbily relic. Does does not qualify based on high value matrix in upper 12in.

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 surface indicators of wetland hydrogy present.

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

Project/Site: Easton | City/County: Park Co. | Sampling Date: 8/5/2013

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

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

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

Subregion (LRR): LRR E | Lat: 46.06090666 | Long: -110.63737166 | Datum: WGS84

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:

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: 5 ft)			
1. Phleum pratense	40	☑	FAC
2. Trifolium pratense	20	☑	FACU
3. Taraxacum officinale	10	☐	FACU
4. Cirsium arvense	5	☐	FAC
5. Carum carvi	5	☐	FACU
6. Agrostis gigantea	5	☐	FAC
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 35

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	85 (A)		290 (B)

Prevalence Index = B/A = 3.41

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-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
0-12	10YR 5/3	100					Silt Loam	friable

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

Hydric Soil Indicators: (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): _____

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:

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

Project/Site: Easton | City/County: Park Co. | Sampling Date: 8/5/2013

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

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

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

Subregion (LRR): LRR E | Lat: 46.058668333 | Long: -110.640118333 | Datum: WGS84

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:
DP along transect 2 in excavated basin with periodic inundation.

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: 5 ft)			
1. Typha latifolia	10	☑	OBL
2. Beckmannia syzigachne	10	☑	OBL
3. Juncus effusus	10	☑	FACW
4. Agrostis gigantea	10	☑	FAC
5. Phleum pratense	5	☐	FAC
6. Glyceria grandis	5	☐	OBL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	50 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 45

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	50 (A)		90 (B)

Prevalence Index = B/A = 1.8

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
0-12	10YR 3/1	80	7.5YR 5/8	20	C	M	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): _____

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Soil saturated at 8 in bgs.

Remarks:

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST(X-34(14) **Control#** 4866

3. Evaluation Date 8/5/2013 **4. Evaluators** B Schultz, B Sandefur **5. Wetland/Site# (s)** Creation

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

Approx Stationing or Mileposts NA

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

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 9.74

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 9.74

☐ **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/Intermittent	90
Depressional	Aquatic Bed	Excavated	Seasonal/Intermittent	10

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 disturbance	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 a few ranch structures to the east. Undeveloped riparian corridor and herbaceous uplands to north, south, and west. Two species of noxious weeds were 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, 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 agriculutre (hay) and an undeveloped riparian corridor.

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 of palustrine emergent wetlands (PEM) and aquatic beds in the deeper depressions.

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 2013 county species list; MTNHP 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	
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: MTNHP, 2013 field observations

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 Many shorebirds and waterfowl have been documented using this site from 2003 to 2013.

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**

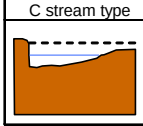
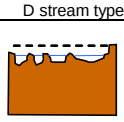
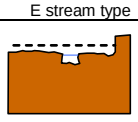
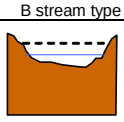
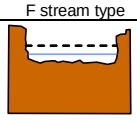
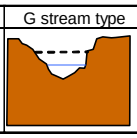
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

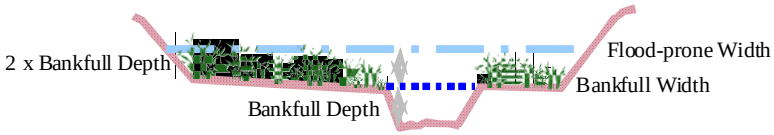
iii. Final Score and Rating: 0 NA **Comments:** Wetland cells generally isolated from Shields River with no fish habitat present.

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
						



Floodprone 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 flow 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: (9.85 acre wetland) * (1 ft. max depth at highwater) = 9.85 acre feet. Inundation levels at the time of site visit were low.

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: There was no evidence of ponding or flooding in 2013. There was evidence of flooding/ponding in 2012 and 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: Similar vegetation as seen in 2012.

14I. Production Export/Food Chain Support:

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

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

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

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

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

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

Comments: Vegetated area greater than 5ac with moderate level of biological activity and seasonal hydrology.

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: Little to no ponding occuring on site during 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: Vegetation becoming well established with tree populations establishing along fringes.

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

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

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

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

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

Comments:

Permission is 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	0.974	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	1.948	☐
C. General Wildlife Habitat	M	.7	1	6.818	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	4.87	☐
F. Short and Long Term Surface Water Storage	H	.8	1	7.792	☑
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	8.766	☑
H. Sediment/Shoreline Stabilization	M	.6	1	5.844	☐
I. Production Export/Food Chain Support	H	.8	1	7.792	☑
J. Groundwater Discharge/Recharge	M	.7	1	6.818	☐
K. Uniqueness	M	.4	1	3.896	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.487	☐
Totals:		5.75	10	56.005	
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 above)

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#** 4866

3. Evaluation Date 8/5/2013 **4. Evaluators** B Schultz, B Sandefur **5. Wetland/Site# (s)** Preservation

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

Approx Stationing or Mileposts NA

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/PEM Habtiat

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/Intermittent	10
Riverine	Forested Wetland		Seasonal/Intermittent	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 disturbance	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, the disturbance regime is low.

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

Cirsium arvense and Cynoglossum officinale

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

AA contains small areas of existing PFO/PSS/PEM wetlands located at the northwest (Shields River) and southcentral ends of the mitigation area. The existing PFO/PEM habitat located at the southern end of the AA receives direct hydrologic inputs from the created flood channel. Both wetland features are bordered by created wetlands and the Shields River riparian corridor.

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: PEM, PFO, and PSS vegetated communties are present on site.

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 2013 county species list; MTNHP 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	
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 MTNHP, 2013 field observations

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 use of site by moose, deer, golden eagle, and other avian species.

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**

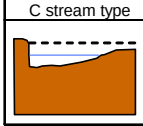
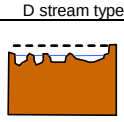
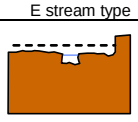
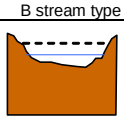
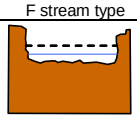
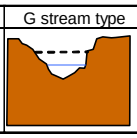
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

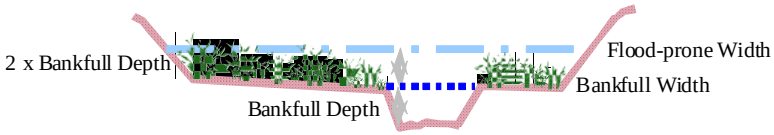
iii. Final Score and Rating: 0 NA **Comments:** No fish habitat on site.

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
						



Floodprone 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: Approximately 30% 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 at this location.

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 (approximate 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 contains restricted 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: No shoreline in the project area.

14I. Production Export/Food Chain Support:

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

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

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

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

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

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

Comments: There is a restricted surface water outlet to the south.

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: Much of the AA was saturated during the site visit in 2013.

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: Site disturbance is low and structural diversity is high.

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

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

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

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

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

Comments:

Permission for access is 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	L	.2	1	0.22	☐
C. General Wildlife Habitat	H	.9	1	0.99	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	H	.9	1	0.99	☐
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	E	1	1	1.1	☑
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:		6.55	9	7.205	
Percent of Possible Score			**72.78** %		

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

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

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

☐

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

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST(X-34(14) **Control#** 4866

3. Evaluation Date 8/5/2013 **4. Evaluators** B Schultz, B Sandefur **5. Wetland/Site# (s)** Restoration

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

Approx Stationing or Mileposts NA

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

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.56

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 1.56

☐ **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/Intermittent	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 disturbance	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 a few ranch structures to the east. Undeveloped riparian corridor and herbaceous uplands to north, south, and west. Two species of noxious weeds were 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, Cynoglossum officinale

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 ground water early in the growing season and has developed wetland characteristics.

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: Planted shrubs along channel are surviving but have yet to develop and shrub community, emergent vegetation present.

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 2013 county species list; MTNHP 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	
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 MTNHP; observed on site in 2013.

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 AA with frequent deer and moose sightings.

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**

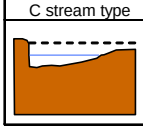
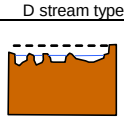
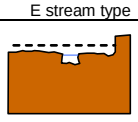
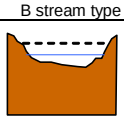
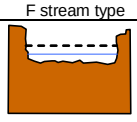
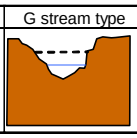
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

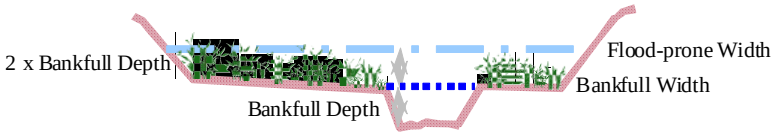
iii. Final Score and Rating: 0 NA **Comments:** Although activated during high-flow events within the Shields River, no permanent fish habitat within AA.

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
						



Floodprone 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: Outlet is resticted. AA subject to overflow from Shields River and empties into old meanders of the Shields River at the south end of AA.

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: (1.56 acre of restoration) x (average 1 ft. ponding/flow at high water) = 1.56 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 topographically restricted.

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: Increased vegetation development from 2012 to 2013 of species with high stability ratings including Salix, Carex and Juncus.

14I. Production Export/Food Chain Support:

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

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

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

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

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

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

Comments: Channel is seasonally inundated and has a restricted 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: Emergent wetland within seasonal flood channel common wetland type within basin with 10-50% of area wetlands similar to A

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

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

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

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

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

Comments:

Permission required for access.

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	0.156	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	0.312	☐
C. General Wildlife Habitat	M	.7	1	1.092	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	0.936	☐
F. Short and Long Term Surface Water Storage	M	.6	1	0.936	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.56	☑
H. Sediment/Shoreline Stabilization	H	.9	1	1.404	☑
I. Production Export/Food Chain Support	M	.7	1	1.092	☑
J. Groundwater Discharge/Recharge	M	.7	1	1.092	☑
K. Uniqueness	M	.4	1	0.624	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.078	☐
Totals:		5.95	10	9.282	
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 above)

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana



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



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



Photo Point 1 – *Photo 1* **Location:** East boundary
Bearing: 190 Degrees **Taken in 2012**



Photo Point 1 – *Photo 2* **Location:** East boundary
Bearing: 250 Degrees **Taken in 2012**



Photo Point 1 – *Photo 1* **Location:** East boundary
Bearing: 190 Degrees **Taken in 2013**



Photo Point 1 – *Photo 2* **Location:** East boundary
Bearing: 250 Degrees **Taken in 2013**



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



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



Photo Point 1 – *Photo 3* **Location:** East boundary
Bearing: 300 Degrees **Taken in 2012**



Photo Point 2 – *Photo 1* **Location:** NE corner of site
Bearing: 200 Degrees **Taken in 2012**



Photo Point 1 – *Photo 3* **Location:** East boundary
Bearing: 300 Degrees **Taken in 2013**



Photo Point 2 – *Photo 1* **Location:** NE corner of site
Bearing: 200 Degrees **Taken in 2013**



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



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



Photo Point 3 – *Photo 1* **Location:** NW corner of site
Bearing: 140 Degrees **Taken in 2012**



Photo Point 4A – *Photo 1* **Location:** Shields Bank-DS
Bearing: 170 Degrees **Taken in 2012**



Photo Point 3 – *Photo 1* **Location:** NW corner of site
Bearing: 140 Degrees **Taken in 2013**



Photo Point 4A – *Photo 1* **Location:** Shields Bank-DS
Bearing: 170 Degrees **Taken in 2013**



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



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



Photo Point 4B – *Photo 1* **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2012**



Photo Point 5 – *Photo 1* **Location:** West boundary
Bearing: 105 Degrees **Taken in 2012**



Photo Point 4B – *Photo 1* **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2013**



Photo Point 5 – *Photo 1* **Location:** West boundary
Bearing: 105 Degrees **Taken in 2013**



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



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2010



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2012



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2012



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2013



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2013



Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 8 foreground
Taken in 2010



Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 8 foreground
Taken in 2012



Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2012



Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 8 foreground
Taken in 2013



Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2013



Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2010



Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2012



Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2012



Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2013



Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2013



Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2010



Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2012



Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2012



Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2013



Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2013



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 2012



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

Location: NE corner of site
Taken in 2013



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 2012



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

Location: NW corner of site
Taken in 2013



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 2012



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

Location: Western boundary of site
Taken in 2013



Data Point: E-1
Bearing:
Location: Veg community 8
Taken in 2013



Data Point: E-2
Bearing:
Location: Veg community 8
Taken in 2013

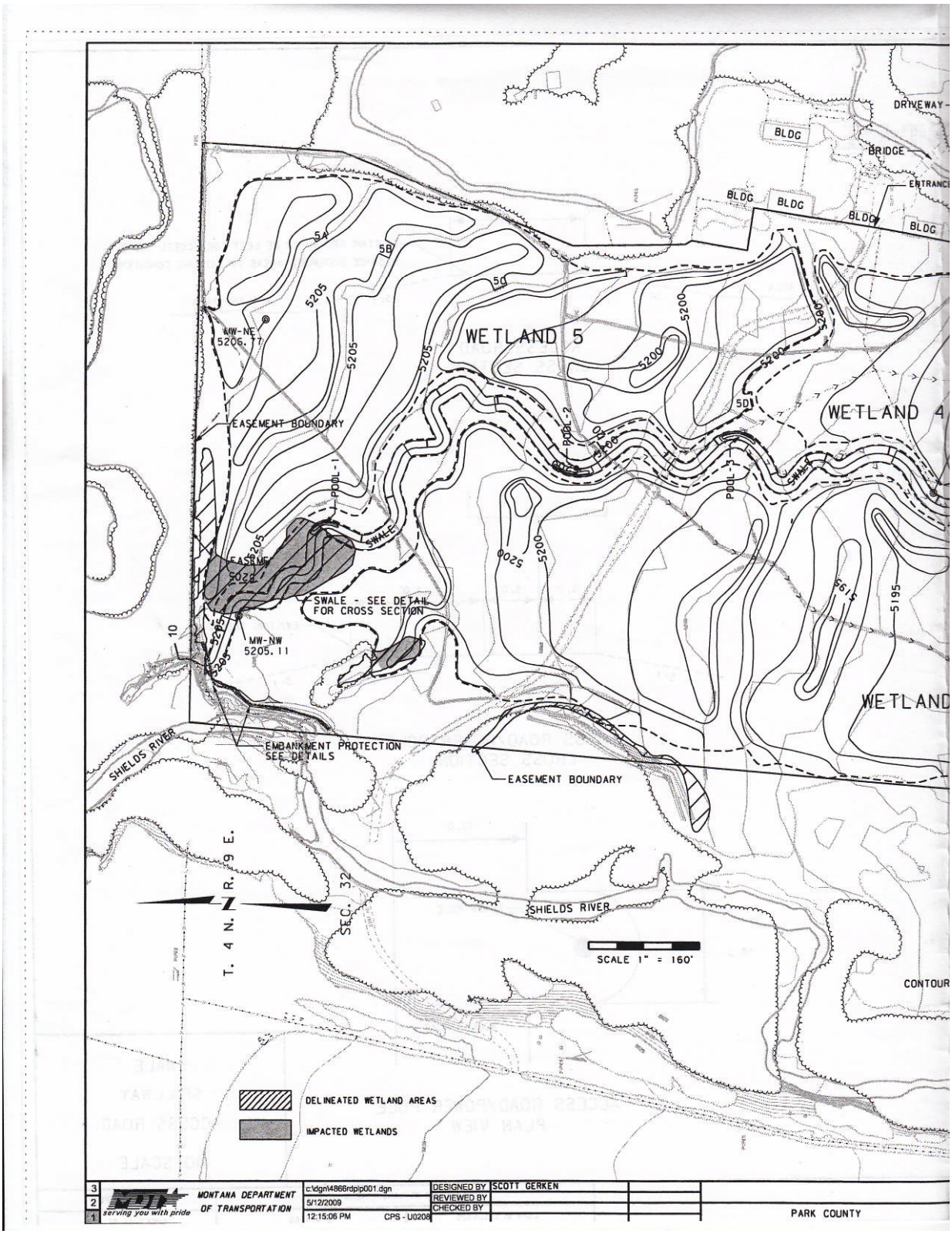


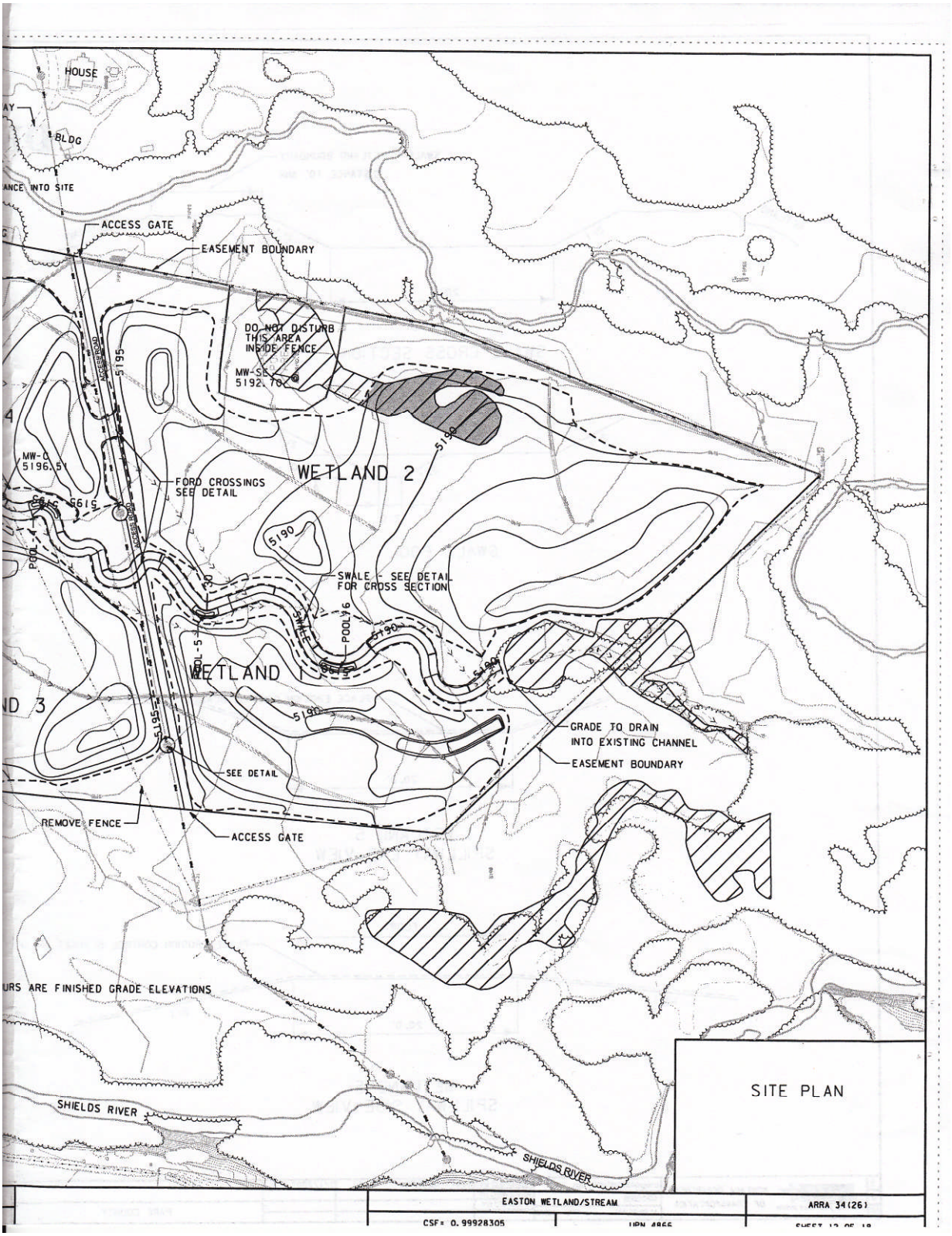
Data Point: E-3
Bearing:
Location: Veg community 6
Taken in 2013

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-SE 5192.70
MW-C 5196.5
FORD CROSSINGS SEE DETAIL
WETLAND 2
WETLAND 1
SWALE - SEE DETAIL FOR CROSS SECTION
POOL 96
POOL 5
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)