# MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2016

# ROSTAD RANCH MITIGATION SITE MEAGHER COUNTY, MONTANA



Prepared for:



December 2016

Prepared by:



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# Montana Department of Transportation Wetland Mitigation Monitoring Report: Year 2016

# ROSTAD RANCH MITIGATION SITE MEAGHER COUNTY, MONTANA

MDT Project Number STPX-0002 (749) Control Number 5565

USACE: NWO-2006-90851-MTB

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# 1.0 INTRODUCTION

The Rostad Ranch 2016 Wetland Mitigation Monitoring Report presents the results of the fourth year of postconstruction monitoring at the Rostad Ranch wetland mitigation site. The Montana Department of Transportation (MDT) Rostad Ranch project is located in the southwest quarter of Section 12 and the northwest quarter of Section 13, Township 8 North, Range 11 East, Meagher County, Montana. The property is located approximately 0.6 mile northeast of Martinsdale, Montana, as illustrated in Figure 1-1. The site was constructed to provide MDT with an estimated 39.70 acres of wetland mitigation credits on a private ranch that had been historically used for grazing cattle and hay production.

The entire 60-acre mitigation site is protected long-term by an MDT wetland conservation easement agreement with the landowner. A fence that was installed along the boundaries of the wetland conservation easement demarcates the site.

Figures A-2 and A-3 in Appendix A show the 2016 monitoring activity locations and mapped site features, respectively. The MDT Mitigation Site Monitoring form, US Army Corps of Engineers (USACE) Wetland Determination Data forms for the Great Plains (GP) Region [USACE, 2010], and the 2008 MDT Montana Wetland Assessment Method (MWAM) forms [Berglund and McEldowney, 2008] are included in Appendix B. Project site photographs are included in Appendix C, and the Preliminary Design Plan and Profile is provided in Appendix D.

The Rostad Ranch site is located within Watershed #10 – Musselshell River Basin. Wetlands were developed at this location to provide compensatory mitigation for wetland impacts associated with future transportation projects in the Musselshell River Basin. The Rostad Ranch site was selected based on site evaluations and project feasibility assessments initiated by MDT in 2002.

The project objectives include the following:

- Provide 39.70 acres of wetland mitigation credits that result from restoration, creation, rehabilitation, and preservation within the site.
- Establish three types of wetland vegetation communities, including:
  - 1. Palustrine emergent wet meadow
  - 2. Palustrine scrub/shrub
  - 3. Emergent zones around the open-water areas
  - 4. Upland buffer established around the wetland perimeter.

The project credit ratios as presented in the *Rostad Ranch Wetland Mitigation Plan, Meagher County, Montana* [MDT, 2007], which was approved by the USACE, are shown in Table 1-1.

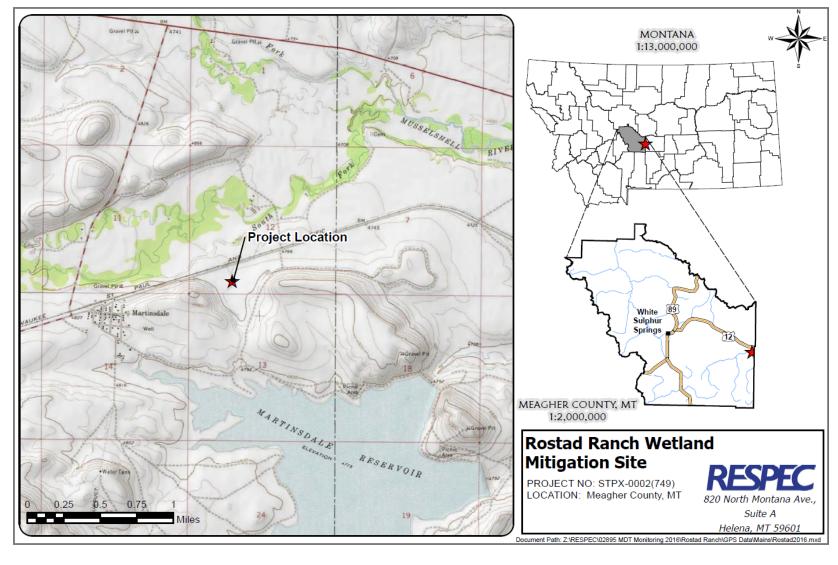


Figure 1-1. Project Location of the Rostad Ranch Site.

Compensatory **Proposed** Anticipated Approved Anticipated Mitigation Wetland Mitigation Area Mitigation **Mitigation Credit** Ratios(b) Type<sup>(a)</sup> **Type** (acres) (acres) Palustrine Restoration emergent and 27.11 1:1 27.11 (Reestablishment) scrub/shrub Palustrine Creation emergent and 9.84 1:1 9.84 (Establishment) scrub/shrub Restoration Palustrine 2.63 1.5:1 1.75 (Rehabilitation) emergent Palustrine. 0.06 Preservation 0.25 4:1 scrub/shrub Upland Buffer N/A 6.76 5:1 1.35 Permanent Wetland N/A N/A 1:1 -0.41**Impact** 

Table 1-1. Wetland Credit Determination for the Rostad Ranch Site

46.59

**Credit Acreage** 

39.70

The USACE-approved performance standards are listed below.

Site Acreage

- Wetland Characteristics: All of the 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 (1987 Wetland Manual) [Environmental Laboratory, 1987] and the 2010 Regional Supplement to the Corps of Engineers Manual: Great Plains Region (Version 2.0) (2010 Regional Supplement) [USACE, 2010]. These methodologies were used to establish baseline wetland conditions on site.
  - a. Wetland Hydrology Success will be achieved where wetland hydrology is observed according to technical guidelines in the above-referenced documents. The USACE technical standard for monitoring wetland hydrology requires 14 or more consecutive days of flooding or ponding, or a water table that is 12 inches (30 centimeters) or less below the soils surface during the growing season at a minimum frequency of 5 years in 10 (50 percent or higher probability).
  - b. Hydric Soil Success will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service 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. Because 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 where combined absolute cover of facultative or wetter species is greater than or equal to 70 percent and state-listed noxious

Totals

(a) Cowardin et al. [1979].

<sup>(</sup>b) Mitigation credit ratios used were from the Montana Corps Regulatory Programs 2005 Wetland Credit Ratios [USACE, 2005].

weeds do not exceed 5 percent absolute cover. The following concept of "dominance," as defined in the 2010 Regional Supplement, will be applied during future routine wetland determinations in the created/restored wetlands: "Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines)."

- i. Woody Plants Plantings will be considered successful where they exceed 50 percent survival after 5 years. MDT anticipates that natural colonization of woody plant species from nearby sources after construction activities are complete. The rate and extent of natural woody plant colonization will depend on factors such as habitat availability, animal activity, seed sources, and other natural selection factors.
- 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 hair grass (*Deschampsia caespitosa*), Northwest Territory sedge (*Carex utriculata*), Baltic rush (*Juncus balticus*), American slough grass (*Beckmannia syzigachne*), American manna grass (*Glyceria grandis*), and bluejoint reed grass (*Calamagrostis canadensis*).
- 2. Open-Water Areas: The intent of the project is to provide seasonal open water in the wetland enhancement areas where excavation in the existing wetland and upland will be completed. Open water that is established within the designated open-water areas will be considered successful and creditable if it does not exceed 10 percent of the total wetland acreage (39.83 acres).
- 3. Upland Buffer: Success will be achieved when noxious weeds do not exceed 5 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 desirable upland plant species by the end of the monitoring period.
- 4. **Weed Control:** Implementation of weed control will be based on annual monitoring of the site to determine the weed species present and degree of infestation within the site. Based on the monitoring results, control measures will be implemented by MDT to reduce and eventually minimize infestations of state-listed noxious weed species within the site.
- 5. **Fencing:** Fencing for the proposed mitigation site has been installed along the perimeter of the easement boundary to protect the integrity of the wetland from disturbance that may be detrimental to the site. The installed fencing is designed to be wildlife-friendly to allow for wildlife movement into and out of the site.

Construction entailed filling of existing ditches, excavating and grading the site to distribute water across the site, and creating open-water areas. The primary source of wetland hydrology for the site is groundwater. A groundwater seep located in the south portion of the site provides water to the site during high groundwater periods. Surface water from an irrigation ditch that runs along the south boundary of the site augments the site hydrology. A diversion structure was installed at the south end of the project to direct irrigation water onto the site to recharge groundwater.

Revegetation tasks included using a combination of wetland seed mixes, native tree/shrub plantings, and willow cuttings that were collected from a variety of native species found in the area. Mitigation habitat types that were developed on the site through the construction process include restored open water; created, restored, and enhanced wetland areas; and upland buffer areas. Specific revegetation tasks were developed for each habitat type.

Monitoring the site will be completed according to MDT's *Standard Monitoring Protocol*, which has been used for all of the MDT wetland mitigation sites since 1998. Monitoring will be implemented for a minimum of 5 years or longer as determined by the USACE Montana Regulatory Office's review of the annual monitoring reports for the site. The USACE will make the final decision as to whether the site has met wetland success criteria.

# 2.0 METHODS

The first year of monitoring at the Rostad Ranch site was completed on August 21, 2013. During this visit, MDT established permanent photo points and vegetation transects within the site. The 2016 monitoring event was completed on June 27, 2016. Information for the Wetland Mitigation Site Monitoring form and Wetland Determination Data forms was recorded in the field during the site investigation (Appendix B). Monitoring activity sites were located with a global positioning system (GPS) and are illustrated on Figure A-2 (Appendix A). Data-collection activities included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird- and wildlife-use documentation, photographic documentation, functional assessment, and a nonengineering 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 in situ during the site visit. The data were recorded on the Wetland Determination Data forms (Appendix B). Hydrologic assessments allow mitigation goals that address inundation and saturation requirements to be evaluated.

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 a 50 percent probability exists that the minimum daily temperature is greater than or equal to 28.5 degrees Fahrenheit [USACE, 2010]. Temperature data recorded for the meteorological station at the Martinsdale 3NNW, Montana (245387), weather station, which is located approximately 3.3 miles northwest of the site, have a median (5 years in 10) growing season length of 119 days. Areas that were 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 that were 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 forms (Appendix B).

#### 2.2 VEGETATION

The boundaries of general dominant-species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2016 aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (< 1 percent), 1 (1–5 percent), 2 (6–10 percent), 3 (11–20 percent), 4 (21–50 percent), and 5 (> 50 percent) (Appendix B). Community types were named based on the predominant vegetation species that characterized each mapped polygon (Figure A-3, Appendix A).

Temporal changes in vegetation were evaluated through annual assessments of a static belt transect established in August 2013 (Figure A-2, Appendix A). Vegetation composition was assessed and recorded along three vegetation belt transects (T-1, T-2, and T-3), which are approximately 10 feet wide and 422, 453, and 320 feet long, respectively (Figure A-2, Appendix A). The transect endpoints were recorded with a resource-grade GPS unit. The survival of woody species that were planted on the site was recorded during each monitoring event.

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 that were used for the vegetation community polygon data (Appendix B). Photographs were taken at the transect endpoints during the monitoring event (Appendix C).

The *Montana Noxious Weed List* (July 2015), prepared by the Montana Department of Agriculture [2015], was used to categorize weeds identified within the site. The location of noxious weeds was noted in the field during the investigation and mapped on the 2016 aerial photos (Appendix A). The noxious weed species that were identified are color-coded. The locations are denoted with the symbol "x", "▲", or "■," which represent 0.0–0.1 acre, 0.1–1.0 acre, or greater than 1.0 acre in extent, respectively. The letters T, L, M, and H represent the cover classes and stand for less than 1 percent, 1–5 percent, 6–25 percent, and 26–100 percent, respectively.

# **2.3 SOIL**

Soil information was obtained from the *Web Soil Survey for Meagher County Area* [US Department of Agriculture (USDA), 2012] and in situ soil descriptions. Soil cores were excavated by using a Montana sharpshooter shovel and evaluated according to procedures outlined in the 1987 Wetland Manual [Environmental Laboratory, 1987] and the 2010 Regional Supplement [USACE, 2010]. 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 US, including special aquatic sites and jurisdictional wetlands, were delineated throughout the project area according to criteria established in the 1987 Wetland Manual and the 2010 Regional Supplement. The technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology that were 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 2016 National Wetland Plant List (NWPL) [Lichvar et al., 2016]. 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 onto the Wetland Determination Data forms (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 surveyed and identified on the 2016 aerial photographs. Wetland areas were calculated using GIS methods.

# 2.5 WILDLIFE

Observations and other positive indicators of use by mammal, reptile, amphibian, and bird species were recorded on the Wetland Mitigation Site Monitoring forms during each of the site visits. Indirect-use indicators, including tracks, scat, burrows, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list of animals observed from 2013 through 2016 was compiled for this report.

# 2.6 FUNCTIONAL ASSESSMENT

The 1999 MDT MWAM [Berglund, 1999] was used to evaluate the functions and values of the 3.4 acres of existing wetlands identified on the site in 2004. The 2008 MDT MWAM [Berglund and McEldowney, 2008] was used to evaluate functions and values of wetlands delineated on the site from 2013 through 2016. This method provides an objective means of assigning wetlands an overall rating and provides regulators with 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. MWAM forms were completed for one assessment area (AA) that included both created and existing wetlands within the mitigation site (Appendix B).

### 2.7 PHOTOGRAPHIC DOCUMENTATION

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

### 2.8 GLOBAL POSITIONING SYSTEM DATA

Site features and survey points were collected by using a resource-grade (± 1 meter) Trimble R1 GNSS GPS receiver and companion Android tablet during the 2016 monitoring season. The collected data were then transferred to a personal computer, imported into GIS, and projected in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included wetland boundaries, fence boundaries, photo points, transect endpoints, noxious weed infestations, and wetland data points.

# 2.9 MAINTENANCE NEEDS

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

# 3.0 RESULTS

# 3.1 HYDROLOGY

Climate data from the meteorological station at the Martinsdale 3 NNW, Montana (245387), weather station recorded an average annual precipitation rate of 13.61 inches from January 1893 to July 2012 [Western Region Climate Center, 2013]. The historic precipitation average from January to August (1893–2012) was 10.55 inches. This station, however, was missing precipitation data for the latter part of 2011 through 2014. The Lennep 6 WSW (244954) weather station [Western Regional Climate Center, 2016] is located near the site (approximately 11 miles southwest) and has a period of record that extends from August 1959 through August 2016. Based on data recorded from the Lennep Station for the January through August time period, precipitation totals for this region were 12.50 inches (long-term average), 16.32 inches (2011), 9.42 inches (2012), 12.3 inches (2013), 14.27 inches (2014), 11.77 inches (2015), and 10.81 inches (2016). The data that were collected after construction indicate below-average precipitation in 2012, 2015, and 2016; near-average precipitation in 2013; and above-average precipitation in 2014.

The hydrology for the site is supplied from multiple sources, including a shallow seasonal groundwater table, groundwater that emerges from a natural spring located near the narrow-leaf willow (*Salix exigua*) stand in the south portion of the site, direct precipitation, surface runoff, and surface-water diversion out of an adjacent irrigation canal. Construction included excavating and grading to fill drainage ditches, distributing water across the site, creating open-water areas, and installing a diversion structure in the south end of the site to direct irrigation water to the site. MDT has secured water rights to use surface water as a secondary source of hydrology to supplement the groundwater

and ensure long-term viability of the site. The irrigation canal originates west of Martinsdale and is supplied by flows from the South Fork Musselshell River.

During the 2016 field survey, approximately 45 percent of the wetland area was inundated, including one wetland depression that was impounded by a constructed dike in the northern half of the site and one excavated depression located in the south half of the site. MDT turned the irrigation water into the Rostad site on May 5; this water was shut off on June 14 because of a lack of water by the irrigation district. During that time, MDT used approximately 80-acre-feet of water to supplement the wetlands because of the lack of precipitation this spring. Overall precipitation levels were below average between 2015 and 2016, and the lack of snowpack affected moisture regimes for the entire watershed and site in 2016.

Water depths ranged from 0.25 to 2.0 feet and averaged 0.5 foot. Water depth at the edge of the open-water boundary was 0.5 foot. Vegetation around the perimeter of the open boundary increased in 2015 from previous years. Areas that were not inundated exhibited seasonal soil saturation to the ground surface. Evidence of wetland hydrology observed on the site in 2016 included drainage patterns, soil saturation, high water table, oxidized rhizospheres on living roots, geomorphic position, water marks, drift deposits, and a positive FAC-neutral test.

Four data points were sampled to determine the upland and wetland boundaries (Wetland Determination Data forms, Appendix B). DP1-W and DP2-W were located near the center of the site in areas that met the wetland criteria. Wetland hydrology indicators at DP1-W, which is located near the edge of a created wetland cell, included drainage patterns and a positive FAC-neutral test. DP2-W was located in a newly delineated wetland swale and included the following wetland hydrology indicators: a high water table within 2 inches of the soil surface, saturation to the ground surface, oxidized rhizospheres on living roots, drainage patterns, and a positive FAC-neutral test. No primary or secondary indicators of wetland hydrology were observed at DP1-U or DP2-U, which are located upslope of the wetland data points in upland community Type 8.

To date, wetland hydrology has been lacking across the site, which has resulted in the creation, reestablishment, and rehabilitation of fewer acres of wetland than were originally proposed for the site. Generally speaking, the northwest and southeast quadrants of the site are not becoming inundated during the growing season and have not converted from upland to wetland plant communities as intended.

# 3.2 VEGETATION

A total of 65 plant species were identified on the site from 2013 through 2016, as provided in Table 3-1.

Table 3-1. Vegetation Species Observed From 2013 Through 2016 at the Rostad Ranch Site (Page 1 of 2)

Scientific Names	Common Names	GP Indicator Status <sup>(a)</sup>
Achillea millefolium	Common Yarrow	FACU
Agropyron cristatum	Crested Wheatgrass	NI
Agrostis gigantea	Black Bent	FACW
Algae, green	Algae, green	NL
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Amaranthus retroflexus	Red-Root	FACU
Ambrosia acanthicarpa	Flat-spine Ragweed	NL
Aster sp.	Aster	NL
Bassia scoparia	Mexican-Fireweed	FACU
Beckmannia syzigachne	American Slough Grass	OBL
Berteroa incana	Hoary False-alyssum	NL
Brassica kaber	Brassica kaber	NL
Bromus arvensis	Field Brome	FACU
Bromus carinatus	California Brome	NL
Bromus inermis	Smooth Brome	UPL
Carex nebrascensis	Nebraska Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Centaurea stoebe	Spotted Knapweed	NL
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium sp.	Goosefoot	NL
Cirsium arvense	Canadian Thistle	FACU
Convolvulus arvensis	Field Bindweed	NL
Cynoglossum officinale	Gypsy-Flower	FACU
Cyrtorhyncha cymbalaria	Alkali Buttercup	OBL
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	NL
Downingia laeta	Great Basin Calico Flower	NL
Eleocharis palustris	Common Spike-Rush	OBL
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Epilobium ciliatum	Fringed Willowherb	FACW
Glyceria grandis	American Manna Grass	OBL
Glycyrrhiza lepidota	American Licorice	FACU
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FACW

Table 3-1. Vegetation Species Observed From 2013 Through 2016 at the Rostad Ranch Site (Page 2 of 2)

Scientific Names	Common Names	GP Indicator Status <sup>(a)</sup>
Juncus articulatus	Joint-Leaf Rush	OBL
Juncus balticus	Baltic Rush	FACW
Juncus bufonius	Toad Rush	OBL
Lactuca serriola	Prickly Lettuce	FAC
Lepidium densiflorum	Miner's Pepperwort	FAC
Medicago sativa	Alfalfa	UPL
Melilotus albus	White Sweet-Clover	NL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Pascopyrum smithii	Western-Wheat Grass	FACU
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FACU
Poa palustris	Fowl Blue Grass	FACW
Poa pratensis	Kentucky Blue Grass	FACU
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus angustifolia	Narrow-Leaf Cottonwood	FACW
Populus balsamifera	Balsam Poplar	FACW
Populus tremuloides	Quaking Aspen	FAC
Potentilla gracilis	Graceful Cinquefoil	FAC
Rumex crispus	Curly Dock	FAC
Rumex occidentalis	Western Dock	OBL
Salix exigua	Narrow-Leaf Willow	FACW
Schedonorus pratensis	Meadow False Rye Grass	FACU
Sonchus arvensis	Field Sow-Thistle	FAC
Tanacetum vulgare	Common Tansy	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	NL
Trifolium arvense	Rabbit-foot Clover	NL
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FACU
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Veronica peregrina	Neckweed	FACW

<sup>(</sup>a) 2016 NWPL [Lichvar et al., 2016]. New species that were identified in 2016 are **bolded.** 

Vegetation plant communities were identified by plant composition and dominance. The following six vegetation community types were identified in 2016:

- Upland Type 8 Bromus inermis/Trifolium spp.
- Wetland Type 2 Juncus balticus/Carex nebrascensis
- Wetland Type 3 Salix exigua
- Wetland Type 5 Glyceria grandis/Typha latifolia
- Wetland Type 6 Open Water/Aquatic Macrophytes
- Wetland Type 7 Phalaris arundinacea.

Wetland Type 7 was a new community in 2016. The community composition is provided in full detail on the Wetland Mitigation Site Monitoring form (Appendix B), and the community boundaries are shown on Figure A-3 (Appendix A). These community types are discussed below.

Upland community Type 8 – *Bromus inermis/Trifolium* spp. was identified on approximately 45.04 acres across the site. This community was previously identified as Type 1 – *Phleum pretense/Trifolium* spp. from 2013 through 2015. The community generally represented undisturbed uplands that were historically used for hay and cattle production and areas where spoils from excavation activities were deposited. A total of 42 species were identified within the community. Dominant species included smooth brome (*Bromus inermis*) and white clover (*Trifolium repens*), with lesser percent coverage of creeping wild rye (*Elymus repens*), meadow false rye grass (*Schedonorus pratensis*), spotted knapweed (*Centaurea stoebe*), red clover (*Trifolium pratense*), and yellow sweet-clover (*Melilotus officinalis*).

Wetland community Type 2 – *Juncus balticus/Carex nebrascensis* characterized a majority of the wetland areas delineated from 2013 through 2016. The community was mapped across 10.9 acres within the creation, reestablishment, and rehabilitation areas of the site. A total of 35 species were identified within the community. Baltic rush (*Juncus balticus*), Nebraska sedge (*Carex nebrascensis*), and American slough grass (*Beckmannia syzigachne*) were dominant components of this community. Other species included fox-tail barley (*Hordeum jubatum*), tufted hair grass (*Deschampsia caespitosa*), reed canary grass (*Phalaris arundinacea*), common spike-rush (*Eleocharis palustris*), and narrow-leaf willow (*Salix exigua*).

Wetland community Type 3 – *Salix exigua* was identified within the 0.31-acre preexisting wetland area in the southern end of the site that remained undisturbed during 2012 construction. Narrow-leaf willow dominated the area. Many willow cuttings were installed around this community, which exhibited an approximate 50 percent survival during the 2016 field survey. This community is expected to expand over time, as indicated by the willow saplings/cuttings noted around the margins of the community. Fowl blue grass (*Poa palustris*), tufted hair grass, Nebraska sedge, Northwest Territory sedge (*Carex utriculata*), field meadow-foxtail (*Alopecurus pratensis*), American slough grass, black bentgrass (*Agrostis gigantea*), broad-leaf cat-tail (*Typha latifolia*), common spike-rush, and neckweed (*Veronica peregrina*) were also identified within the community.

Wetland community Type 5 – *Glyceria grandis/Typha latifolia* was observed around the margins of inundated cells located in the south and north half of the site. The 2.24-acre community was dominated by emergent species, including American manna grass, broad-leaf cat-tail, common spike-rush, and American slough grass. This community showed an increase of 2.21 acres across the site in 2016 and replaced Type 6 because of lower water levels on the site in 2016.

Wetland community Type 6 – Open Water/Aquatic Macrophytes was identified on 0.64 acre and included two inundated areas: one was impounded by a constructed dike in the northern half of the site, and the other is an excavated depression located in the southern half of the site. Emergent and submergent species are expected to continue to establish in subsequent monitoring years. Twelve species were observed within the community, including common spike-rush, broad-leaf cat-tail, American slough grass, American manna grass (*Glyceria grandis*), and Great Basin calico flower (*Downingia laeta*). A trace amount of green algae (a protist) was present in the open water.

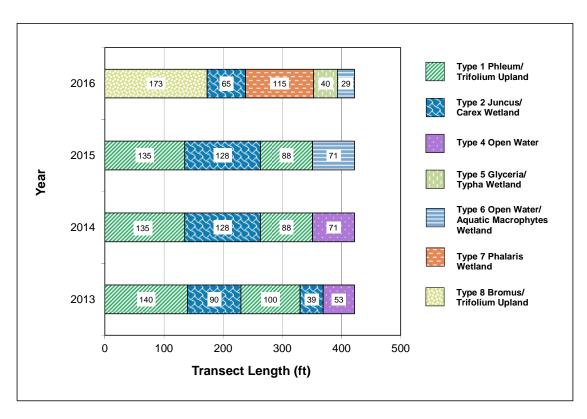
Wetland community Type 7 – *Phalaris arundinacea* was identified on 0.82 acre of the site along the southern edge of the impounded wetland on the northern half of the site. This community type is seasonally inundated and replaced Type 2 – *Juncus balticus/Carex nebrascensis* from previous years' monitoring. The increase in reed canary grass could be attributed to seeds being introduced to the site from supplemental irrigation flows and increased seed germination from low water levels in recent years.

Vegetation cover was measured along three transects at the site in 2016 (Figure A-2, Appendix A). The data recorded on T-1 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in tabular and graphical formats in Table 3-2 and Charts 3-1 and 3-2, respectively. Photographs of the transect ends are provided in Appendix C. T-1 extends 422 feet from a corner of the easement area into the large wetland depression that was impounded by the constructed dike. The transect intercepted upland community Type 8 – *Bromus inermis/Trifolium* spp. and wetland community Types 2, 5, 6, and 7. Ten hydrophytic and sixteen upland species were identified along the transect. Types 5 and 7 were new to the transect in 2016 as the vegetation communities adjust to differing water levels in the impoundment.

Data collected on T-2 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in tabular and graphic formats in Table 3-3 and Charts 3-3 and 3-4, respectively. Photographs at the transect endpoints are provided in Appendix C. This transect began at a mature narrow-leaf cottonwood (*Populus angustifolia*) tree near the entrance of the site, extended 453 feet, and alternated between upland community Type 8 – *Bromus inermis/Trifolium* spp. and wetland community Type 2 – *Juncus balticus/Carex nebrascensis*. Seven hydrophytic and eighteen upland species were identified along the transect. Hydrophytic vegetation composed 70 percent of T-2 in 2016.

Table 3-2. Data Summary for T-1 From 2013 Through 2016 at the Rostad Ranch Site

Monitoring Year	2013	2014	2015	2016
Transect Length (feet)	422	422	422	422
Vegetation Community Transitions Along Transect	4	3	3	4
Vegetation Communities Along Transect	2	2	3	5
Hydrophytic Vegetation Communities Along Transect	1	1	2	4
Total Vegetative Species	27	30	30	26
Total Hydrophytic Species	9	9	9	10
Total Upland Species	18	21	21	16
Estimated % Total Vegetative Cover	90	95	95	95
Estimated % Unvegetated	10	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	30.6	30.3	47.2	59.0
% Transect Length Comprising Upland Vegetation Communities	56.9	52.8	52.8	41.0
% Transect Length Comprising Unvegetated Open Water	12.6	16.8	0	0
% Transect Length Comprising Mudflat	0	0	0	0



**Chart 3-1.** Transect Maps Showing Community Types on T-1 From 2013 Through 2016 at the Rostad Ranch Site.

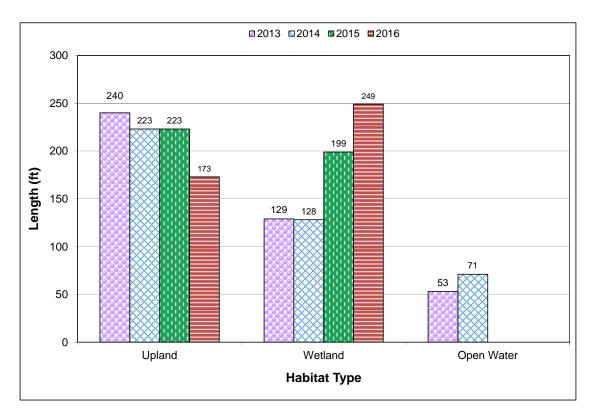
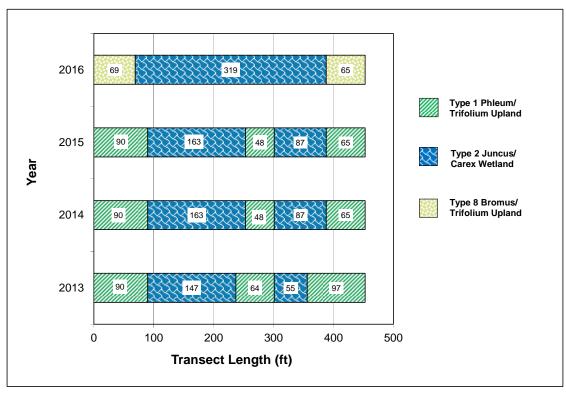


Chart 3-2. Length of Habitat Types Within T-1 From 2013 Through 2016 at the Rostad Ranch Site.

Table 3-3. Data Summary for T-2 From 2013 Through 2016 at the Rostad Ranch Site

Monitoring Year	2013	2014	2015	2016
Transect Length (feet)	453	453	453	453
Vegetation Community Transitions Along Transect	4	4	4	2
Vegetation Communities Along Transect	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1
Total Vegetative Species	26	27	27	25
Total Hydrophytic Species	8	7	7	7
Total Upland Species	18	20	20	18
Estimated % Total Vegetative Cover	90	95	95	95
Estimated % Unvegetated	10	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	44.6	55.2	55.2	70.0
% Transect Length Comprising Upland Vegetation Communities	55.4	44.8	44.8	30.0
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising Mudflat	0	0	0	0



**Chart 3-3.** Transect Maps Showing Community Types on T-2 From 2013 Through 2016 at the Rostad Ranch Site.

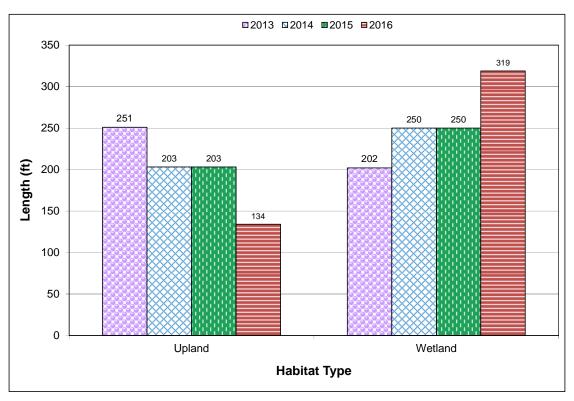


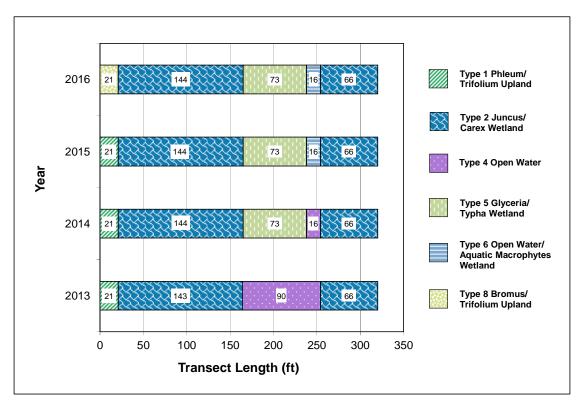
Chart 3-4. Length of Habitat Types Within T-2 From 2013 Through 2016 at the Rostad Ranch Site.

T-3 was established in the south end of the mitigation site and traversed the excavated reestablishment and rehabilitation credit areas. Data collected on T-3 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in tabular and graphic formats in Table 3-4 and Charts 3-5 and 3-6, respectively. T-3 also began at a mature narrow-leaf cottonwood tree and extended east for 320 feet (Figure A-2, Appendix A). Photographs of the transect endpoints are shown in Appendix C. This transect originated in upland community Type 8, transitioned into wetland community Type 2, continued through wetland community Types 5 – *Glyceria grandis/Typha latifolia* and 6 – Open Water/Aquatic Macrophytes, and ended in wetland community Type 2. Wetland community Type 5 replaced a majority of the open water observed on the transect in 2013. Hydrophytic vegetation communities represented 93.4 percent of the transect intervals. Bare ground accounted for approximately 10 percent of the transect. Because of the presence of an active sandhill crane next at the east end of this transect (Figure A-2, Appendix A), field crews expedited their review of this transect and did not stretch a tape or walk the entire transect. No changes were apparent in the transect communities from 2015 based on a rapid assessment of the area.

Table 3-4. Data Summary for T-3 From 2013 Through 2016 at the Rostad Ranch Site

Monitoring Year	2013	2014	2015	2016
Transect Length (feet)	320	320	320	320
Vegetation Community Transitions Along Transect	3	4	4	4
Vegetation Communities Along Transect	2	3	4	4
Hydrophytic Vegetation Communities Along Transect	1	2	3	3
Total Vegetative Species	25	31	31	31
Total Hydrophytic Species	14	16	16	16
Total Upland Species	11	15	15	15
Estimated % Total Vegetative Cover	85	90	90	90
Estimated % Unvegetated	15	10	10	10
% Transect Length Comprising Hydrophytic Vegetation Communities	65.3	88.4	93.4	93.4
% Transect Length Comprising Upland Vegetation Communities	6.6	6.6	6.6	6.6
% Transect Length Comprising Unvegetated Open Water	28.1	5	0	0
% Transect Length Comprising Mudflat	0	0	0	0

Priority 2B noxious weeds that were identified within the Rostad Ranch site included hoary alyssum (*Berteroa incana*), spotted knapweed (*Centaurea stoebe*), Canada thistle (*Cirsium arvense*), gypsyflower (*Cynoglossum officinale*), field bindweed (*Convolvulus arvensis*), and common tansy (*Tanacetum vulgare*). A total of 33 infestation areas were mapped in 2016 and range in size from less than 0.1 acre to greater than 1 acre in size. The majority of the infestations, with cover classes that range from trace (less than 1 percent) to moderate (6–25 percent), were located at the edge of the constructed wetlands in upland community Type 8 – *Bromus inermis/Trifolium* spp. Many of the infestations appear to have established on the site before mitigation construction; eight new infestations were observed and documented during the field survey in 2014, five additional infestations in 2015, and three in 2016.



**Chart 3-5.** Transect Maps Showing Community Types on T-3 From 2013 Through 2016 at the Rostad Ranch Site.

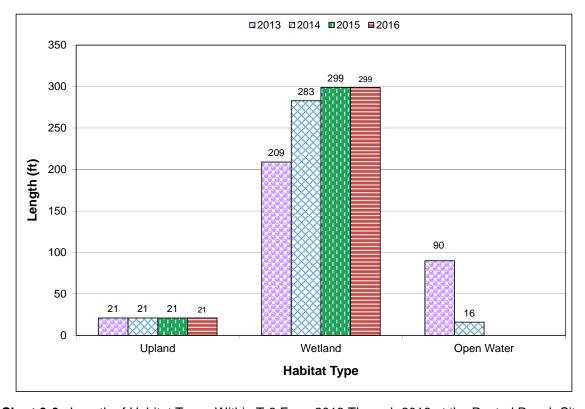


Chart 3-6. Length of Habitat Types Within T-3 From 2013 Through 2016 at the Rostad Ranch Site.

Approximately 2,000 willow cuttings were planted throughout the excavated areas. An estimated 50 percent of the willow cuttings survived through 2016. The cuttings appeared healthy and vigorous with some sign of browse. A total of 100 black cottonwoods (*Populus balsamifera*) and 100 quaking aspens (*Populus tremuloides*) were installed around the perimeter of the proposed open-water areas in 2012. Survival of these containerized, 5-gallon plant materials was also estimated at 50 percent in 2016. Natural recruitment of woody species may be occurring, but extremely tall grass in the herbaceous layer makes surveying for and identify planted and volunteer shrubs across the site very difficult.

### **3.3 SOIL**

Soils on the site were mapped in the *Web Soil Survey for Meagher County Area* [USDA, 2012] as the Varney-Notter cobbly loam and Delpoint variant-Marmarth-Cabbart loam soil series. The Varney-Notter cobbly loam mapped soil unit was located across the northern half of the site while the Delpoint variant-Marmarth-Cabbart loam mapped soil unit was located across the southern half. Both series generally consist of very deep, well-drained soils formed in alluvium. The mapped soil units were not identified on the *Montana Hydric Soils List* [USDA, 2015].

Soil test pits were excavated at four locations, all within what was originally mapped as the Delpoint variant-Marmarth-Cabbart loam soil series (Figure A-2, Appendix A). DP1-W and DP2-W are located in areas that exhibited hydric soils. The soil at DP1-W, which is located at the edge of an excavated depression, consisted of an upper 6-inch very dark gray (10YR 3/1) sandy loam and a lower 12-inch dark gray (10YR 4/1) sandy loam with 5 percent yellowish-brown (10YR 5/8) redoximorphic concentrations. The soil met the criteria for depleted below dark surface (A11) and classification as a hydric soil. The soil profile at DP2-W, which is located in a drainage area between two wetland cells, revealed an upper 4-inch black (10YR 2/1) sandy clay loam and a lower 16-inch black (10YR 2/1) sandy clay loam with 15 percent yellowish-brown (10YR 5/6) redoximorphic concentrations. The soil met the criteria for redox dark surface (F6) and classification as a hydric soil. DP1-U, which is located upslope from DP1-W, displayed a dark grayish-brown (10YR 4/2) sandy clay loam and did not meet the criteria for any hydric soil indicators. DP2-U, which is located upslope from DP2-W, exhibited a dark grayish-brown (10YR 4/2) sandy clay loam and did not meet the criteria for any hydric soil indicators.

# 3.4 WETLAND DELINEATION

Four data points were evaluated in 2016 to determine the wetland and upland boundaries at this site (Figure A-2, Appendix A; Wetland Determination Data forms, Appendix B). DP1-W and DP2-W are located in areas that met the wetland criteria. The total wetland acreage delineated in 2016, including preexisting wetland areas, was 14.96 acres, which is an increase of 0.56 acre since 2014. The delineated acreages are provided in Table 3-5. The proposed wetland areas that were identified within the mitigation plan were overlaid with the wetlands surveyed in 2016 to identify the extent of wetlands within each crediting area. The 2016 wetland delineation included 0.25 acre within the preservation credit area, 9.97 acres within the reestablishment credit area, 1.56 acres within the wetland rehabilitation credit area, and 3.18 acres within the creation credit area. To date, the site is 31.63 acres short of the intended goal of 46.59 acres across the site. This lack of wetland development is directly

related to the lack of adequate hydrology across the site. One of the reasons the site is not receiving adequate hydrology is because of the inadequate water distribution across the site. MDT and the engineering company responsible for the design at the site are undertaking adaptive management actions during the fall/winter of 2016/2017 to provide a better distribution of water across portions of the site.

Table 3-5. Total Wetland Acres Delineated From 2013 Through 2016 at the Rostad Ranch Site

Wetland and Upland Habitats	2013 Delineated Acres	2014 Delineated Acres	2015 Delineated Acres	2016 Delineated Acres
Project Area	60.00	60.00	60.00	60.00
Created Wetlands	1.07	2.68	3.18	3.18
Restoration Wetlands (Reestablishment)	10.89	9.91	9.91	9.97
Restoration Wetlands (Rehabilitation)	1.53	1.56	1.56	1.56
Preservation Wetlands	0.25	0.25	0.25	0.25
Total Wetlands	13.74	14.40	14.90	14.96

### 3.5 WILDLIFE

A comprehensive list of birds and other wildlife species that were observed directly or indirectly from 2011 through 2016 is presented in Table 3-6 and the Wetland Mitigation Site Monitoring form in Appendix B. White-tailed deer (*Odocoileus virginianus*), pronghorn antelope (*Antilocapra americana*), Richardson's ground squirrel (Urocitellus richardsonii), unidentified tadpoles, and 14 bird species were observed in 2016. Wildlife observations in 2016 are bolded in Table 3-6. During the 2016 site visit, an active sandhill crane nest with two eggs was observed in the south part of the site. The adult crane that was tending to the nest flushed when crews unknowingly approached to within 10 feet when work began on T-3. The nest was located directly in line with the transect, so crews expedited work in the immediate area so as to allow the adult to return to the nest, which was critical because of the high temperature. The adult returned to the nest after crews left that part of the site.

#### 3.6 FUNCTIONAL ASSESSMENT

The 1999 MDT MWAM [Berglund, 1999] was used to evaluate the three existing wetlands that were identified within the site in 2004. The 2008 MWAM [Berglund and McEldowney, 2008] has been used to evaluate the site from 2013 through 2016. All of the wetlands that were identified from 2013 through 2016 were evaluated as one AA. The results of the 2004 and 2013–2016 assessments are summarized in Table 3-7. The completed 2016 MWAM form is included in Appendix B.

The 2004 assessment identified 3.4 acres of Category III wetlands. The majority of the existing wetlands within the site before construction consisted of man-made drainage and irrigation ditches that had been constructed to drain and disperse water throughout the site. The only remnants of the historic wetlands are a willow thicket and roadside drainage ditch. The preexisting wetlands averaged 34 percent of the possible score and attained a total of 12.46 functional units. Wetlands across the site remain Category III with high ratings for Montana Natural Heritage Program (MTNHP) species habitat, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and production export/food chain support.

Table 3-6. Wildlife Species Observed From 2013 Through 2016 at the Rostad Ranch Site

Common Name	Scientific Name
	phibian
Boreal Chorus Frog	Pseudacris maculata
Frog Sp.	Unidentified
	Bird Spinus triatus
American Goldfinch	Spinus tristus
American Robin	Turdus migratorius
American White Pelican	Pelecanus erythrorhynchos
Bank Swallow	Riparia riparia
Blue-winged Teal	Anas discors
Bobolink	Dolichonyx oryzivorus
Brewer's Blackbird	Euphagus cyanocephalus
Canada Goose	Branta canadensis
Common Grackle	Quiscalus quiscula
Eastern Kingbird	Tyrannus tyrannus
Grasshopper Sparrow	Ammodramus savannarum
Green-winged Teal	Anas crecca
Killdeer	Charadrius vociferus
Mallard	Anas platyrhynchos
Northern Flicker	Colaptes auratus
Northern Harrier	Circus cyaneus
Northern Shoveler	Anas clypeata
Red-tailed Hawk	Buteo jamaicensis
Red-winged Blackbird	Agelaius phoeniceus
Ring-necked Pheasant	Phasianus colchicus
Sandhill Crane	Grus canadensis
Sparrow sp.	Unidentified
Spotted Sandpiper	Actitis macularius
Tree Swallow	Tachycineta bicolor
Western Meadowlark	Sturnella neglecta
Willet	Tringa semipalmata
Wilson's Snipe	Gallinago delicata
Yellow-headed Blackbird	Xanthocephalus xanthocephalus
Black Bear	Ursus americanus
Coyote	Canis latrans
Deer sp.	Odocoileus sp.
Muskrat	Ondatra zibethicus
Pronghorn	Antilocapra americana
Raccoon	Procyon lotor
Richardson's Ground Squirrel	Urocitellus richardsonii
White-tailed Deer	Odocoileus virginianus

Species that were identified in 2016 are bolded.

Table 3-7. Functions and Values of the Rostad Ranch Site From 2004 and 2013 Through 2016

Function and Value Parameters From the Montana Wetland Assessment Method	2004 <sup>(a)</sup> W-1-04	2004 <sup>(a)</sup> W-2-04	2004 <sup>(a)</sup> W-3-04	2013 <sup>(b)</sup>	2014 <sup>(b)</sup>	2015 <sup>(b)</sup>	2016 <sup>(b)</sup>
Listed/Proposed Threatened and Endangered (T&E) Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0)	Low (0)	Low (0)
MTNHP Species Habitat	Low (0.2)	Low (0.2)	Low (0.2)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
General Wildlife Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Mod (0.5)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Short- and Long-Term Surface-Water Storage	Low (0.2)	Low (0.2)	Low (0.2)	High (0.8)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Sediment/Nutrient/Toxicant Removal	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	Mod (0.6)	N/A	N/A	Mod (0.6)	High (0.9)	High (0.9)
Production Export/Food Chain Support	Mod (0.7)	Mod (0.7)	Low (0.3)	High (0.9)	Mod (0.6)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	N/A	High (1.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)	Mod (0.4)	Low (0.2)	Low (0.3)	Low (0.3)
Recreation/Education Potential (bonus points)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points/Possible Points	3.9/10	3.9/10	1.9/8	5.25/8	4.65/9	5.75/9	5.75/9
% of Possible Score Achieved	39.0%	39.0%	24.0%	65.6%	51.7%	63.9%	63.9%
Overall Category	III	III	III	II	III	III	III
Total Acreage of Assessed Wetlands Within Site Boundaries	1.2	1.8	0.4	13.74	14.40	14.90	14.96
Functional Units (acreage × actual points)	4.68	7.02	0.76	72.1	67.0	85.7	86.02

<sup>(</sup>a) 1999 MWAM form [Berglund, 1999].

# 3.7 PHOTOGRAPHIC DOCUMENTATION

Photographs that were taken at photo points 1–7 (PP1 to PP7), transect endpoints, and wetland determination data points are shown in Appendix C.

# 3.8 MAINTENANCE NEEDS

Priority 2B noxious weeds that were identified within the Rostad Ranch site included hoary alyssum, spotted knapweed, Canadian thistle, gypsy-flower, field bindweed, and common tansy. A total of 33 infestation areas were mapped in 2016; these areas range in size from less than 0.1 acre to greater than 1 acre in size. The majority of the infestations, with cover classes that range from trace (less than 1 percent) to moderate (6–25 percent), were located at the edge of the constructed wetlands in upland community Type 1. A weed contractor with MDT treated 2 acres (4.4 percent of the upland buffer) of

<sup>(</sup>b) 2008 MWAM form [Berglund and McEldowney, 2008].

the site in July 2016, with treatment concentrated in areas of infestation by the six noxious weed species observed on site. MDT has an ongoing weed-control program for their mitigation sites that includes an annual assessment of weeds identified at each location during the yearly monitoring and treatment of mapped weeds to contain and control identified populations.

The wildlife-friendly fence that was installed around the easement area was intact during the 2016 site visit. Seven bluebird boxes were installed around the site perimeter in 2012 and were in good condition in 2016. Swallows occupied two bird boxes during the 2016 site visit. The irrigation headgate structure was in good condition during the 2016 site visit. A small amount of fine sediment was beginning to accumulate in the stilling pool but did not appear to inhibit hydrology or the function of the structure. During future monitoring efforts, inspecting this structure and stilling pool is recommended to ensure proper functionality. Also, no indicators of hydrology were observed in the northwestern portion of the site during the 2016 monitoring event.

#### 3.9 CURRENT CREDIT SUMMARY

Table 3-8 summarizes the estimated wetland credits based on the USACE-approved credit ratios and the wetland delineation completed in June 2016. Proposed mitigation credits from the 2007 *Rostad Ranch Mitigation Plan, Meagher County, Montana* [MDT, 2007] included reestablishing 27.11 wetland acres, rehabilitating 2.63 wetland acres, creating 9.84 wetland acres, preserving 0.25 wetland acre, and maintaining 6.76 acres of upland buffer (Table 3-8). The wetland acreages that were delineated in 2016 included 9.97 acres of reestablished wetlands, 1.56 acres of rehabilitated wetland, 3.18 acres of created wetland, and 0.25 acre of preservation wetland (community Type 3 – *Salix exigua*). The total mitigation credit estimated in 2016, including the upland buffer credit and the deduction for the 0.41-acre wetland impact incurred during mitigation construction, totaled 15.19 credit acres.

Table 3-9 provides a summary of the approved performance standards and success criteria based on site conditions documented in 2016. All of the wetlands that were delineated at the Rostad Ranch site in 2016 satisfied the three criteria of wetland hydrology, hydrophytic vegetation, and hydric soils. Willow stakes that were planted within the site exhibited a 50 percent survival rate during the third year of planting, which is down from 2015; however, not all of the live cuttings may have been located because of tall grass. Even at 50 percent, this criteria is still being met. Although the site was recently disturbed from construction efforts in 2012, vegetation is successfully establishing, with aerial coverage by desirable plants estimated at greater than 90 percent. The coverage of state-listed noxious weeds in the upland buffer was approximately 5 percent in 2016. The cover of noxious weeds within the delineated wetlands was less than 5 percent. The extent of the open water surveyed in 2016 composed approximately 4 percent of the total wetland acreage, which is below the cap of 10 percent stipulated in the USACE-approved performance criteria. The percentage of open water may continue to decrease as additional emergent wetlands develop on the site. The entire 60-acre easement area has been fenced to exclude grazing.

Table 3-8. Summary of Wetland Credits at the Rostad Ranch Site From 2013 Through 2016

Compensatory Mitigation Type	Wetland Type <sup>(a)</sup>	Approved Mitigation Ratio <sup>(b)</sup>	Anticipated Mitigation Area (acres)	Anticipated Mitigation Credit (acres)	2013 Delineated Mitigation Areas (acres)	2013 Estimated Mitigation Credit (acres)	2014 Delineated Mitigation Areas (acres)	2014 Estimated Mitigation Areas (acres)	2015 Delineated Mitigation Areas (acres)	2015 Estimated Mitigation Credit (acres)	2016 Delineated Mitigation Areas (acres)	2016 Estimated Mitigation Credit (acres)
Restoration (Reestablishment)	Palustrine emergent	1:1	27.11	27.11	10.89	10.89	9.91	9.91	9.91	9.91	9.96	9.96
Creation (Establishment)	Palustrine emergent	1:1	9.84	9.84	1.07	1.07	2.68	2.68	3.18	3.18	3.18	3.18
Restoration (Rehabilitation)	Palustrine emergent	1.5:1	2.63	1.75	1.53	1.02	1.56	1.04	1.56	1.04	1.56	1.04
Preservation	Palustrine, scrub/shrub	4:1	0.25	0.06	0.25	0.06	0.25	0.06	0.25	0.06	0.25	0.06
Upland Buffer	N/A	5:1	6.76 <sup>(c)</sup>	1.35	6.76	1.35	6.76	1.35	6.76	1.35	6.76	1.35
Permanent Wetland Impact	N/A	1:1	N/A	-0.41	N/A	-0.41	N/A	-0.41	N/A	-0.41	N/A	-0.41
	Totals		46.59	39.70	20.50	13.98	21.16	14.63	21.66	15.13	21.72	15.19

<sup>(</sup>a) Cowardin et al. [1979].(b) The mitigation credit ratios that were used are from the Montana Corps Regulatory Programs 2005 Wetland Credit Ratios [USACE, 2005].

<sup>(</sup>c) The anticipated upland buffer credit was used until wetland areas expand to full extent.

Table 3-9. Summary of Performance Standards and Success Criteria (Page 1 of 2)

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	The three parameter criteria for hydrology, vegetation, and soils are met as outlined in the 1987 Wetland Manual and 2010 Regional Supplement.	Y	Wetland habitat areas within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	Wetland habitat areas within the site exhibit soil saturation for a minimum 12.5 percent of growing season.
Hydric Soil	Hydric soil conditions are present or appear to be forming.	Y	The recently constructed wetland complex exhibits weak hydric soil development in areas that had been originally identified as upland before construction. Preexisting hydric soil characteristics are present in several areas that had been identified as wetland before project construction.
	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.	Υ	Plant cover has continued to develop across disturbed soils.
Lhudroph tio	Combined absolute cover of facultative or wetter species is greater than or equal to 70 percent.	Y	Areas identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC).
Hydrophytic Vegetation	Noxious weeds do not exceed 5 percent cover.	Y	Many noxious weed infestations have been mapped across this site, primarily outside of site wetlands. Estimated noxious weed cover within delineated wetlands is below 5 percent.
Woody Plants	Plantings exceed 50 percent survival after 5 years.	Y	Approximately 75 percent of the woody plantings observed were alive in 2015, which exceeds the 50 percent survival rate.
Herbaceous Plants	At the conclusion of the monitoring period, ocular coverage of desirable hydrophytic vegetation will be at least 80 percent.	Y	Created wetlands generally exhibited greater than 90 percent vegetation cover during the 2016 monitoring event and showed increased vegetation cover from 2013.
Open-Water Areas	Open water that is established within the designated wetland cells will be considered successful and creditable if open water does not exceed 10 percent of the total wetland acreage.	Y	Open water was mapped within 4 percent of the total wetland acreage in 2016. These areas are exhibiting emergent vegetation development and are anticipated to continue to develop aquatic macrophyte communities within the 5-year monitoring period.

Table 3-9. Summary of Performance Standards and Success Criteria (Page 2 of 2)

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Upland Buffer	Success will be achieved when noxious weeds do no exceed 5 percent cover within the buffer areas on site.	Y	Many noxious weed infestations, including field bindweed, gypsy-flower, Canadian thistle, spotted knapweed, common tansy, and hoary alyssum were mapped within the site in 2016. Noxious weeds are currently estimated to cover right at 5 percent of the upland buffer within the conservation easement area. MDT will need to continue to implement weed-control measures to continue to meet these criteria.
	Any area that was disturbed within creditable buffer zone must have at least 50 percent aerial cover of desirable upland plant species by the end of the monitoring period.	Y	Upland buffers that surround wetland areas within the site exhibited greater than 50 percent aerial cover of non-weed species in 2016.
Weed Control	Weed-control measures are implemented to minimize and/or eliminate infestations of state-listed noxious weed species within the site.	Y	State-listed noxious weed species across the site have been estimated at 5 percent absolute cover in 2016.
Fencing	Wildlife-friendly fencing is installed along the easement boundaries.	Y	Wildlife-friendly fencing has been installed around the easement boundaries and is in good condition.

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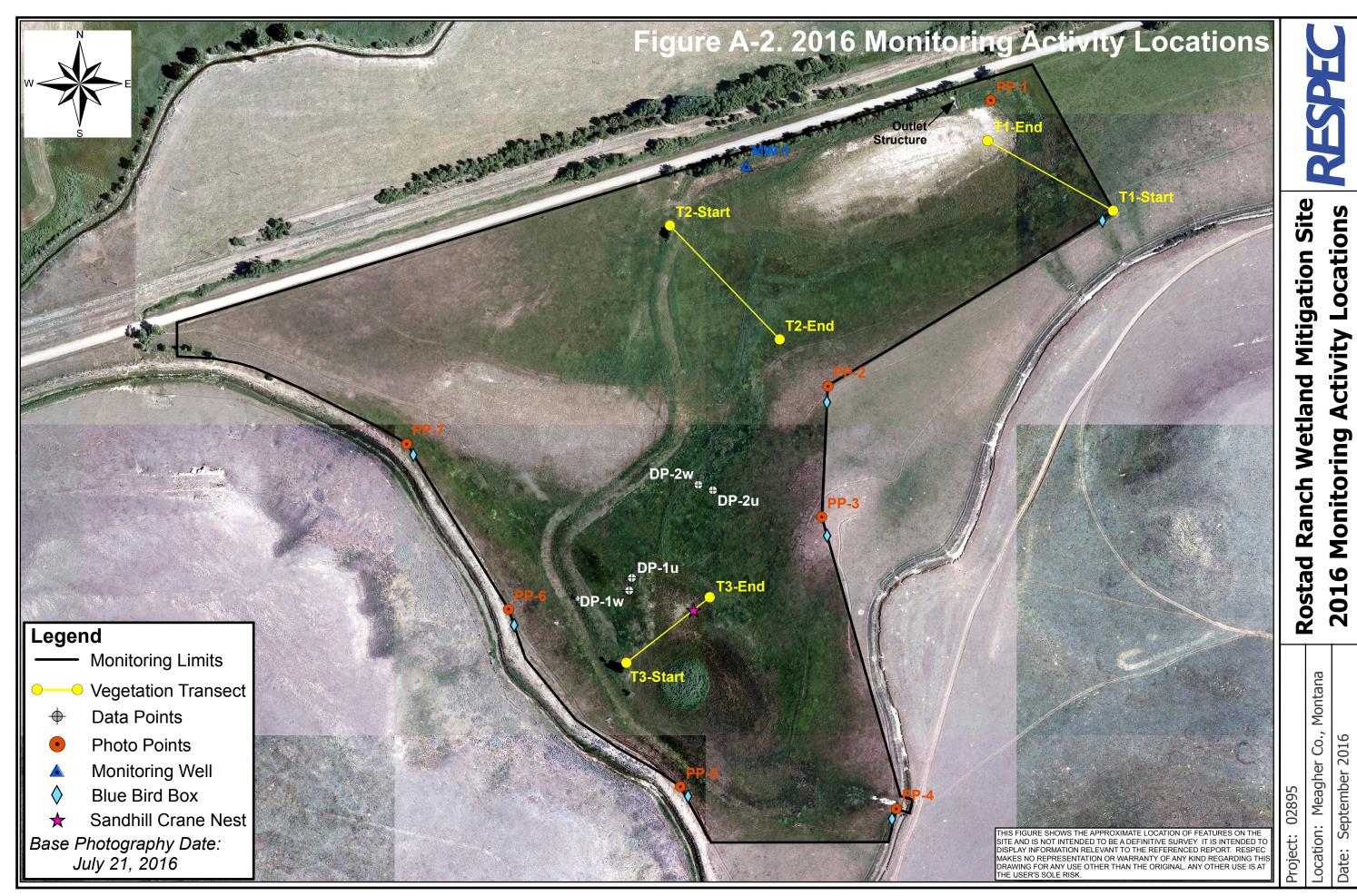
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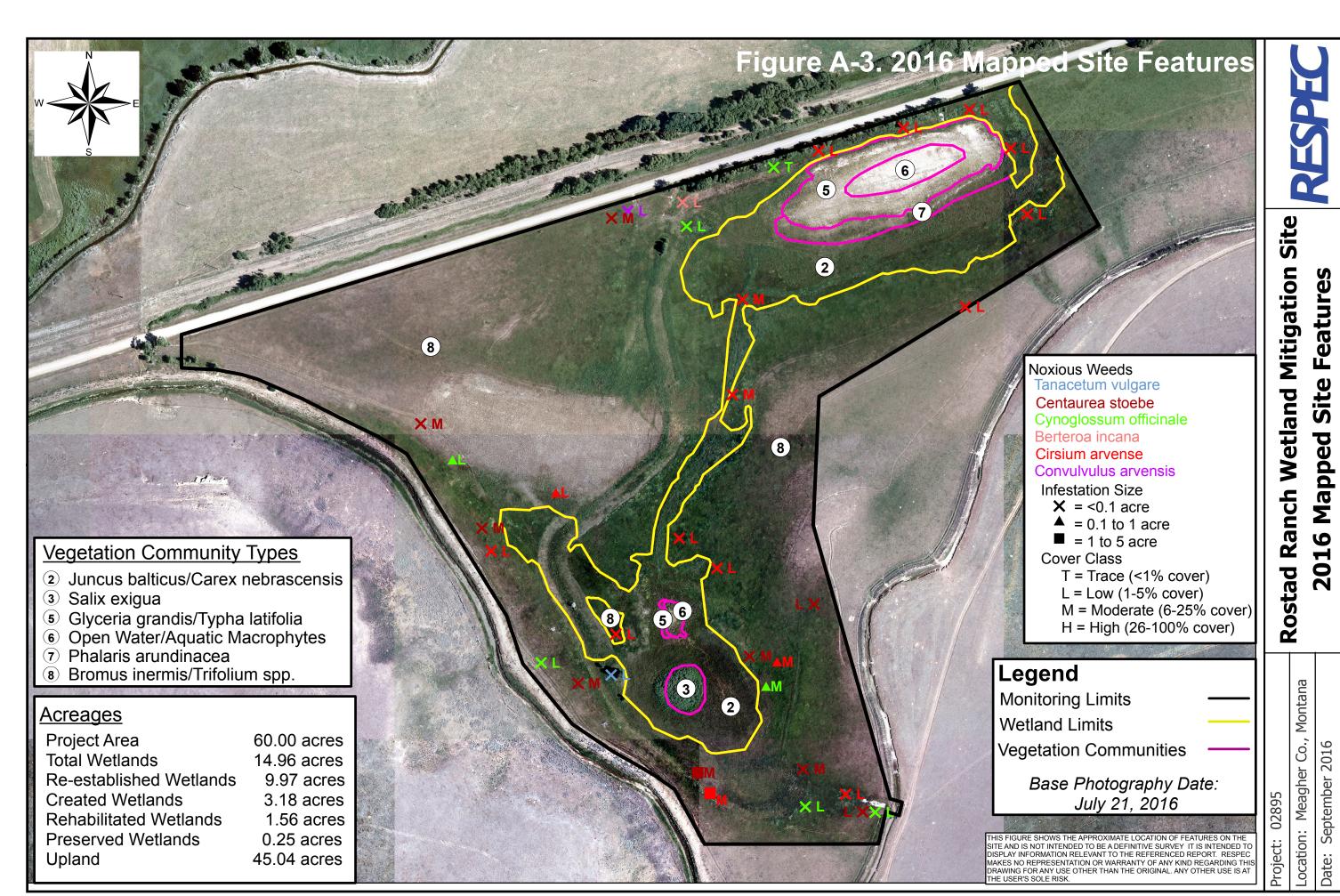
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# APPENDIX A PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring Rostad Ranch Mitigation Site Meagher County, Montana





# APPENDIX B MONITORING FORMS

MDT Wetland Mitigation Monitoring Rostad Ranch Mitigation Site Meagher County, Montana

# RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Rostad Ranch Assessment Date: June 27, 2016  Traxler Location: Martinsdale, Montana Milepost: Legal Description: T 8N R 11E Weather Conditions: Sunny, 75 degrees Initial Evaluation Date: August 21, 2013 Size of evaluation area: 60 acres			Project Number: Person(s) conducting the assessment: M. and T.  MDT District: Billings  Section 12 and 13  Time of Day: Noon Monitoring Year: 4 # Visits in Year: 1 Land use surrounding wetland: Agriculture						
HYDROLOGY									
Surface Water Source: Groundwater, supplemental hydrology from ditch/headgate, surface runoff Inundation: Present Average Depth: 0.5 feet Range of Depths: 0.25-2 ft.  Percent of assessment area under inundation: 45%  Depth at emergent vegetation-open water boundary: 0.5 feet  If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes  Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):  Drainage patterns, soil saturation, water marks, drift deposits, oxidized rhizospheres on living roots, geomorphic position, FAC-nuetral test									
Groundwater Monitoring Wells: <u>Present</u> Record depth of water below ground surface (in feet):									
XX7 11 X7 1	Depth	Well Number	Depth	Well Number	Depth				
Well Number									
MW-1	-								
	-								

#### **VEGETATION COMMUNITIES**

Community Number: **8** Community Title (main spp): **Bromus inermis / Trifolium spp.** 

Dominant Species	% Cover	Dominant Species %	
Bromus inermis	5 = > 50%	Pascopyrum smithii	1 = 1-5%
Trifolium repens	3 = 11-20%	Phleum pratense	1 = 1-5%
Schedonorus pratensis	2 = 6-10%	Populus angustifolia	1 = 1-5%
Elymus repens	2 = 6-10%	Taraxacum officinale	1 = 1-5%
Melilotus officinalis	2 = 6-10%	Trifolium pratense	1 = 1-5%
Achillea millefolium	1 = 1-5%	Centaurea stoebe	1 = 1-5%

Comments / Problems: <u>Previously recorded as community Type 1 with a prevalence of Phleum pratense</u>. <u>Upland communities across the site are dominated by Bromus inermis in 2016,</u>

Community Number: 2 Community Title (main spp): Juncus balticus / Carex nebrascensis

Dominant Species	% Cover	Dominant Species	% Cover
Carex nebrascensis	4 = 21-50%	Open Water	1 = 1-5%
Juneus balticus	4 = 21-50%	Poa palustris	1 = 1-5%
Beckmannia syzigachne	3 = 11-20%	Sonchus arvensis	1 = 1-5%
Phalaris arundinacea	2 = 6-10%	Deschampsia caespitosa	1 = 1-5%
Hordeum jubatum	2 = 6-10%	Rumex crispus	1 = 1-5%
Eleocharis palustris	1 = 1-5%	Typha latifolia	1 = 1-5%

Comments / Problems: Wet meadow, revegetation successful since 2013.

Community Number: 3 Community Title (main spp): Salix exigua /

Dominant Species	% Cover	Dominant Species % (	
Salix exigua	5 = > 50%	Alopecurus pratensis	1 = 1-5%
Deschampsia caespitosa	2 = 6-10%	Carex nebrascensis	1 = 1-5%
Poa palustris	2 = 6-10%	Agrostis gigantea	+=<1%
Beckmannia syzigachne	1 = 1-5%	Veronica peregrina	+ = < 1%
Carex utriculata	1 = 1-5%	Typha latifolia	+=<1%
Eleocharis palustris	1 = 1-5%		

Comments / Problems: <u>Undisturbed salix community near southern extent of monitoring boundary.</u>

Community Number: 5 Community Title (main spp): Glyceria grandis / Typha latifolia

Dominant Species	% Cover	Dominant Species	% Cover
Glyceria grandis	4 = 21-50%		
Typha latifolia	3 = 11-20%		
Eleocharis palustris	3 = 11-20%		
Open Water	3 = 11-20%		
Beckmannia syzigachne	2 = 6-10%		

Comments	/ Problems:	
Comments	/ I I O O I C III S.	

## **VEGETATION COMMUNITIES (continued)**

Community Number: 6 Community Title (main spp): Open Water / Aquatic macrophytes

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Carex nebrascensis	+ = < 1%
Eleocharis palustris	1 = 1-5%	Juncus balticus	+ = < 1%
Typha latifolia	1 = 1-5%	Polypogon monspeliensis	+ = < 1%
Beckmannia syzigachne	1 = 1-5%	Downingia laeta	+ = < 1%
Glyceria grandis	1 = 1-5%	Rumex crispus	+ = < 1%
Algae, green	+=<1%	Veronica peregrina	+ = < 1%

Comments / Problems: Originally designated as open water community type #4 in previous survey years. Species composition had combined areal coverage greater than 5%, thus wetland community type #6 was created to reflect this increase in vegetation cover in 2015.

Community Number: 7 Community Title (main spp): Phalaris arundinacea /

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	5 = > 50%		
Elymus trachycaulus	3 = 11-20%		
Poa pratensis	1 = 1-5%		
Trifolium pratense	1 = 1-5%		
Medicago sativa	+=<1%		
Thlaspi arvense	1 = 1-5%		

Comments / Problems: This community type has developed around the south edge of the north empoundment. This type is new in 2016.

Community Number: \_\_\_\_ Community Title (main spp): \_\_\_\_\_

Dominant Species	% Cover	<b>Dominant Species</b>	% Cover

Comments / Problems: \_\_\_\_\_

Community Number: \_\_\_ Community Title (main spp): \_\_\_\_

Dominant Species	% Cover	Dominant Species	% Cover

Commen	ts / Problems	•
Commen	18 / FIODICHIS	_

#### PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes
Populus balsamifera	100		Estimated 50% survival
Populus tremuloides	100		Estimated 50% survival
Salix spp.	2000		Estimated 50% survival

Comments / Problems: Willow stakes were planted in spring 2013. Due to tall herbaceous vegetation, locating all plantings was difficult during the site visit. Especially difficult was locating plants (stems) that had died. Those plants observed looked healthy with minor deer browse noted. Survival in 2016 was estimated at 50% survival based on the number of live stems observed. Mortality causes unknown but may be a result of dry site conditions since the site has not developed wetland acreage as anticipated.

Site: Rostad Ranch
Transect Number: 1

Date: June 29, 2016 Examiner: M. and T. Traxler
Approximate Transect Length: 428 feet Compass Direction from Start: 290 Note:

Transect Interval Length: 173 feet (station 0-173)				
Vegetation Community Type: Bromus inermis / Trifolium	Vegetation Community Type: Bromus inermis / Trifolium spp.			
Plant Species	Cover			
Bromus inermis	4 = 21-50%			
Poa palustris	2 = 6-10%			
Trifolium pratense	2 = 6-10%			
Achillea millefolium	1 = 1-5%			
Medicago sativa	1 = 1-5%			
Phleum pratense	1 = 1-5%			
Tragopogon dubius	1 = 1-5%			
Aster sp.	1 = 1-5%			
Pascopyrum smithii	1 = 1-5%			
Taraxacum officinale	1 = 1-5%			
Total Vegetative Cover:	%			
Č	1			

Transect Interval Length: 65 feet (station 173-238)	
Vegetation Community Type: Juncus balticus / Carex nebrascensis	
Plant Species	Cover
Poa palustris	3 = 11-20%
Juneus balticus	3 = 11-20%
Carex nebrascensis	2 = 6-10%
Phalaris arundinacea	2 = 6-10%
Trifolium pratense	2 = 6-10%
Eleocharis palustris	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Phleum pratense	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: 115 feet (station 238-353)	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	Cover
Phalaris arundinacea	5 = > 50%
Elymus trachycaulus	3 = 11-20%
Poa pratensis	1 = 1-5%
Trifolium pratense	1 = 1-5%
Thlaspi arvense	1 = 1-5%
Medicago sativa	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: 40 feet (station 353-393)	
Vegetation Community Type: Glyceria grandis / Typah latifolia	
Plant Species	Cover
Glyceria grandis	2 = 6-10%
Phalaris arundinacea	2 = 6-10%
Typha latifolia	2 = 6-10%
Eleocharis palustris	2 = 6-10%
Rumex crispus	2 = 6-10%
Total Vegetative Cover:	%

## MDT WETLAND MONITORING - VEGETATION TRANSECT

Site: Rostad Ranch
Transect Number: 1

Date: June 29, 2016 Examiner: M. and T. Traxler
Approximate Transect Length: 428 feet Compass Direction from Start: 290 Note:

Transect Interval Length: 35 feet (station 393-	-428)
Vegetation Community Type: Open Water / Aquatic macrophytes	
Plant Species	Cover
Open Water	5 = > 50%
Glyceria grandis	5 = > 50%
Eleocharis palustris	2 = 6-10%
Typha latifolia	2 = 6-10%
Beckmannia syzigachne	1 = 1-5%
Carex nebrascensis	1 = 1-5%
Juneus balticus	1 = 1-5%
Rumex crispus	+=<1%
Total Vegetat	ive Cover: %

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
	_
	_
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
-	
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
_	
Total Vegetative Cover:	%

## MDT WETLAND MONITORING - VEGETATION TRANSECT

Site: Rostad Ranch
Transect Number: 2

Date: June 29, 2016 Examiner: M. and T. Traxler
Approximate Transect Length: 453 feet Compass Direction from Start: 120 Note:

Transect Interval Length: 69 feet (station 0-69)	
Vegetation Community Type: Bromus inermis / Trifolium spp.	
Plant Species	Cover
Bromus inermis	5 = > 50%
Trifolium pratense	3 = 11-20%
Melilotus officinalis	3 = 11-20%
Elymus repens	2 = 6-10%
Bare Ground	1 = 1-5%
Cirsium arvense	1 = 1-5%
Taraxacum officinale	1 = 1-5%
Chenopodium album	1 = 1-5%
Descurainia sophia	1 = 1-5%
Poa palustris	1 = 1-5%
Phleum pratense	+=<1%
Total Vegetative Cover:	%

Transect Interval Length: 319 feet (station 69-388)	
Vegetation Community Type: Juncus balticus / Care	ex nebrascensis
Plant Species	Cover
Juneus balticus	4 = 21-50%
Carex nebrascensis	3 = 11-20%
Trifolium pratense	2 = 6-10%
Phleum pratense	2 = 6-10%
Phalaris arundinacea	4 = 21-50%
Poa pratensis	2 = 6-10%
Salix exigua	1 = 1-5%
Typha latifolia	1 = 1-5%
Bare Ground	1 = 1-5%
Pascopyrum smithii	1 = 1-5%
Total Vegetative Cov	ver: %

Transect Interval Length: 65 feet (station 388-453)	
Vegetation Community Type: Bromus inermis / Trifolium spp.	
Plant Species	Cover
Bromus inermis	4 = 21-50%
Poa pratensis	2 = 6-10%
Elymus trachycaulus	2 = 6-10%
Juneus balticus	2 = 6-10%
Pascopyrum smithii	2 = 6-10%
Elymus repens	2 = 6-10%
Achillea millefolium	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Trifolium pratense	1 = 1-5%
Phleum pratense	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
Total Vegetative Cove	er: %

Transect Number: 3 Approximate Transect Length: 320 feet Compass Direction from Start: 30 Note: Transect visually estimated due to active sandhill crane nest on transect. 2015 species list and cover used in 2016.

Transect Interval Length: 21 feet (station 0-21)	
Vegetation Community Type: Bromus inermis / Trifolium	spp.
Plant Species	Cover
Populus angustifolia	4 = 21-50%
Elymus repens	2 = 6-10%
Amaranthus retroflexus	1 = 1-5%
Brassica kaber	1 = 1-5%
Phleum pratense	1 = 1-5%
Bare Ground	1 = 1-5%
Bromus arvensis	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: 144 feet (station 21-165)		
Vegetation Community Type: Juncus balticus / Carex nebrascensis		
Plant Species	Cover	
Hordeum jubatum	3 = 11-20%	
Deschampsia caespitosa	3 = 11-20%	
Juneus balticus	2 = 6-10%	
Carex nebrascensis	1 = 1-5%	
Epilobium ciliatum	1 = 1-5%	
Beckmannia syzigachne	1 = 1-5%	
Juneus bufonius	1 = 1-5%	
Total Vegetative Cover:	%	

Transect Interval Length: 73 feet (station 165-238)		
Vegetation Community Type: Glyceria grandis / Typha latifolia		
Plant Species	Cover	
Glyceria grandis	4 = 21-50%	
Typha latifolia	3 = 11-20%	
Eleocharis palustris	3 = 11-20%	
Beckmannia syzigachne	2 = 6-10%	
Open Water	2 = 6-10%	
Total Vegetative Cover:	%	

Transect Interval Length: 16 feet (station 238-254)		
Vegetation Community Type: Open Water / Aquatic macrophytes		
Plant Species	Cover	
Open Water (<6" deep in 2016, 95% vegetated)	5 = > 50%	
Typha latifolia	2 = 6-10%	
Algae, green	1 = 1-5%	
Downingia laeta	+ = < 1%	
Glyceria grandis	+ = < 1%	
Polypogon monspeliensis	+ = < 1%	
Veronica peregrina	+ = < 1%	
Beckmannia syzigachne	+ = < 1%	
Eleocharis palustris	+ = < 1%	
Total Vegetative Cover:	%	

B-5

## MDT WETLAND MONITORING - VEGETATION TRANSECT

Site: Rostad Ranch
Transect Number: 4

Approximate Transect Length: 320 feet

Compass Direction from Start: 30

Note:

Transect Interval Length: 66 feet (station 254-320)	
Vegetation Community Type: Juncus balticus / Carex nebrascensis	
Plant Species	Cover
Eleocharis palustris	3 = 11-20%
Typha latifolia	2 = 6-10%
Elymus trachycaulus	2 = 6-10%
Beckmannia syzigachne	1 = 1-5%
Hordeum jubatum	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Juneus balticus	1 = 1-5%
Pascopyrum smithii	1 = 1-5%
Melilotus officinalis	+=<1%
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	Cover
Total Vegetative Cover:	%

#### MDT WETLAND MONITORING - VEGETATION TRANSECT

<b>Cover Estimate</b>		<b>Indicator Class</b>	Source
+ = < 1%	3 = 11-10%	+ = Obligate	P = Planted
1 = 1-5%	4 = 21-50%	- = Facultative/Wet	V = Volunteer
2 = 6-10%	5 = > 50%	0 = Facultative	

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): \_\_\_\_%

Establish transects perpendicular to the shoreline (or saturated perimeter). The transect should begin in the upland area. Permanently mark this location with a standard metal fencepost. Extend the imaginary transect line towards the center of the wetland, ending at the 3 foot depth (in open water), or at the point where water depths or saturation are maximized. Mark this location with another metal fencepost.

Estimate cover within a 10 foot wide "belt" along the transect length. At a minimum, establish a transect at the windward and leeward sides of the wetland. Remember that the purpose of this sampling is to monitor, not inventory, representative portions of the wetland site.

#### **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 uplan
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.

Location	Photograph Frame #	Photograph Description & Lat/Long	Compass Reading (°)
PP-1		Photo Point 1 (Pano): 46.463894 / -110.292686	140-240
PP-2		Photo Point 2 (Pano): 46.461612 / -110.294534	180-70
PP-3		Photo Point 3 (Pano): 46.460579 / -110.294502	160-360
PP-4		Photo Point 4 (Pano): 46.458241 / -110.29377	190-340
PP-5		Photo Point 5 (Pano): 46.458417 / -110.296185	300-110
PP-6		Photo Point 6 (NNE): 46.459839 / -110.298195	30
PP-6		Photo Point 6 (ESE): 46.459839 / -110.298195	100
PP-7		Photo Point 7 (Pano): 46.461119 / -110.299371	0-300
T-1 start		Transect 1 start: 46.463043 / -110.291222	290
T-1 end		Trasnect 1 end: 46.463577 / -110.29274	110
T-2 start		Transect 2 start: 46.46286 / -110.296341	130
T-2 end		Transect 2 end: 46.46191 / -110.295059	310
T-3 start		Transect 3 start: 46.459347 / -110.296814	30
T-3 end		Transect 3 end: 46.459827 / -110.295876	210
DP-1W		Wetland soil pit #1: 46.462577 / -110.294263	
DP-1U		Upland soil pit #1: 46.462457 / -110.294063	

Comments / Problems: Photos for DP-2W and DP-2U were not taken. No soil pits were dug at these sites to minimize disturbance of a nearby sandhill crane nest.

## **GPS SURVEYING**

Using a resource grade GPS survey the items on the checklist below. Collect at least 3 location points set at a 5 second recording rate. Record file numbers for site in designated GPS field notebook.

<ul> <li>GPS Checklist:</li> <li>□ Upland/wetland boundary.</li> <li>□ 4-6 landmarks that are recognizable on the aerial photograph.</li> <li>□ Start and End points of vegetation transect(s).</li> <li>□ Photograph reference points.</li> <li>□ Groundwater monitoring well locations.</li> <li>□ Bird nest boxes.</li> </ul>
Comments / Problems:
WETLAND DELINEATION (attach COE delineation forms)
At each site conduct these checklist items:  Delineate wetlands according to the 1987 Army COE manual and regional supplement.  Delineate wetland – upland boundary onto aerial photograph.
Comments / Problems:
FUNCTIONAL ASSESSMENT  Complete and attach full MDT Montana Wetland Assessment Method field forms.
Comments / Problems:
MAINTENANCE
Were man-made nesting structure installed at this site? <u>Yes</u> If yes, do they need to be repaired? <u>No</u> 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? <u>Yes</u> If yes, are the structures working properly and in good working order? <u>Yes</u> If no, describe the problems below.
Comments / Problems:

#### WILDLIFE

#### Birds

Were man-made nesting structures installed?  $\underline{Yes}$ 

If yes, type of structure: **Box** How many? **7** Are the nesting structures being used? **Yes** Do the nesting structures need repairs? **No** 

## **Mammals and Herptiles**

Mammal and Hamtile Species	Number	Indirect Indication of Use							
Mammal and Herptile Species	Observed	Tracks	Scat	Burrows	Other				
White-tailed Deer	1								
Pronghorn	3								
Richardson's Ground Squirrel	1								
Frog sp.	1				Tadpole				

## **Additional Activities Checklist:**

**NA** Macroinvertebrate Sampling (if required)

Comments / Problems: <u>Two bird boxes in use by tree swallows</u>. <u>In addition to the 3 pronghorn observed on-site</u>, <u>1 dead pronghorn was observed on the adjacent property</u>.

## **BIRD SURVEY - FIELD DATA SHEET**

Site: Rostad Ranch	Date: <u>6/27/16</u>
Survey Time:	to

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Northern Flicker	1	L	UP				
American Robin	1	L	UP				
Eastern King Bird	1	L	UP				
Yellow-headed	8	L FO	MA UP				
Blackbird							
Killdeer	1	F	MF				
Spotted Sandpiper	1	F	MF				
Red-winged Blackbird	17	LFFO	MA UP				
Tree Swallow	4	BP FO	UP				
Bobolink	3	L	UP				
Ring-necked Pheasant	1	L	UP				
Brewer's Blackbird	16	FO L	UP				
Sandhill Crane	2	FO N	UP MA				
Western Meadowlark	2	FO	UP				
Sparrow sp.	4	L	UP				
					_		

#### BEHAVIOR CODES

**BP** = One of a breeding pair **BD** = Breeding display

F = Foraging
FO = Flyover
L = Loafing

N = Nesting

Weather:	
Notes:	

## HABITAT CODES

AB = Aquatic bed
FO = Forested
I = Island
WM = Wet meadow
WA = Marsh
US = Unconsolidated shore

MF = Mud Flat OW = Open Water

## WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch		Ci	ty/County:	Meagher		Samp	ling Date: _	27-Jun-16	)
Applicant/Owner: MDT				State:	: MT	Sampling Point:	D	)P-1U	
Investigator(s): M. and T. Traxler			Section, To	wnship, Ra	nge: <b>S</b> 12	T 8N	<b>R</b> 11E		
Landform (hillslope, terrace, etc.):	Footslope	1	Local relief	(concave, c	convex, none): co	onvex	Slope:	1.5%	0.9
Subregion (LRR): LRR F		<b>Lat.:</b> 46.4	162457		Long.: -110.29	94063	Datur	m: WGS	
Soil Map Unit Name: Delpoint varian	nt Marmarth Cabbart Ioa				-	I classification:			
re climatic/hydrologic conditions or				s • No C		olain in Remarks			
Are Vegetation , Soil		significantly d			ormal Circumsta		Yes 💿	No O	J
		-				-			
Are Vegetation, Soil		naturally prob		-	eded, explain any		-		
Summary of Findings - A		owing sar	npling p	oint loc	ations, tran	sects, impo	rtant fea	atures	, etc.
Hydrophytic Vegetation Present?	Yes O No O		Is the	Sampled A	rea				
Hydric Soil Present?	Yes O No O			•	Yes O No	•			
Wetland Hydrology Present?	Yes ○ No •		Within	i a wedanu					
Remarks:									
Upland sample point. Formerly R1	l-u								
<b>VEGETATION</b> - Use scien	itific names of pl	ants	Dominant	FWS Re	gion: GP				
		Absolute	Species? Rel.Strat.	Indicator	Dominance Tes	st worksheet:			
<u>Tree Stratum</u> (Plot size: 30 Foo	ot Radius )	% Cover	Cover	Status	Number of Domii	nant Species			
1			<u> </u>		That are OBL, FA	CW, or FAC:	0	(	(A)
2		ſ	⊢		Total Number of	Dominant			
4.			⊢		Species Across A	II Strata:	1	(	(B)
		0	= Total Co	wor	Percent of dom	ninant Species			
Sapling/Shrub Stratum (Plot size:	15 Foot Radius )		- Total Co	ivei	That Are OBL,		0.09	<u>%</u> (	(A/B)
1	-	0[			Prevalence Inde	ex worksheet:			
2					Total % (		Multiply by:		
3					OBL species			0	
4			<u> </u>		FACW species	0	(2 =	0	
5			□ <u> </u>		FAC species		3 =	0	
(Diot size: 5 Foot	Padius \	0	= Total Co	ver	FACU species	25 <b>x</b>	(4 =	100	
Herb Stratum (Plot size: 5 Foot		00	7/ 20/	LIDI	UPL species	80 <b>x</b>	(5 = <u></u>	400	
Bromus inermis     Cirsium arvense			✓ 76.2% 19.0%	UPL FACU	Column Total	s: <u>105</u> (	(A)	500	(B)
Sisymbrium altissimum			4.8%	FACU	Prevalence	Index = B/A =	4.76	2	
4.		0	0.0%			getation Indicat			
5.		0	0.0%			_			
6		0 [	0.0%			est for Hydroph		ion	
7. 8.		_ 0	0.0%			nce Test is > 50			
9.		0	0.0%			nce Index is ≤3			
10.		0[ 0	0.0%		4 - Morpho	logical Adaptati emarks or on a	ons¹(Provid separate sh	ie suppoi eet)	rting
			= Total Co	ver		c Hydrophytic V	-	-	1
_Woody Vine Stratum (Plot size:	30 Foot Radius )				1 Indicators of	f hydric soil and	wetland hy	drology	must
1		0			be present.	niyanc son ana	wedana ny	ar ology i	iiust
2.									
			= Total Co	ver	Hydrophytic				
% Bare Ground in Herb Stratum	0		. 5.0 50		Vegetation Present?	Yes O No	•		
Remarks:									
	to distance to the								
Smooth brome is dominant grass i	in this upland plot.								

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Soil Sampling Point: DP-1U

rofile Description: (Describe to the depth needed to document the indicator or confirm to the depth Matrix Redox Features	· · · · · · · · · · · · · · · · · · ·
(inches) Color (moist) % Color (moist) % Type 1 Loc	<sup>2</sup> Texture Remarks
0-18 10YR 4/2 100	Sandy Clay Loam
	<u> </u>
Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains 2	Location: PL=Pore Lining. M=Matrix
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1) Sandy Gleyed Matrix S4	1 cm Muck (A9) (LRR I, J)
Histic Epipedon (A2) Sandy Redox (S5)	Coastal Prairie Redox (A16) (LRR F, G, H)
Black Histic (A3) Stripped Matrix (S6)	Dark Surface (S7) (LRR G)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1)	High Plains Depressions (F16)
Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2)  1 cm Muck (A9) (LRR F,G,H) Depleted Matrix (F3)	(LRR H outside of MLRA 72 and 73)
1 cm Muck (A9) (LRR F,G,H) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6)	Reduced Vertic (F18)
Thick Dark Surface (A12)  Depleted Dark Surface (F7)	Red Parent Material (TF2)
Sandy Muck Mineral (S1)  Redox depressions (F8)	☐ Very Shallow Dark Surface (TF12)
2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16)	Uther (Explain in Remarks)
5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 and 73 of LRR H)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problem
estrictive Layer (if present):	
Type:	
Depth (inches):	Hydric Soil Present? Yes No
	, , , , , , , , , , , , , , , , , , , ,
emarks:	, , , , , , , , , , , , , , , , , , , ,
emarks:	
emarks:  hydric soil indicators observed.	
emarks: hydric soil indicators observed.  /drology	
emarks: hydric soil indicators observed.  /drology etland Hydrology Indicators:	
emarks: b hydric soil indicators observed.  ydrology etland Hydrology Indicators:	
emarks: hydric soil indicators observed.  ydrology etland Hydrology Indicators:	Secondary Indicators (minimum of two requir
hydric soil indicators observed.  /drology etland Hydrology Indicators: imary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)
emarks: hydric soil indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  Salt Crust (B11)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)
emarks:  p hydric soil indicators observed.  ydrology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Aquatic Invertebrates (B13)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)
emarks:  hydric soil indicators observed.  ydrology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)
emarks:  phydric soil indicators observed.  pydrology  retland Hydrology Indicators:  rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)
emarks:  hydric soil indicators observed.  ydrology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Oxidized Rhizospheres on Living Roots (C	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)
emarks:  hydric soil indicators observed.  ydrology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  (where not tilled)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)
emarks:  hydrology  (etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  (where not tilled)  Algal Mat or Crust (B4)  Presence of Reduced Iron (C4)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)
emarks: hydric soil indicators observed.  /drology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  (where not tilled)  Algal Mat or Crust (B4)  Presence of Reduced Iron (C4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Other (Explain in Remarks)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)  FAC-neutral Test (D5)
emarks:  hydric soil indicators observed.   ydrology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  (where not tilled)  Algal Mat or Crust (B4)  Presence of Reduced Iron (C4)  Iron Deposits (B5)  Thin Muck Surface (C7)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)  FAC-neutral Test (D5)
emarks: hydric soil indicators observed.  /drology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Water Stained Leaves (B9)  eld Observations:	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)  FAC-neutral Test (D5)
emarks:  hydric soil indicators observed.   ydrology  etland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  (where not tilled)  Algal Mat or Crust (B4)  Presence of Reduced Iron (C4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Water Stained Leaves (B9)  eld Observations:  urface Water Present?  Yes  No  Depth (inches):	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)  FAC-neutral Test (D5)
emarks:  phydric soil indicators observed.  pydrology  retland Hydrology Indicators:  rimary Indicators (minimum of one required; check all that apply)  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Hydrogen Sulfide Odor (C1)  Water Marks (B1)  Dry Season Water Table (C2)  Sediment Deposits (B2)  Drift deposits (B3)  (where not tilled)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Thin Muck Surface (C7)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  reter Table Present?  Yes  No  Depth (inches):  Depth (inches):	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)  FAC-neutral Test (D5)  Frost Heave Hummocks (D7) (LRR F)
emarks:  hydric soil indicators observed.   ydrology  etland Hydrology Indicators:  rimary 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)  Inundation Visible on Aerial Imagery (B7)  Water Table (Present?  Yes  No  Depth (inches):  Inuration Present?  Yes  No  Depth (inches):  Inuration Present?  Yes  No  Depth (inches):  Inuration Present?  Yes  No  Depth (inches):  Inurdicators observed.  Inundation Visible on Aerial Imagery  Inundation Present?  Yes  No  Depth (inches):  Depth (inches):	Secondary Indicators (minimum of two requir  Surface Soil Cracks (B6)  Sparsely Vegetated Concave Surface (B8)  Drainage Patterns (B10)  Oxidized Rhizospheres on Living Roots (C3)  (where tilled)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Geomorphic Position (D2)  FAC-neutral Test (D5)
emarks:  hydric soil indicators observed.   ydrology  etland Hydrology Indicators:  rimary 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)  Inundation Visible on Aerial Imagery (B7)  Water Table (C2)  Water Water Present?  Yes  No  Depth (inches):  Inturation Present?  Yes  No  Depth (inches):  Inturation Present?  Presente of Reduced Iron  Other (Explain in Remarks)  Water-Indicators  Water Present?  Yes  No  Depth (inches):  Inturation Present?  Yes  No  Depth (inches):  Depth (inches):  Indicators observed.  Inturation Present?  Yes  No  Depth (inches):	Secondary Indicators (minimum of two requires Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) FAC-neutral Test (D5) Frost Heave Hummocks (D7) (LRR F)
emarks:  hydric soil indicators observed.   ydrology  etland Hydrology Indicators:  rimary 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)  Inundation Visible on Aerial Imagery (B7)  Water Table (Present?  Yes  No  Depth (inches):  Inuration Present?  Yes  No  Depth (inches):  Inuration Present?  Yes  No  Depth (inches):  Inuration Present?  Yes  No  Depth (inches):  Inurdicators observed.  Inundation Visible on Aerial Imagery  Inundation Present?  Yes  No  Depth (inches):  Depth (inches):	Secondary Indicators (minimum of two requir Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) FAC-neutral Test (D5) Frost Heave Hummocks (D7) (LRR F)
emarks:  Phydric soil indicators observed.  Pydrology  Tetland Hydrology Indicators:  rimary 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)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Teld Observations:  Intrace Water Present?  Yes  No  Depth (inches):  Jeturation Present?  No  Depth (inches):  Depth (inches):  Depth (inches):  Depth (inches):  Depth	Secondary Indicators (minimum of two requir Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) FAC-neutral Test (D5) Frost Heave Hummocks (D7) (LRR F)
emarks:  hydric soil indicators observed.   ydrology  etland Hydrology Indicators:  rimary 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)  Inundation Visible on Aerial Imagery (B7)  Water Table (C2)  Water Water Present?  Yes  No  Depth (inches):  Inturation Present?  Yes  No  Depth (inches):  Inturation Present?  Presente of Reduced Iron  Other (Explain in Remarks)  Water-Indicators  Water Present?  Yes  No  Depth (inches):  Inturation Present?  Yes  No  Depth (inches):  Depth (inches):  Indicators observed.  Inturation Present?  Yes  No  Depth (inches):	Secondary Indicators (minimum of two requir Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2) FAC-neutral Test (D5) Frost Heave Hummocks (D7) (LRR F)

US Army Corps of Engineers Great Plains - Version 2.0

## WETLAND DETERMINATION DATA FORM - Great Plains Region

roject/Site: Rostad Ranch		City/County: M	eagher	Sampling Date: 27-Jun-16
pplicant/Owner: MDT			State: _	MT Sampling Point: DP-1W
vestigator(s): M. and T. Traxler		Section, Town	nship, Rang	e: S 12 T 8N R 11E
andform (hillslope, terrace, etc.): Lowland		Local relief (c	oncave, con	vex, none): concave Slope: 1.5%
bregion (LRR): LRR F	<b>Lat.:</b> 46.	.462577	ı	Long.: -110.294263
I Map Unit Name: Delpoint variant-Marmarth-Cabbart loa				NWI classification: Not Mapped
climatic/hydrologic conditions on the site typical for this		(	● No ○	(If no, explain in Remarks.)
	•			. ,
Are Vegetation, Soil, or Hydrology	significantly (			,
Are Vegetation, Soil, or Hydrology	naturally pro	blematic?	(If neede	ed, explain any answers in Remarks.)
ummary of Findings - Attach site map sl	nowing sa	mpling po	int locat	ions, transects, important features, e
ydrophytic Vegetation Present? Yes  No				
Hydric Soil Present? Yes No			ampled Area	
		within a	Wetland?	Yes ● No ○
Vetland Hydrology Present? Yes ♥ No ◯ Remarks:				
Formerly R1-w.				
· · · · · · · · · · · · · · · · · · ·				
<b>EGETATION - Use scientific names of pl</b>	ants	Dominant   Species? —	FWS Regio	on: -?-
(D		Rel.Strat. I	i.u.cuco.	Dominance Test worksheet:
Tree Stratum (Plot size: 30 Foot Radius )	% Cover	Cover S		Number of Dominant Species
1		H	7	That are OBL, FACW, or FAC: 2 (A)
2	0	H		Total Number of Dominant
4.		H	9	Species Across All Strata: (B)
		= Total Cove		Percent of dominant Species
Sapling/Shrub Stratum (Plot size: 15 Foot Radius )		- Total Cove	"   7	That Are OBL, FACW, or FAC: 100.0% (A/B)
1	0		P	revalence Index worksheet:
2	0			Total % Cover of: Multiply by:
	0		_	
3		Ш	01	BL species <u>10</u> x 1 = <u>10</u>
4.	0			BL species 10 x 1 = 10  ACW species 90 x 2 = 180
1	0		F	
<b>4.</b> 5.	0	= Total Cove	F.	ACW species 90 x 2 = 180
4	0 0		F / F / UI	ACW species 90 x 2 = 180  AC species 0 x 3 = 0
4. 5. Herb Stratum (Plot size: 5 Foot Radius ) 1. Carex nebrascensis	0 0 0	5.0%	Fr Fr UI	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris	0 0 0 0	5.0%	FA FA UI OBL CO	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  olumn Totals: 100 (A) 190 (B)
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus	0 0 0 0 5 5 60	5.0% 5.0% 60.0%	FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  olumn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris	0 0 0 5 5 60 30	5.0% 5.0% 60.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  ol umn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5. 6.	0 0 0 5 5 60 30 0	5.0%   5.0%   60.0%	FACW H	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  ol umn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  lydrophytic Vegetation Indicators:
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5.  6.  7.	5 5 60 30 0	5.0%   5.0%   60.0%   0.0%   0.0%   0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  ol umn Total s: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  lydrophytic Vegetation Indicators:  1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is > 50%
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5.  6.  7.  8.	5 5 60 30 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  Olumn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B/
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis 2. Eleocharis palustris 3. Juncus balticus 4. Poa palustris 5. 6. 7. 8. 9.	5 5 60 30 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  PL species 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B/A =
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis 2. Eleocharis palustris 3. Juncus balticus 4. Poa palustris 5. 6. 7. 8. 9.	5 5 60 30 0 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  Olumn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B/
4. 5.    Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis 2. Eleocharis palustris 3. Juncus balticus 4. Poa palustris 5. 6.   7.   8.   9.   10.	5 5 60 30 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  PL species 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B/A =
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5. 6. 7. 8. 9. 10.  Woody Vine Stratum (Plot size: 30 Foot Radius )	0 0 0 5 5 60 30 0 0 0 0 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  Ol umn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5. 6.  7. 8.  9. 10.  Woody Vine Stratum (Plot size: 30 Foot Radius )  1	0 0 0 5 5 60 30 0 0 0 0 0 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  PL species 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B/A =
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5.  6.  7.  8.  9.  10.  Woody Vine Stratum (Plot size: 30 Foot Radius )	0 0 0 5 5 60 30 0 0 0 0 0 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0%  Total Cove	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  Olumn Totals: 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Indrophytic Vegetation Indicators:  ✓ 1 - Rapid Test for Hydrophytic Vegetation ✓ 2 - Dominance Test is > 50% ✓ 3 - Prevalence Index is ≤ 3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  Problematic Hydrophytic Vegetation¹ (Explain)  ¹ Indicators of hydric soil and wetland hydrology must be present.
4. 5.  Herb Stratum (Plot size: 5 Foot Radius )  1. Carex nebrascensis  2. Eleocharis palustris  3. Juncus balticus  4. Poa palustris  5. 6.  7. 8. 9.  10.  Woody Vine Stratum (Plot size: 30 Foot Radius )  1	0 0 0 5 5 60 30 0 0 0 0 0 0	5.0% 5.0% 60.0% 30.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	FACW FACW FACW FACW FACW FACW FACW FACW	ACW species 90 x 2 = 180  AC species 0 x 3 = 0  ACU species 0 x 4 = 0  PL species 0 x 5 = 0  PL species 100 (A) 190 (B)  Prevalence Index = B/A = 1.9  Index = B/A =

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Soil Sampling Point: DP-1W

Depth (inches) 0-6 6-18	Color (moist) 10YR 3/1					rm the	absence of indicators.)
0-6		%	Color (moist)	ox Features % T	1	Loc2	Texture Remarks
		100	COIOI (IIIOISE)		<del>VDC</del>	LUC	Sandy Loam
0-10			10VD E/0			N/	<u> </u>
·	10YR 4/1	_ <del></del>	10YR 5/8		<u> </u>	M	Sandy Clay Loam
J.	•		ed Matrix, CS=Covere		Sand Grains	<sup>2</sup> Loca	ation: PL=Pore Lining. M=Matrix
		able to all LRF	Rs, unless otherwis				Indicators for Problematic Hydric Soils 3:
Histosol (A Histic Epipe	•		Sandy Gleyed Sandy Redox (				1 cm Muck (A9) (LRR I, J)
Black Histic			Stripped Matri	•			Coastal Prairie Redox (A16) (LRR F, G, H)  Dark Surface (S7) (LRR G)
=	Sulfide (A4)		Loamy Mucky				High Plains Depressions (F16)
	ayers (A5) (LRR F)		Loamy Gleyed				(LRR H outside of MLRA 72 and 73)
_	(A9) (LRR F,G,H)		Depleted Matr				Reduced Vertic (F18)
= .	Below Dark Surface (A	A11)	Redox Dark Su				Red Parent Material (TF2)
	Surface (A12)		Depleted Dark				Very Shallow Dark Surface (TF12)
	k Mineral (S1)	(LDD C 11)	Redox depress		<i>(</i> )		Other (Explain in Remarks)
	cky Peat or Peat (S2) by Peat or Peat (S3) (I		☐ High Plains De	and 73 of LR	•		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problemation
	•	LKK F)	(WILKA 72	anu 73 oi Ek	кк п)		nydrology must be present, unless disturbed or problematic
	yer (if present):						
Type:	`						Hydric Soil Present? Yes • No
Depth (inch	es):						,
Remarks:							
Redox features	s starting at 6 inch	es.					
I							
Hydrology	1						
	ology Indicators:						Secondary Indicators (minimum of two required)
•		f one required	l; check all that app	nlv)			Surface Soil Cracks (B6)
Surface Wa		TOTIO TOQUITOC	Salt Crust (E				Sparsely Vegetated Concave Surface (B8)
=	er Table (A2)		= .	rtebrates (B13	3)		✓ Drainage Patterns (B10)
Saturation	• •		_ ·	ilfide Odor (C´	•		Oxidized Rhizospheres on Living Roots (C3)
Water Mar				Mater Table ((			(where tilled)
	Deposits (B2)			zospheres on	•	is (C3)	Crayfish Burrows (C8)
	sits (B3)			not tilled)	3	( )	Saturation Visible on Aerial Imagery (C9)
□ Duit debo;	or Crust (B4)			Reduced Iron	(C4)		Geomorphic Position (D2)
			☐ Thin Muck S		()		FAC-neutral Test (D5)
Algal Mat o	n Visible on Aerial Im	agery (B7)		in in Remarks	:)		Frost Heave Hummocks (D7) (LRR F)
Algal Mat o	ined Leaves (B9)	-3-3( )	ott.or (Expire	rromano,	,		
Algal Mat of Iron Depos							
Algal Mat of Iron Depos	tions:		Donth (inc	nes):			
Algal Mat of Iron Deposition Inundation Water-State	V	s 🔾 No 🖲	Depth (inc				
Algal Mat of Iron Deposition Inundation Water-Stail	Present? Yes						
Algal Mat of Iron Deposition Iron Deposition Inundation Water-Stail  Field Observa Surface Water F Water Table Pre	Present? Yes	s○ No ●	Depth (inc			Wetla	and Hydrology Present? Yes   No
Algal Mat of Iron Deposition Inundation Water-Stail	Present? Yes esent? Yes	s○ No ●	Depth (inc			Wetla	and Hydrology Present? Yes   No
Algal Mat of Iron Deposition Iron Deposition Water-Stail  Field Observa  Surface Water F  Water Table Present Saturation Present Iron Present Iron Iron Present Iron Iron Present Iron Iron Iron Iron Iron Iron Iron Iron	Present? Yes esent? Yes ent? Yes ary fringe)	No •	Depth (inc	nes):	s inspection		,
Algal Mat of Iron Deposition Iron Deposition Inundation Water-Stail Water-Stail Water Table Presentation Prese (includes capillated Describe Recompany)	Present? Yes esent? Yes ent? Yes ary fringe)	No •	Depth (inc	nes):	s inspectio		,
Algal Mat of Iron Deposition Iron Deposition Water-Stail  Field Observa  Surface Water F  Water Table Present Saturation Present Iron Present Iron Iron Present Iron Iron Present Iron Iron Iron Iron Iron Iron Iron Iron	Present? Yes esent? Yes ent? Yes ary fringe)	No •	Depth (inc	nes):	s inspectio		,
Algal Mat of Iron Deposition Iron Deposition Inundation Water-Stail Field Observa Surface Water F Water Table Pressaturation Press (includes capillated Describe Recommendated Describe Recommendated Pressaturation Press (includes capillated Describe Recommendated Pressaturation Press (includes capillated Pressaturation Press (includes capillated Pressaturation Press (includes capillated Pressaturation Press (includes capillated Press (includes capill	Present? Yes esent? Yes ent? Yes ent? Yes orded Data (stream	No No No n gauge, mon	Depth (inc Depth (inc itor well, aerial pho	nes):tos, previou		ons), if	,

US Army Corps of Engineers Great Plains - Version 2.0

## WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch		c	ity/County:	Meagher		Samp	ling Date:	27-Jun-16	5
Applicant/Owner: MDT				State:	: <u>MT</u> <b>S</b>	ampling Point:		DP-2U	
Investigator(s): M. and T. Traxler			Section, To	wnship, Ra	nge: <b>S</b> 12	<b>T</b> _8N	<b>R</b> _11E		
Landform (hillslope, terrace, etc.):	Undulating		Local relief	(concave, o	convex, none): cor	nvex	Slope:	1.0%	<u>0.6</u> °
Subregion (LRR): LRR F		<b>Lat.:</b> 46.	458892		Long.: -110.294	915	Date	um: WGS	
Soil Map Unit Name: Delpoint variant	t-Marmarth-Cabbart Ioar				-	classification:			
re climatic/hydrologic conditions on				s • No C		ain in Remarks		:u	
Are Vegetation , Soil		significantly of			ormal Circumstan		., Yes ⊙	No C	)
Are Vegetation , Soil ,		naturally prob			eded, explain any a	-		••-	
Summary of Findings - At	_			-			-	eatures	s, etc.
Hydrophytic Vegetation Present?	Yes O No •				<u> </u>				
Hydric Soil Present?	Yes ○ No ●			Sampled A		`			
Wetland Hydrology Present?	Yes ○ No ●		withir	n a Wetland	<sub>I?</sub> Yes O No 🖲	<b>)</b>			
Remarks:									
Upland sample point. Formerly R2 disturbance to active sandhill crane  VEGETATION - Use scien	e nest nearby.		Dominant		was not completed	d in 2016 at thi	s point to	minimize	
			Species? Rel.Strat.	Indicator	Dominance Test	worksheet:			
Tree Stratum (Plot size: 30 Foot	t Radius )	% Cover		Status	Number of Domina	ant Species			
1			<u> </u>		That are OBL, FAC			0	(A)
2			Ц		Total Number of D	lominant			
			<u> </u>		Species Across All			2	(B)
4		0	Ш		Doroont of domi	t Cnoclos			
Sapling/Shrub Stratum (Plot size:	15 Foot Radius_)	0	= Total Co	ver	Percent of domine That Are OBL, FA		0.0	)%	(A/B)
1		0			Prevalence Index	x worksheet:			
2					Total % Co		Multiply by:		
3					OBL species			0	
4					FACW species		_	20	
5		0			FAC species		3 =	0	
		0	= Total Co	ver	FACU species	45 x		180	
Herb Stratum (Plot size: 5 Foot F	Radius )				UPL species		5 = _	225	
			45.0%	UPL	Column Totals		(A)	425	(B)
2. Pascopyrum smithii			40.0%	FACU					(6)
3. Poa palustris			10.0%	FACW	Prevalence	Index = B/A =	4.	25	
4. Poa pratensis 5.		5	5.0%	FACU	Hydrophytic Veg	etation Indicat	ors:		
6.			0.0%	- —	1 - Rapid Te	st for Hydroph	vtic Veget	ation	
7.			0.0%			ce Test is > 50			
8.			0.0%			ce Index is ≤3			
9.			0.0%			ogical Adaptati		:	
10.			0.0%		data in Re	ogicai Adaptati marks or on a :	ons (Prov separate s	iae suppo heet)	rting
		100	= Total Co	over	Problematic	Hydrophytic V	egetation <sup>1</sup>	(Explain)	)
_Woody Vine Stratum_ (Plot size:	30 Foot Radius )				1 Indicators of I	hydric soil and	wetland h	ydrology	must
1		0			be present.				
2		0							
		0	= Total Co	ver	Hydrophytic Vegetation				
% Bare Ground in Herb Stratum	0				Present?	Yes O No	lefton		
Remarks:					+				
Dominance Test is 0.00% and Prev	valence Index > 3.0								
	raierios mass > 0.0.								

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Soil Sampling Point: DP-2U

rofile Description: (Describe to the dep  Depth Matrix		ox Features			•	
(inches) Color (moist) %	Color (moist)		vpe 1 Lo	C <sup>2</sup>	Texture	Remarks
0-24 10YR 4/2 100					Sandy Clay Loam	
Type: $C=Concentration$ . $D=Depletion$ . $RM=I$	Reduced Matrix, CS=Covere	ed or Coated S	Sand Grains	<sup>2</sup> Locatio	on: PL=Pore Lining. M=N	Matrix
ydric Soil Indicators: (Applicable to al	I LRRs, unless otherwis	e noted.)			Indicators for Probl	ematic Hydric Soils <sup>3</sup> :
Histosol (A1)	Sandy Gleyed	Matrix S4			1 cm Muck (A9) (	LRR I, J)
Histic Epipedon (A2)	Sandy Redox (				Coastal Prairie Re	dox (A16) (LRR F, G, H)
Black Histic (A3)	Stripped Matrix				Dark Surface (S7)	` '
Hydrogen Sulfide (A4)	Loamy Mucky					
Stratified Layers (A5) (LRR F)  1 cm Muck (A9) (LRR F,G,H)	Loamy Gleyed					e of MLRA 72 and 73)
Depleted Below Dark Surface (A11)	☐ Depleted Matri ☐ Redox Dark Su				Reduced Vertic (F	•
Thick Dark Surface (A12)	Depleted Dark				Red Parent Mater	` '
Sandy Muck Mineral (S1)	Redox depress				Very Shallow Dar	
2.5 cm Mucky Peat or Peat (S2) (LRR G, F			6)		Other (Explain in	· ·
5 cm Mucky Peat or Peat (S3) (LRR F)	, — 3	and 73 of LF	,		hydrology must be pre	rtic vegetation and wetland sent, unless disturbed or problem
estrictive Layer (if present):	•		•		,	,
Type:						
туре.						
Donth (inches):				_	Hydric Soil Present?	Yes ○ No ●
Depth (inches):					Hydric Soil Present?	Yes ○ No ●
Depth (inches):emarks:					Hydric Soil Present?	Yes ○ No •
					Hydric Soil Present?	Yes ○ No ●
emarks:					Hydric Soil Present?	Yes ○ No •
emarks: Indicators observed.					Hydric Soil Present?	Yes ○ No ●
emarks: indicators observed.					Hydric Soil Present?	Yes ○ No •
emarks: indicators observed.  /drology etland Hydrology Indicators:					,	
emarks: o indicators observed.  ydrology etland Hydrology Indicators:	uired; check all that app	oly)			,	ators (minimum of two requir
emarks: indicators observed.  /drology etland Hydrology Indicators:	uired; check all that app				Secondary Indication	ators (minimum of two requir
emarks: Indicators observed.  Indicators observed.  Indicators observed.  Indicators observed.  Indicators observed.  Indicators observed.	Salt Crust (B		3)		Secondary Indic. Surface Soil Sparsely Ve	ators (minimum of two requir Cracks (B6)
emarks: indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one req  Surface Water (A1)	Salt Crust (B	11)	•		Secondary Indication Surface Soil Sparsely Ve Drainage Pa	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8)
emarks: indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one req  Surface Water (A1)  High Water Table (A2)	Salt Crust (B Aquatic Inve	11) rtebrates (B1	1)		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10)
emarks:  vindicators observed.  vdrology  etland Hydrology Indicators:  rimary Indicators (minimum of one req  Surface Water (A1)  High Water Table (A2)  Saturation (A3)	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season V	11) rtebrates (B1: ılfide Odor (C Water Table (	1)		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3)
emarks: indicators observed.  /drology etland Hydrology Indicators: imary Indicators (minimum of one reg  ] Surface Water (A1)  ] High Water Table (A2)  ] Saturation (A3)  ] Water Marks (B1)	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season \ Oxidized Rhi	11) rtebrates (B1: ılfide Odor (C Water Table (	1) C2)		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where	ators (minimum of two require Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) etilled)
emarks: indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one req    Surface Water (A1)   High Water Table (A2)   Saturation (A3)   Water Marks (B1)   Sediment Deposits (B2)	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season V Oxidized Rhi (where	11) rtebrates (B1 ulfide Odor (C Water Table ( zospheres on	1) C2) Living Roots		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N	ators (minimum of two requirements (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) etilled) rows (C8)
emarks: indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one reg    Surface Water (A1)   High Water Table (A2)   Saturation (A3)   Water Marks (B1)   Sediment Deposits (B2)   Drift deposits (B3)	Salt Crust (B Aquatic Inve Hydrogen St Dry Season V Oxidized Rhi (where to	11) rtebrates (B1 ilfide Odor (C Water Table (i zospheres on not tilled) Reduced Iron	1) C2) Living Roots		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) disible on Aerial Imagery (C9)
emarks: indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one reg    Surface Water (A1)   High Water Table (A2)   Saturation (A3)   Water Marks (B1)   Sediment Deposits (B2)   Drift deposits (B3)   Algal Mat or Crust (B4)	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season N Oxidized Rhi (where I Presence of Thin Muck Si	ntebrates (B1: Iffide Odor (C Water Table (c zospheres on not tilled) Reduced Iron urface (C7)	1) C2) Living Roots (C4)		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) disible on Aerial Imagery (C9)
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emarks: indicators observed.  /drology etland Hydrology Indicators: rimary Indicators (minimum of one req    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)   Inundation Visible on Aerial Imagery (B7)   Water-Stained Leaves (B9)  eld Observations:	Salt Crust (B Aquatic Inve Hydrogen St Oxidized Rhi (where to Presence of Thin Muck St Other (Expla	ntebrates (B1: ulfide Odor (C Water Table (c zospheres on not tilled) Reduced Iron urface (C7) in in Remarks	1) C2) Living Roots (C4)		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral	ators (minimum of two require Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) etilled) rows (C8) fisible on Aerial Imagery (C9) Position (D2) Test (D5)
emarks:  o indicators observed.  ydrology  Yetland Hydrology Indicators: rimary Indicators (minimum of one reg  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)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Yes N	Salt Crust (B Aquatic Inve Hydrogen St Dry Season V Oxidized Rhi (where I Presence of Thin Muck SI Other (Expla	ntebrates (B1: ulfide Odor (C Water Table (c zospheres on not tilled) Reduced Iron urface (C7) in in Remarks	1) C2) Living Roots (C4)		Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) fisible on Aerial Imagery (C9) Position (D2) Test (D5)
emarks:  o indicators observed.  ydrology  Yetland Hydrology Indicators: rimary Indicators (minimum of one reg  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)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Yes N	Salt Crust (B Aquatic Inve Hydrogen St Oxidized Rhi (where to Presence of Thin Muck St Other (Expla	ntebrates (B1: Iffide Odor (C Water Table ( zospheres on not tilled) Reduced Iron urface (C7) in in Remarks	1) C2) Living Roots (C4)	(C3)	Secondary Indic. Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral Frost Heave	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) l'isible on Aerial Imagery (C9) Position (D2) Test (D5) Hummocks (D7) (LRR F)
remarks:  o indicators observed.  purply  purp	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season \ Oxidized Rhi (where I Presence of Thin Muck Si Other (Expla	ntebrates (B1: Iffide Odor (C Water Table (c zospheres on not tilled) Reduced Iron urface (C7) in in Remarks hes):	1) C2) Living Roots (C4)	(C3)	Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral	ators (minimum of two require Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) etilled) rows (C8) fisible on Aerial Imagery (C9) Position (D2) Test (D5)
remarks:  o indicators observed.  purply  purp	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season ( Oxidized Rhi (where I Presence of Thin Muck Si Other (Expla	ntebrates (B1: Iffide Odor (C Water Table ( zospheres on not tilled) Reduced Iron urface (C7) in in Remarks hes): hes):	1) C2) Living Roots (C4)	(C3)	Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral Frost Heave	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) l'isible on Aerial Imagery (C9) Position (D2) Test (D5) Hummocks (D7) (LRR F)
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emarks:  o indicators observed.  ydrology  Yetland Hydrology Indicators: rimary Indicators (minimum of one reg  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)  Inundation Visible on Aerial Imagery (B7)  Water-Stained Leaves (B9)  Yet Observations: Urface Water Present?  Yes Naturation Present?	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season ( Oxidized Rhi (where I Presence of Thin Muck Si Other (Expla	ntebrates (B1: Iffide Odor (C Water Table ( zospheres on not tilled) Reduced Iron urface (C7) in in Remarks hes): hes):	1) C2) Living Roots (C4)	(C3)	Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral Frost Heave	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) l'isible on Aerial Imagery (C9) Position (D2) Test (D5) Hummocks (D7) (LRR F)
emarks:  prindicators observed.  primary Indicators (minimum of one required with the property of the property	Salt Crust (B Aquatic Inve Hydrogen Su Dry Season ( Oxidized Rhi (where I Presence of Thin Muck Si Other (Expla	ntebrates (B1: Iffide Odor (C Water Table ( zospheres on not tilled) Reduced Iron urface (C7) in in Remarks hes): hes):	1) C2) Living Roots (C4)	(C3)	Secondary Indication Surface Soil Sparsely Ve Drainage Pa Oxidized Rh (where Crayfish But Saturation N Geomorphic FAC-neutral Frost Heave	ators (minimum of two requir Cracks (B6) getated Concave Surface (B8) tterns (B10) izospheres on Living Roots (C3) e tilled) rows (C8) l'isible on Aerial Imagery (C9) Position (D2) Test (D5) Hummocks (D7) (LRR F)

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## WETLAND DETERMINATION DATA FORM - Great Plains Region

Investigator(s): M. and T. Traxler  Landform (hillslope, terrace, etc.): Swale  Local relief (concave, convex, none): concave  Slope: 1  Subregion (LRR): LRR F  Lat.: 46.459122  Long.: -110.295368  Datum  Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes  Are climatic/hydrologic conditions on the site typical for this time of year?  Yes No (If no, explain in Remarks.)	2-2W 5%0.9 ° : WGS_19
Landform (hillslope, terrace, etc.): Swale  Local relief (concave, convex, none): concave  Slope: 1  Subregion (LRR): LRR F  Lat.: 46.459122  Long.: -110.295368  Datum  Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes  re 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 Are Vegetation , Soil , or Hydrology naturally problematic?  (If needed, explain any answers in Remarks.)	:_WGS_19
Subregion (LRR): LRR F  Lat.: 46.459122  Long.: -110.295368  Datum  Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes  re climatic/hydrologic conditions on the site typical for this time of year?  Are Vegetation , Soil , or Hydrology significantly disturbed?  Are "Normal Circumstances" present?  Yes  Are "Normal Circumstances" present?  Yes  (If needed, explain any answers in Remarks.)	:_WGS_19
Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes  re climatic/hydrologic conditions on the site typical for this time of year?  Are Vegetation , Soil , or Hydrology significantly disturbed?  Are Vegetation , Soil , or Hydrology naturally problematic?  (If needed, explain any answers in Remarks.)	:_WGS_19
Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes  re climatic/hydrologic conditions on the site typical for this time of year?  Are Vegetation , Soil , or Hydrology significantly disturbed?  Are Vegetation , Soil , or Hydrology naturally problematic?  Are Vegetation , Soil , or Hydrology naturally problematic?  (If needed, explain any answers in Remarks.)	
e climatic/hydrologic conditions on the site typical for this time of year?  Are Vegetation , Soil , or Hydrology significantly disturbed?  Are Vegetation , Soil , or Hydrology naturally problematic?  Are Vegetation , Soil , or Hydrology naturally problematic?  (If needed, explain any answers in Remarks.)	No O
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes  Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)	No O
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)	NO C
(2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	
Summany of Findings - Attach site man showing sampling point locations, transects, important fea	
summary of Findings - Actach site map showing sampling point locations, transects, important lea	tures, etc.
Hydrophytic Vegetation Present? Yes No Is the Sampled Area	
Hydric Soil Present?  Yes  No  within a Wetland? Yes  No  Wes  No  Wes  No  No  Wes  No  No  Wes  No	
Wetland Hydrology Present? Yes   No   No   Within a Wetland? 163 © No   Within a Wetland?	
Remarks:	
Formerly R2-w. Data is same as 2015 data point. Detailed investigation was not completed in 2016 at this point to minimize disturbance to sandhill crane nest nearby.	active
VEGETATION - Use scientific names of plants  Dominant Species?  FWS Region: GP	
Absolute Rel.Strat. Indicator Dominance Test worksheet:	
Number of Dominant Species	(4)
That are obligation in the state of the stat	(A)
Total Number of Dominant	(5)
4. Species Across All Strata: 1	(B)
0 = Total Cover Percent of dominant Species	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius ) That Are OBL, FACW, or FAC: 100.05	<u>%</u> (A/B)
1	
2	
3. OBL species $10 \times 1 = 1$	0
$\frac{4}{2}$ FACW species $\frac{90}{2}$ x 2 = $\frac{18}{2}$	30
5. FAC species $0 \times 3 = 0$	)
$\frac{0}{-} = \text{Total Cover}$ FACU species $\frac{0}{-} \times 4 = \frac{0}{-}$	)
Herb Stratum (Plot size: 5 Foot Radius )  UPL species 0 x 5 = (	)
1. Alopecurus pratensis       10       10.0%       FACW         2. Carex nebrascensis       10       10.0%       OBL     Col umn Total s: 100 (A) 16	90 <b>(B)</b>
2. Carex nebrascensis  10	
4.	
5. Hydrophytic Vegetation Indicators:	
6. 0 0 1 - Rapid Test for Hydrophytic Vegetation	on
7. 0 0 0.0% 2 - Dominance Test is > 50%	
8	
9. 0 0.0% 4 - Morphological Adaptations (Provide data in Remarks or on a separate sheep	supporting
	,
= Total Cover	xplain)
Woody Vine Stratum (Plot size: 30 Foot Radius )  1 Indicators of hydric soil and wetland hydbe present.	rology must
1	
2	
0 = Total Cover Hydrophytic Vegetation	
% Bare Ground in Herb Stratum 0 Present? Yes No	
l	
Remarks:	

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Soil Sampling Point: DP-2W

		=				nfirm the	absence of indicators.)	
Depth (inches)	Matri Color (moist		Color (moist)	lox Feat	ures Tvpe <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-4	10YR 2/1		COIOI (IIIOISE)		1100	LUC	Sandy Clay Loam	Remarks
			10VD F//	15				
4-20	10YR 2/1	85	10YR 5/6	15		M	Sandy Clay Loam	
	-							
1Type: C=Cc	oncentration D=Den	letion RM=Rec	luced Matrix, CS=Covere	ed or Coa	— ——— ted Sand Gra	ins 21 oca	ation: PL=Pore Lining. M=Mat	rix
J.	·		RRs, unless otherwis				Indicators for Problem	
Histosol			Sandy Gleyed				1 cm Muck (A9) (LRI	•
Histic Ep	ipedon (A2)		Sandy Redox				= ' ' ' '	x (A16) (LRR F, G, H)
Black His			Stripped Matri				Dark Surface (S7) (L	•
_ , ,	n Sulfide (A4)		Loamy Mucky				High Plains Depressi	• •
	l Layers (A5) (LRR F) ck (A9) (LRR F,G,H)		Loamy Gleyed  Depleted Matr		2)			of MLRA 72 and 73)
$\equiv$	Below Dark Surface	(A11)	Redox Dark Su	` '	)		Reduced Vertic (F18)	
	rk Surface (A12)	` ,	Depleted Dark	•	•		Red Parent Material Very Shallow Dark S	, ,
Sandy M	uck Mineral (S1)		Redox depress	sions (F8)			Other (Explain in Re	, ,
2.5 cm N	Mucky Peat or Peat (S	S2) (LRR G, H)	High Plains De	pressions	s (F16)		<sup>3</sup> Indicators of hydrophytic	•
5 cm Mu	cky Peat or Peat (S3)	) (LRR F)	(MLRA 72	and 73 (	of LRR H)			it, unless disturbed or problematic.
Restrictive I	Layer (if present):							
Type: _								
Depth (in	ches):						Hydric Soil Present?	Yes   No
Remarks:								
Hydric soil ir	ndicators noted - re	edox features	at 4 inches.					
İ								
Hydrolog	11/							
	-						0 1 1 1 1	, , , , , , , , , , , , , , , , , , ,
-	drology Indicators		معاد ماممار ماا فاممة معا	-1. \				rs (minimum of two required)
		or one requir	ed; check all that app Salt Crust (E				Surface Soil Cr	` ,
_	Water (A1) ater Table (A2)		Aguatic Inve	,	(D12)			ated Concave Surface (B8)
✓ Fign wa	` ,		Hydrogen Si		` '		✓ Drainage Patte	rns (B10) spheres on Living Roots (C3)
	larks (B1)		Dry Season					
	nt Deposits (B2)				s on Living R	nots (C3)	(where ti Crayfish Burrov	•
	posits (B3)			not tilled	-	0013 (00)		ole on Aerial Imagery (C9)
	at or Crust (B4)		Presence of		-		Geomorphic Po	0 3 . ,
_ `	posits (B5)		☐ Thin Muck S				FAC-neutral Te	, ,
	ion Visible on Aerial	Imagery (B7)	Other (Expla		•			ummocks (D7) (LRR F)
	tained Leaves (B9)	3, 3, ,	oe. (2xp.c					
Field Observ								
Surface Wate		es O No	<ul><li>Depth (inc</li></ul>	hes):				
Water Table I	Present? Y	es 💿 No	Depth (inc	has).	2			
Saturation Pro		es • No				Wetla	and Hydrology Present?	Yes   No
(includes cap	. Y	es 🔍 No	Depth (inc	hes):	0			
Describe Re	ecorded Data (stre	am gauge, mo	onitor well, aerial pho	tos, pre	vious inspe	ctions), if	available:	
Remarks:								

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#### MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Rostad Ran	ch 2. MDT Project #: STPX-0	0002(749) 3. Control #: <u>556</u>	<u>5</u>	
3. Evaluation Date: 6/27/2016	4. Evaluator(s): M&T Traxle	er 5. Wetland/Site #(s): Rosta	ad Ranch - created and existing	wetland
6. Wetland Location(s): Tow	nship <u>8 N</u> , Range <u>11 E</u> , Sectior	n <u>12;</u> Township <u>8 N</u> , Range <u>11</u>	E, Section <u>13</u>	
Approximate Stationing of	Roadposts:			
Watershed: 10 - Musselsh	ell County: Meagher	<u> </u>		
7. Evaluating Agency: RESP Purpose of Evaluation:  Wetland potentially af Mitigation wetlands; p Other Other	fected by MDT project pre-construction	9. Assessment Area	(AA) Size (acre): (visually estimated)  (AA) Size (acre): (visually estimated)  (AA) Size (acre): (visually estimated)	
10. CLASSIFICATION OF WE	TLAND AND AQUATIC HABI	TATS IN AA (See manual for de	efinitions.)	
HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Slope	Emergent Wetland	Excavated	Seasonal / Intermittent	78
Slope	Scrub-Shrub Wetland		Seasonal / Intermittent	2
Depressional	Unconsolidated Bottom	Excavated	Seasonal / Intermittent	6

Comments:

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.) common

**Emergent Wetland** 

12. GENERAL CONDITION OF AA

Depressional

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species lists.

Excavated

Seasonal / Intermittent

14

	Predominar	redominant Conditions Adjacent to (within 500 feet of) AA							
Conditions within 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%.									
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							
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%.									

Comments (types of disturbance, intensity, season, etc.): The wetland mitigation site was constructed in Fall 2012/Spring 2013. Extensive excavation occurred to create depressional areas and spread out water across the site. Site was revegetated Fall 2012/Spring 2013 with good growth observed during the first growing season (2013) following construction activities. Significant increases in vegetative growth were observed in 2014 and 2015 since the 2013 monitoring effort. Decreased disturbance from cultivation, grazing, and construction since 2013 led to moderate disturbance rating in 2016.

- ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Spotted knapweed, Canada thistle, houndstongue, hoary alyssum, field bindweed, common tansy
- iii. Provide brief descriptive summary of AA and surrounding land use/habitat: The AA is a historically drained wetland area/meadow that was heavily grazed by cattle. A drainage ditch bisected the property prior to wetland mitigation construction. Existing wetlands were expanded through construction activities with emergent and scrub-shrub wetland communities present. Surrounding land use includes transportation (county road, historic railroad berm), agriculture (hay production and cattle grazing), and the South Fork of the Musselshell River located to the north of the mitigation site.
- 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 peristence of additional		Modified Rating
3 (or 2 if one is forested) classes		NA	NA	NA
2 (or 1 if forested) classes	mod	NA	NA	NA
1 class, but not a monoculture		←NO	YES→	
1 class, monoculture (1 species comprises 90% of total cover)		NA	NA	NA

Comments: Emergent and scrub-shrub vegetation classes

Wetland/Site #(s): Rostad Ranch - created and existing wetland

<ul> <li>i. AA is Documented (D) or Primary or critical habitat (Ii Secondary habitat (Iist spe Incidental habitat (Iist spec No usable habitat</li> <li>ii. Rating: Based on the stror</li> </ul>	st species)	cies)			]								l noint	and ra	ating					
Highest Habitat Level	Doc/F				rimary		c/Sec				condar			nciden		Sus/	Incide	ntal	None	
Functional Point/Rating			, ,					onaa		-		,	D00/11		itu.	Ous		iitai	0L	
Sources for documented us			vation	s rec	ords).	USEV	VS list	for M	eaghe	r Cour	ntv. no l	nahit	at spe	cificati	ons pr	esent	for sp	ecies		
documented occurences.  14B. HABITAT FOR PLANT: Do not include species	S OR A	ANIM <i>A</i>	ALS R	ATEC	·													90.00	<u>~</u>	
AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.  Primary or critical habitat (list species)																				
	DUCH	Primary Sus/Primary Doc/Secondary Sus/Secondary Doc/Incidental Sus/Incidental None																		
Functional Point/Rating S2 and S3 Species	-																			
Functional Point/Rating	.9	9H																		
Sources for documented us of curlew/plover	<b>e</b> (e.g.	obser	vation	s, red	ords):	Obse	rvation	s of E	Oownir	ngia la	eta in w	etlar	nd duri	ing 20′	13-201	5 site	visits;	past	observa	ations
i. Evidence of Overall Wildli  □ Substantial: Based on an □ observations of abunda □ abundant wildlife sign s □ presence of extremely l □ interview with local biolo  ☑ Moderate: Based on any o ☑ observations of scatter □ common occurrence of ☑ adequate adjacent upla □ interview with local biolo ii. Wildlife Habitat Features: For class cover to be consider percent composition of the AAS/I = seasonal/intermittent; T/I  Structural Diversity (see #13)	y of the ant wild such as limiting ogist work if the freed wildlife and food ogist work if work if the devent (see #	e followilife #s scat, habita ith knowing for sour ith knowing from the following from th	wing [c or hig tracks at feati owledg ng [che oups o such a ces owledg m top stribute Abbrev	heck h spe in resures in ge of the eck]. r indivision ge of the to bo ed, the viation	l. ecies d t struct not ava the AA viduals at, tract the AA ttom, c ne mos ns for :	iversit tures, ailable s or rel ks, nes check a	y (during game in the attively st struct appropries to protect protection)	ng an trails, surro few s tures oriate revaler	y periodetc. unding species, gam  AA attent <b>ve</b> ations	od) g area s durir e trails ributes getate are as	mg peaks, etc.	nima few little spar inter peri rix to es m : P/F	al: Bas or no v to no v se adj view v  ods  o arrive nust be e = per	sed on wildlife wildlife acent u vith loc e at rat e withir maner t these	any of observersign upland cal biolo ting. So 1 20% nt/pere	vatior food ogist structuof eacennial	source with kr ural div ch othe	ng pea	ak use  lge of A  is from  erms of	#13.
Class Cover Distribution (all vegetated classes)		□Е	ven			☐ Un	even			□ E	ven			⊠ Un	even			□ E	ven	
Duration of Surface	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α
Water in ≥ 10% of AA		٥,.			• "	٥,.	.,_		• /-	0/1	.,_		• "	0/1	-/-		- ''			
□ Low Disturbance at AA (see #12i)																				
														М						
☐ High Disturbance at AA (see #12i)																				
ii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.																				
Evidence of Wildlife Use Wildlife Habitat Features Rating (ii)																				
(i)		Exc	eptio	nal	1		High				derate			☐ Lo	w					
☐ Substantial											 - N /					4				
					-					.5	5M					-				

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS OR ANIMALS

Comments: Site appears to be getting use by white-tailed deer and numerous bird species. Active Sandhill Crane nest observed in wetlands in 2016.

									Wetla	nd/Sit	e #(s):	Rostac	l Rand	ch - cr	eated a	and ex	isting v	wetlan	<u>d</u>	
If the AA	AL FISH HABIT A is not used by the is not used in a canal, the is not used by the is not used by the is not used in a canal, the is not used	fish, fis	sh use		restora	able di	ue to h		const	raints	, or is n	ot desi	ired fr	om a r	manag	ement	perspe	ective	[such	as fish
	this function if the					e exist	ting sit	uation	is "co	orrecta	able" su	ch that	t the A	A cou	ld be ι	used by	/ fish [	i.e., fis	h use	is
Type of	Fishery: Co	old Wa	ter (C	<b>W</b> ) [	] War	m Wat	ter ( <b>W</b>	W) U	se the	CW o	or WW	guideli	nes in	the m	anual t	o comp	lete th	e matı	ix.	
	lity and Knowr	n / Sus	specte	d Fish	Spec	ies in	AA:	Jse m	atrix t	o sele	ct the f	unction	al poi	nt and	l rating					1
Duration of S Water in AA	Surface	□ P	erman	ent / P	erenn	ial		□s	easo	nal / lı	ntermit	tent		□ 1	empo	rary / I	Ephen	neral		
Aquatic Hidi Escape Cove	ng / Resting / er	Opt	imal	Adeq	uate	Po	oor	Opt	imal	Ade	quate	Po	or	Op	imal	Aded	uate	Po	oor	
Thermal Cov optimal / su	-	0	s	0	s	0	s	0	s	0	S	0	s	0	S	0	s	0	s	
FWP Tier I fis	sh species																			
FWP Tier II of Game fish sp																				
	or Introduced																			
FWP Non-Ga No fish speci	ame Tier IV or es																			
	for identifying	fish s	pp. po	otentia	lly fou	ınd in	AA:						ı	H						3
ii. Modified R	ating: NOTE: N	Modifie	d scor	e cann	ot exc	eed 1.	.0 or b	e less	than	0.1.										
MDEQ list of w	f the AA signific vaterbodies in ne aquatic nuisanc	ed of	<b>TMDL</b>	develo	pmen	t with	listed	"Proba	ble In	npaire	d Uses	" includ	ding c	old or	warm ı	water f	ishery	or aqu	ıatic li	fe
	A contain a docu ntroduced game											nctuary	pool,	upwe	lling ar	rea; sp	ecify in	n comi	nents,	) for
iii. Final Scor	e and Rating: _	Com	ment	s: <u>No p</u>	erenn	ially flo	owing	water	within	AA fo	r fish h	abitat.								
Applies	ATTENUATION only to wetlands in AA are not	that a	re sub		floodii	ng via	in-cha					and pro	ceed	to 14F	÷.					
	t Ratio (ER) Est idth = estimated																		e of th	e stream.
	/	=		_					4	Ø.							B	ge <sup>c</sup>		
flood prone wid	dth / bankfull wic	dth = e	ntrenc	hment	ratio		2 >	k Bank	full De	epth	He V	We W	al Valv	<u> </u>		News In	rill -	lood-p cfull W		/idth
											В	ankfull	Depth	A.so						
	Slightly Entr		d			Mod	lerate	ly Ent 1.41 –		ed					renche					

S	Slightly Entrenche ER 2.2	ed	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

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Estimated or Calculated Entrenchment	☐ SI	ightly Entrer	☐ Entrenched								
(Rosgen 1994, 1996)	C, D, E stream types B stream type							A, F, G stream types			
Percent 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											
AA contains unrestricted outlet											

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? 

YES 

NO Comments: No flooding occurs via in-channel or overbank flow.

			Wetla	and/Site #	(s): Rost	ad Ranc	:h - create	d and ex	isting we	etland				
14F. SHORT AND LONG TERM SURFAC Applies to wetlands that flood or pond If no wetlands in the AA are subject to	from overbank	or in-chan	nel flow, p		n, uplano			groundwa	ater flow					
<ul> <li>Rating: Working from top to bottom, use follows: P/P = permanent/perennial; S/I =</li> </ul>														
Estimated Maximum Acre Feet of W in Wetlands within the AA that are s Periodic Flooding or Ponding	ater Contained		>5 acre f			to 5 ac			≤1 acre t					
Duration of Surface Water at Wetlands	s within the AA	□ P/P	□ S/I	□ <b>T/E</b>	□ P/P	⊠ S/I	□ T/E	□ P/P	□ S/I	□ T/E				
Wetlands in AA flood or pond ≥ 5 out of	10 years					.6M								
Wetlands in AA flood or pond < 5 out of	Wetlands in AA flood or pond < 5 out of 10 years													
Comments: Depressional area and portion (6.7 acres x 0.5 foot = 3.35 acre feet).	s of slope wetlar	nds mainta	ain water s	seasonally	//intermitt	ently. A	pproximat	ely 6.7 a	cres inu	ndated to	).5 foot			
•	eceive sediments o such input, che	s, nutrients eck the NA	s, or toxica A box and	ants throu proceed t	o 14H.	of surfac		nd water	or direc	t input.				
Sediment, Nutrient, and Toxicant Input Levels within AA														
% Cover of Wetland Vegetation in AA	⊠ ≥ 70%	<b>6</b>	□ < 7	70%		<b>□</b> ≥ 70	)%		□ <	70%				
Evidence of Flooding / Ponding in AA	⊠ Yes [	☐ No	☐ Yes	☐ No	Y	es	☐ No		Yes	☐ No				
AA contains no or restricted outlet	1H													
AA contains unrestricted outlet														
Comments: More than 80 percent of the notate as a constructed overflow channel.	on-open water ai	ea is cove	ered with v	vetland ve	egetation.	A restr	cted outle	t is locat	ed on th	e depressi	onal area			
14H. SEDIMENT / SHORELINE STABILIZ Applies only if AA occurs on or within body which is subject to wave action.	the banks of a		proceed to am, or othe		or man-n	nade dra	ainage, or	on the sl	noreline	of a stand	ng water			

14H.	SE	DIME	NT.	/ SHORE	LINE STABILIZ	ATI	ON		L	J <b>NA</b> (pi	roceed to	14I)
					1.1 1							

If 14H does not apply, check the NA box and proceed to 14I.

% Cover of Wetland Streambank or Shoreline by Species with Stability	Duration of S	urface Water Adjacent to Roo	ted Vegetation
Ratings of 6 (see Appendix F).	☐ Permanent / Perennial	Seasonal / Intermittent	☐ Temporary / Ephemeral
⊠ ≥ 65%		.9H	
□ 35-64%			
☐ < 35%			

Comments: AA supports open water areas subject to wave action.

#### 14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating	Genera	I Wildlife Habitat Rati	ng (14Ciii)
(14Diii)	☐ E/H	oxtimes M	
☐ E/H			
L			
⊠ NA		M	

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

Α	$\boxtimes$	Vegeta	ited Co	mponent	t >5 ac	res		Vegeta	ated Co	mponent	1-5 ac	res		Veget	ated Co	mponen	t <1 acr	e
В	_ _	ligh	⊠ M	oderate		Low	_ _	ligh	□ Mc	derate		Low	_ 	ligh	☐ Mo	derate		.ow
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P																		
S/I			.7M															
T/E/A																		

			Wetlar	nd/Site #(	s): Rostad Ra	nch - created	and exist	ing wetland	
14I. PRODUCTION EXPORT / FOOD C	CHAIN S	SUPPORT (con	tinued)						
iii. Modified Rating: Note: Modified sc	ore can	not exceed 1.0	or be less that	n 0.1.					
<b>Vegetated Upland Buffer:</b> Area wit mowing or clearing (unless for weed Is there an average 50-foot wide v	control	).					•	·	
iv. Final Score and Rating: $\underline{.8H}$ Com	ments	Moderate biolo	ogial activity; n	o fish ha	bitat; vegetativ	re component	>5 acres	with a upland	l buffer.
14J. GROUNDWATER DISCHARGE / Check the appropriate indicators i		_							
i. Discharge Indicators  The AA is a slope wetland.  Springs or seeps are known  Vegetation growing during of Wetland occurs at the toe of Seeps are present at the work AA permanently flooded during Wetland contains an outlet,  Shallow water table and the Other:	dorman of a natu etland e ring dro but no	t season/drough Iral slope. edge. Iught periods. inlet.	nt.	□ P€ □ W □ St	arge Indicato ermeable subs etland contain ream is a know her:	trate present v s inlet but no d	outlet.	, , ,	0 ,
iii. Rating: Use the information from i a	nd ii ab	ove and the tab	ole below to se	lect the f	unctional point	and rating.			
			Saturation at A						Ī
- · ·			ATER THAT I			<u>GROUNDWA</u>			
Criteria		☐ P/P 🔲 S/					☐ None		
☐ Groundwater Discharge or Recharge or Re	arge		.7M						
Comments: Seasonal water regime with	nin AA								<u> </u>
14K. UNIQUENESS									
i. Rating: Working from top to bottom,	use the	matrix below to	select the fun	ctional p	oint and rating				
Replacement Potential	spring forest	ontains fen, bo gs or mature (; ted wetland OF ciation listed as TNHP	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	e Common	□ Abundant	□ Rare	☐ Common	☐ Abundant	□ Rare		☐ Abundant
Low Disturbance at AA (#12i)									
Moderate Disturbance at AA (#12i)								.3L	
High Disturbance at AA (#12i)									
14L. RECREATION / EDUCATION PO' Affords 'bonus' points if AA provide i. Is the AA a known or potential recre ii. Check categories that apply to the	es a rec eationa	reational or edu	al site? ⊠ YE	tunity. <b>ES</b> , go to	ii. 🔲 <b>NO</b> , ch	neck the NA bo	ox.	sumptive recr	eational
22. Bathan Haadhanashinkalanda ada		Other:			-			-	

iii. Rating: Use the matrix below to select the functional point and rating.		
Known or Potential Recreational or Educational Area	Known	Potential
Public ownership or public easement with general public access (no permission required)		
Private ownership with general public access (no permission required)		
Private or public ownership without general public access, or requiring permission for public access		.05L

Comments: Currently no recreation/education occurs at the site.

15. **GENERAL SITE NOTES:** A supplemental hydrology source was identified in 2014 -2016 during the site visits. Water is entering the site along the southern boundary from the ditch located upslope. This additional hydrology has resulting in minor increased wetland acreage in 2015/2016.

## Wetland/Site #(s): Rostad Ranch - created and existing wetland

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	low 0.00	1.00	0	
B. MT Natural Heritage Program Species Habitat	high 0.90	1.00	13.41	*
C. General Wildlife Habitat	mod 0.50	1.00	7.45	
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	NA	NA	0	
F. Short and Long Term Surface Water Storage	mod 0.60	1.00	8.94	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	14.9	*
H. Sediment / Shoreline Stabilization	high 0.90	1.00	13.41	*
I. Production Export / Food Chain Support	high 0.80	1.00	11.92	*
J. Groundwater Discharge / Recharge	mod 0.70	1.00	10.43	
K. Uniqueness	low 0.30	1.00	4.47	
L. Recreation / Education Potential (bonus point)	low 0.05		0.745	
Total Points	5.75	9	86.02 Total	Functional Units
Percent of Possible	e Score 64% (round	I to nearest whol	e number)	

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 IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if not 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 (AA) RATING: Check the appropriate category based on the criteria outlined above.

# APPENDIX C PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring Rostad Ranch Mitigation Site Meagher County, Montana



Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2013



Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2014

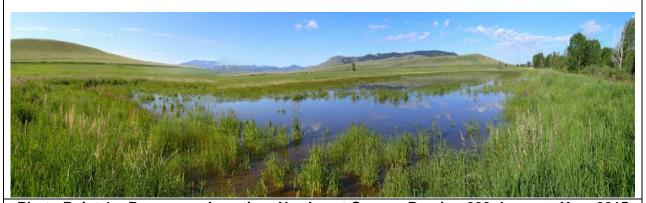


Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2015



Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2016



Photo Point 2 – Panorama; Location: East Fence Corner; Bearing 125 degrees; Year 2013



Photo Point 2 – Panorama; Location: East Fence Corner; Bearing 125 degrees; Year 2014



Photo Point 2 – Panorama; Location: East Fence Corner; Bearing 125 degrees; Year 2015



Photo Point 2 - Panorama; Location: East Fence Corner; Bearing 125 degrees; Year 2016



Photo Point 3 – Panorama; Location: East Fence Line; Bearing 280 degrees; Year 2013



Photo Point 3 – Panorama; Location: East Fence Line; Bearing 280 degrees; Year 2014



Photo Point 3 – Panorama; Location: East Fence Line; Bearing 280 degrees; Year 2015



Photo Point 3 – Panorama; Location: East Fence Line; Bearing 280 degrees; Year 2016



Photo Point 4 – Panorama; Location: SE Fence Corner; Bearing 240 degrees; Year 2013



Photo Point 4 – Panorama; Location: SE Fence Corner; Bearing 240 degrees; Year 2014



Photo Point 4 – Panorama; Location: SE Fence Corner; Bearing 240 degrees; Year 2015



Photo Point 4 – Panorama; Location: SE Fence Corner; Bearing 240 degrees; Year 2016



Photo Point 5 – Panorama; Location: SW Fence Corner; Bearing 200 degrees; Year 2013



Photo Point 5 – Panorama; Location: SW Fence Corner; Bearing 200 degrees; Year 2014



Photo Point 5 – Panorama; Location: SW Fence Corner; Bearing 200 degrees; Year 2015



Photo Point 5 - Panorama; Location: SW Fence Corner; Bearing 200 degrees; Year 2016





Photo Point 6 Bearing 100 degrees

Location: West Fence Line Year 2013



Photo Point 6 Bearing 100 degrees

Location: West Fence Line Year 2014



Photo Point 6
Bearing 100 degrees

Location: West Fence Line Year 2015



Photo Point 6
Bearing 100 degrees

Location: West Fence Line Year 2016



Photo Point 7 – Panorama; Location: West Fence Corner; Bearing 90 degrees; Year 2013



Photo Point 7 – Panorama; Location: West Fence Corner; Bearing 90 degrees; Year 2014

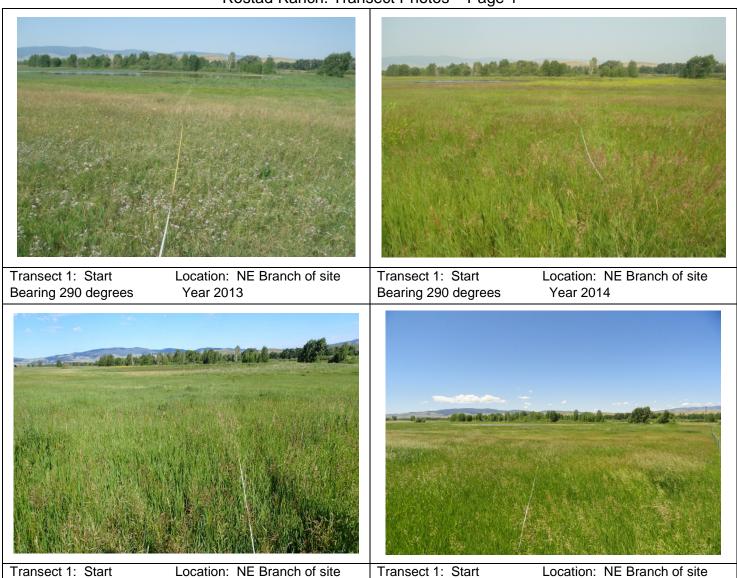


Photo Point 7 – Panorama; Location: West Fence Corner; Bearing 90 degrees; Year 2015



Photo Point 7 - Panorama; Location: West Fence Corner; Bearing 90 degrees; Year 2016

# Rostad Ranch: Transect Photos – Page 1



Bearing 290 degrees

Year 2016

Bearing 290 degrees

Year 2015

# Rostad Ranch: <u>Transect Photos – Page 2</u>



Transect 1: End Bearing 110 degrees

Location: NE Branch of site Year 2013



Transect 1: End Bearing 110 degrees

Location: NE Branch of site Year 2014



Transect 1: End
Bearing 110 degrees

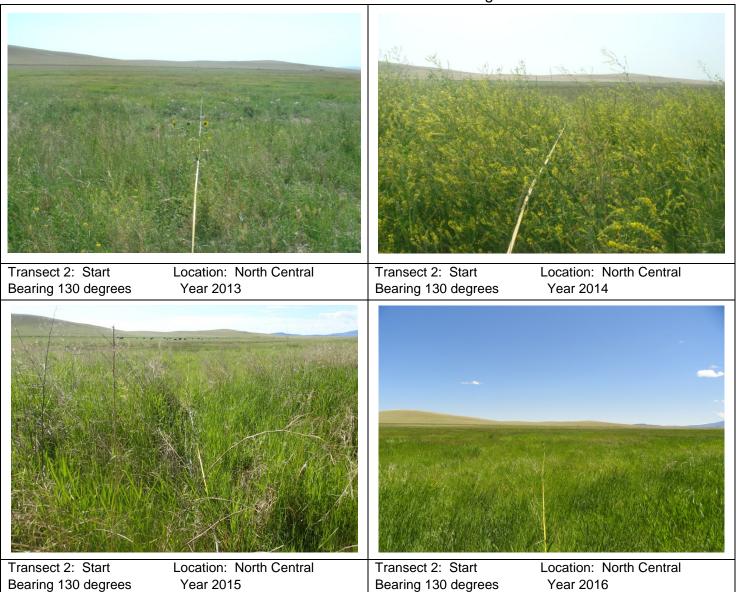
Location: NE Branch of site Year 2015



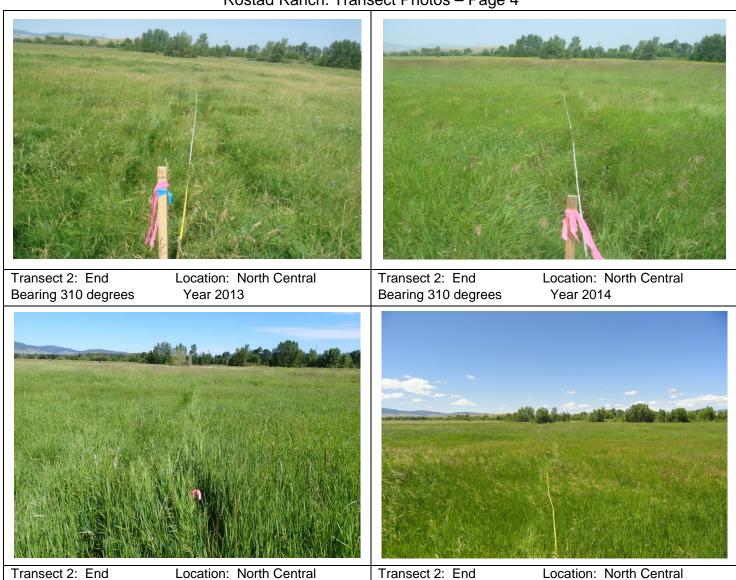
Transect 1: End
Bearing 110 degrees

Location: NE Branch of site Year 2016

#### Rostad Ranch: Transect Photos – Page 3



# Rostad Ranch: Transect Photos - Page 4



Bearing 310 degrees

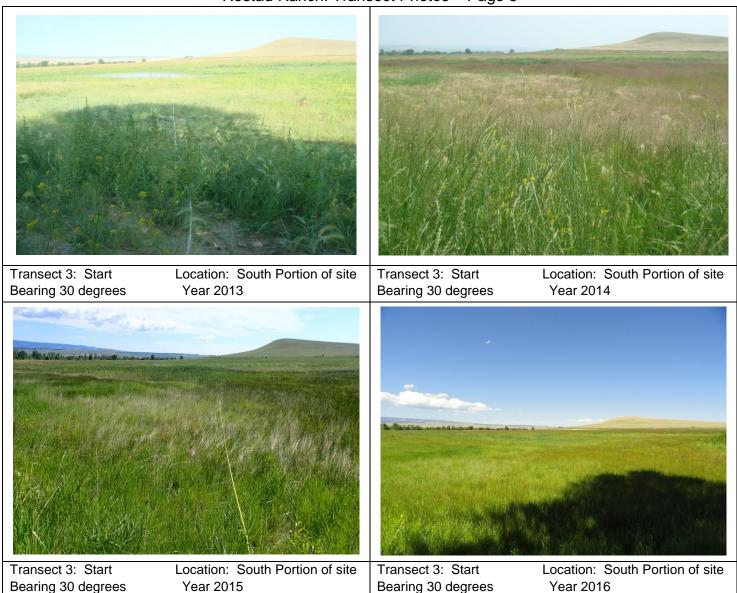
Year 2016

Location: North Central

Year 2015

Bearing 310 degrees

# Rostad Ranch: Transect Photos – Page 5

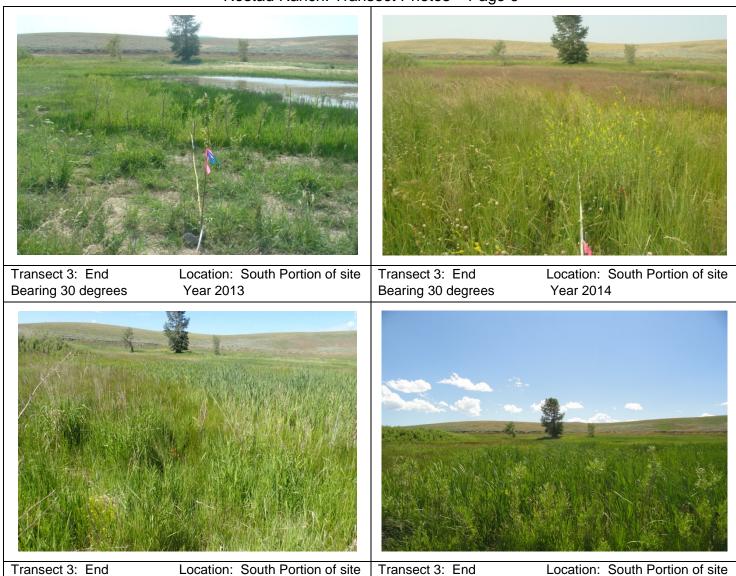


Bearing 30 degrees

Year 2016

Bearing 30 degrees

#### Rostad Ranch: Transect Photos - Page 6



Bearing 30 degrees

Year 2016

Bearing 30 degrees

Year 2015

#### Rostad Ranch: Data Point Photos - Page 1



Location: South portion of site

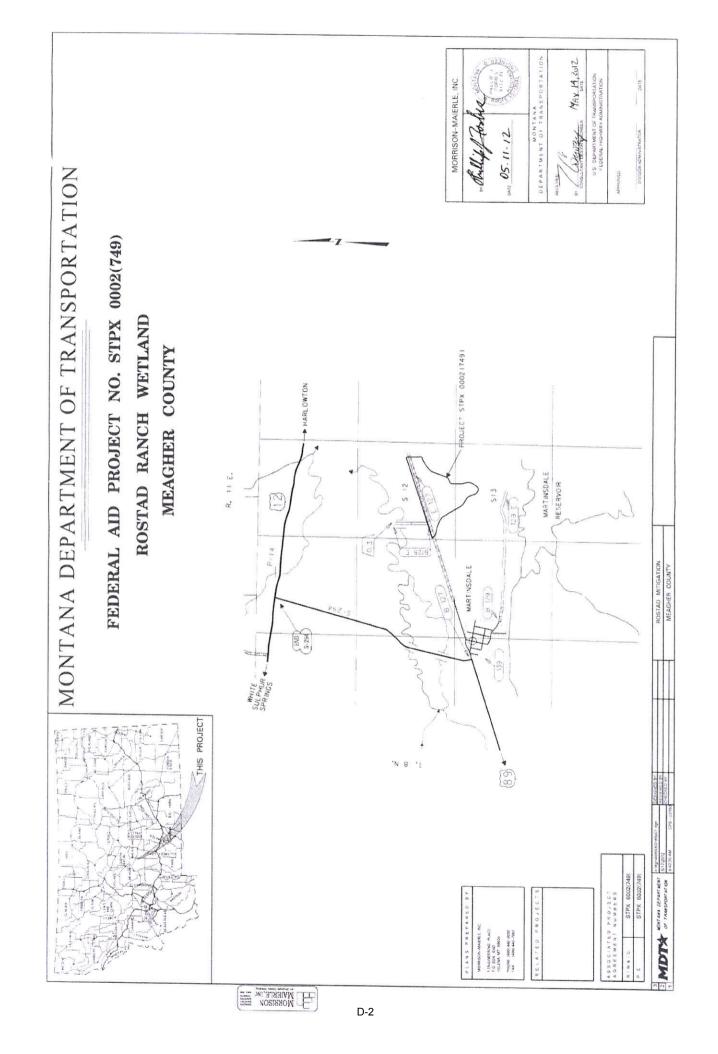
Data Point: DP-1W Year 2016

Data Point: DP-1U Year 2016

Location: South portion of site

# APPENDIX D PROJECT PLAN SHEETS

MDT Wetland Mitigation Monitoring Rostad Ranch Mitigation Site Meagher County, Montana



#### ALL SUBSY AND STAKKE WILL REQUEE THE USE OF A COMMAKEON SCALE FACTOR LESS - OF SPREZE DEAL DAMENSONS ON THE PLACE AND COND. DAMENSONS AND AND THE OPERED SO THE USE OF THE USE OF THE OFFICE OF THE OFFICE OF THE USE OF THE DESTRUCTION FRES FORMATTED FOR THINGER, REGG, AND TOPEDN SURVEY CONTROLLERS ARE AVERABLE UPPORTED FOR THE TOPEDN SURVEY CONTROLLERS AND THE LEGAL OF THE TOPE OF T DRIT METLANDS METHAND 11-E PROJECT LINES HAVE BEEN DELAKERD. METLANDS AND LIKE LEGIS BEFORD FIFE PROJECT LINES AND ANT ACTION AFFECTING SUCH METLANDS IS THE PERSONSIBILITY OF THE CONFRACTOR COMBINATION SCALE FACTOR LINEAR & LEVEL DATA ROSTAD RANCH WETLAND 0.99922360 UPN NUMBER WETLANDS LEGEND SEE CONTROL ABSTRACT FOR BENCHMARK INFORMATION DEL MENTED WETLANDS MPACTED NETLANDS SURVEY DATA WE TL ANDS LEVEL DATUM SOURCE BEARING SOURCE BENCH MARKS NAD 83 (1992) NOTES TEMPORARY EROSION AND SEDIMENT CONTROL RECEIFED SECURIOR PERMITTANT OF DETAILS OF DEAMANGE OF RESPONDING SECURIAR OF ACADISTS AND EXCEPTION AND ACADISTS AND EXCEPTION OF THE ACADISTS OF DETAILS OF THE ACADISTS OF DESTART THE UTATHES ONDERDREAD ICCATON LENTER IT-800-424-5555; ON OTHER STORMS AND SERVICES BESTON SECURITION SERVICES. CLEAR ANG ERUB TO STAKES GRADMS LANTS. INCLUDE THE COST OF SLEARING AND GRUBBING IN THE LINIT PRICE BIO FOR UNCLASSERS EXCANATION. SON UNAUTHE SHOWN IN THE CAMPS ARE SUFFICENT TO RETERSOR IN MARKS WINGER CONDING TO BOTH IN STREET IN THE REMAINING GRADING IS COMPERED INCLASSING UNAUASSING STREET, UNCLASSING TO SECURITION. BEE SHEET TO FOR LODATORS OF PRIZONETERS ON THE PROJECT. NEARGON WILLS IN ACCORDANCE WITH ARM 36, 21, 810. TOPSOIL SALVAGING AND PLACING TO DELASS THE COMPLETE SDAIS BACGRANNIUM CONTACT THE MOT GEOTECHNICAL SECTION AT (406) 444-6881. CLEARING AND GRUBBING PIEZOMETER REMOVAL SOIL S INFORMATION UTILITIES WETLAND PLANS MEAGHER COUNTY SHEET NO. 5-9 0 13 -2 4 5 91 -00 5 TABLE OF CONTENTS CONCEPTUAL REVECETATION PLAN WETLAND MITICATION OVERVIEW WATER DISTRIBUTION OVERVIEW PROPOSED SITE OVERVIEW PROPOSED GRADING PLAN EXISTING SITE OVERVIEW TOPSOIL SALVAGE PLAN DIVERSON STRUCTURE MEET SIMERSON STRUCTURE EROSS SECTION LINEAR & LEVEL DATA WORK AREA #1 PLAN WORK AREA #2 PLAN WORK AREA #3 PLAN TABLE OF CONTENTS CONTROL DIAGRAM CLA VERTE CLE VERT SUMMART BECAP DIVERSION STRUCTURE FLICING ABJORDAN PREZDANTER BROAD CPESTED MER BADAD CRESTED WERN FENCHAL DRUTERATE BRAN TITLE SHEET REVECETATION SUMMARIES DETAILS NOTES PL ANS

PROJECT NO. STPX 0002(749) SHEET 3 OF 19 77.6 77 司督 ROSTAD RANCH WETLAND O III CSF w 0 7 CONTROL DIAGRAM 2.JEB 1911 Jaja Cowittos, Call. P. Jose with Discussion Schauffer P. 2018. Janes on the San Table Street Service of Sanda, on South Service STEED CONTING CONTINGENERAL SECURIOR STANGES & 2000 MINER STEED SECURIOR TO A CONTINUE SECURIOR SECURI The first control of the first SCI WAY CERTHRIS CAP, FLOWN WITH GROUND, STAMPED T 2000. WARE SAY SOUTH FOR STATE SERVICES, SAY 5 SOUTH FOR STATE WAS SAY SHARE FOR A FEALE CORNER, 35 PC. 2000. OF STATE SERVICES, SAY 5 SOUTH OF STATE SERVICES. SEC NOS CONFRO. CAP 6 120m Rein CROMAN, SENAPER E EROR. MARRE 5 N AN DREN. FLOR. 30 145° ST N N NOS CAFON CANA, AND 2 SULJA-07 N N THESE SECULA. of mel conting car fushers to copping Stampto 17000 man 5 100 500. Controlled Man. Recent or a few energia or the Montrolle Controlled National National Applies and National Applies control marks. I through 1 were established to provide control in the areas of future in everyone wild plants. Wit secondary control proceedings were belonged to establish the state slope cook disable and of fift derived betrackets from the research. in order to macrialn a relative occuracy of 11-34,800, ore (Smbrotish Some Factor cord) be wast for this project. 19932160, which is the Combruction Scale Factor for CA 4689. CONTROL MARK ABSTRACT
RECORDS
CDOROGRAFIE 907 379694 2 MDIX WONTAN CEPANTUN 100 508076. ST4

# SUMMARY

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	-	outs: yards	-	
TOTAL	CNC	EXCESS EXCAVATION	EMB •	REMARKS
	0016	9.406		SITE GRADING
	930		900	KEYED BERM
TOTAL	9300	# 9,400	905	

		KEV	REVEGETATION	NOI	
	lamp.	lump sum	CLUBBL SHECK	4000	
STATION	REVECE IATION	YREE & SHR.8	TOPSOR SALVASING	WETLAND SEEDING	REMARKS
FROM TO			a remains		
	-		22.236	36.83	
TOTAL		-	22 235	Ī	

-	ABA	ABANDON PIEZOMETER	HEZOM	ETER	
STATION	DESCRIPTION	schare	cubit. yards	ACCES	REMARKS
	ABANDON WELL			4	SEE SHEET 19 FOR LOCATIONS
TOTAL	The second secon	/	1	*7	

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					BASIC BID ITEMS	UD ITEMS					PEPE CPTIONS or		_				cubec yards	at the state of th	7	square variate	feet.		
1	-	freae	innear teet				culter yards			360.00	31.980,400	O 288	COATING	END SECTIONS	SNOW	ECKIND.		3	VERT	JH A		SKEW	CULVERY
CULVERT CULVERT	ENGTH	RELAY	CLEAN	REMOVE	CULVERT FOUND	FOUND	BEDDING CLASS TOU RIPRAP	SS 700 S	ULVERT SIPRAP	SEOTEX.	STEEL - 2 2/3 x 1/2 CORR	80				ATION	BEDDING CLASS 'DD' RIPRAP THE	SS 'DD' R	RAP UE	1 9	to to		j #
	Pare C	CLEVERT	CLAVERT CULVERT CULVERT	CULVERT	:	MATERIAL	MATERIAL CO	NCRETE C	SAASS		ALUMANUM - 2 Z/3 x 1/2 (JUHA			1.15.51	RIGHT	MAN CONTACT		5	CLASS	in in	u de		
				278.72		-	-		-								_					18 X 23.0 C	W.
	-			2000					-	•												18 X 75.0 C	MP F
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		-		0.00		***************************************	-						i									18 X 42 0 CMP	AMP.
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REMARKS

				BROA	BROAD-CRESTED WEIR	TED WE	R			
		Cubic yards	stuare yasta			6.9	each.			
STA	STATION	PROTECTION	TURF REINFOHGEMEN ( MAT	CANDAS	MEAD GATE	TRASH	CHECK	TURNOUT	REMOVE BRRIGATION STRUC-	REMARKS
FROM	10	£ 3dAJ	TYPE CSCO	2	g				TURE	
		35	120							BROAD-CRESTED WER
101	TOTAL	35	35 (20)	17	7	7	1	100	1	

	BASIC					REMOVE	FOLME ATION MATERIAL		-		GEOTEXTILE
	GH	L_								C14 VEST	
			PIPE	RELAY	CLEAN				BEDDING CLASS 'DD'	RIDRAD	PERM EROS CNTR.
		(10	-		COLVER.				T. OLONGO	CLASS	SURV
	-					1620					
	TOTAL			7	25.	1620		2.4			7
	Call	cutilic pard		pank sages		each.	ton	mans grant	m.		
_	3	to bear	*	TURSE	100	-	-	-			
DIVERSEAN	CAES COD	PROTECTION	REINE	REINFORCEMENT MAT	CATE	GATE	PHIE	107A	-	REMARKS	
	CONC	F 3dA4	148	TYPE 0350	156	15.5	15 ac				
	ě						28.0	**	SEE	SEE DETAIL	
	-	-									
		20		24					375	SEE DETAIL	
		7.		.000	-	-	100				

CULVERT SUMMARY RECAP

		-	loas leet			pach		Hrisar Aset	irrear feet	
STATION	NOI	VILOLIFE FRENDLY	WILDLIFE FRENDRY I LINCL	REMOVE FENCE	WR.OLIFE FENCE	AR OLDE FRIENDLY RENCE PANEL	DEADMAN	FARM GATE"	SATE	REMARKS
FROM	C)	TYPE 1- FU	TYPE 1-6W		SINGLE	DOUBLE		SYPE GA	TYPE GS	
		2,592.4		2 552.4	9			gg		
e control		974,6				~ .			•	
deci por		ì			-	r. 4		6.4		
		5303 983 7.777			~ 4					
19103	101AL	8 397 5		# 2 592.4	12	4	1	*	1	

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+	MEACHER COUNTY	UPN NUMBER	SHEE! 4 OF 19
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