ROSTAD RANCH MITIGATION SITE

Project Overview

Watershed: Watershed #10 – Musselshell River Basin

Monitoring Year: 2019

Years Monitored: 7th year of monitoring

Corps Permit Number: NWO-2006-90851-MTB

Monitoring Conducted By: RESPEC/HDR

Dates Monitoring Was Conducted: August 8, 2019

Purpose of the Approved Project:

The site was constructed to provide 39.70 acres of compensatory wetland mitigation credits for wetland impacts associated with future transportation project related wetland impacts in Watershed #10 – Musselshell River Basin. The initial project included the filling of drainage ditches, excavating and grading the site to distribute water across the site, and creating open-water areas. Adaptive management actions were taken in 2017 to create low spreader dikes to help spread irrigation water across the site.

Site Location:

Latitude: 46.462457 **Longitude:** –110.294063

County: Meagher **Nearest Town:** Martinsdale, MT

Map Included: Yes

Mitigation Site Construction Started: 2012 **Construction Ended:** 2012/Adaptive Management 2017

Dates of Any Recent Corrective or Maintenance Activities (since previous report):

Activity: Weed Spraying **Date:** July 3, 2019 **Specific recommendations for any additional corrective actions:** Weed treatment will continue in 2020.

Anticipated Wetland Credit Acres: 39.70

Wetland Credit Acres Generated to Date: 29.34

Previous Monitoring Reports:
https://www.mdt.mt.gov/publications/brochures/wetland_mitigation.shtml

Requirements (from approved mitigation plan, banking instrument, or Department of Army (DA) permit conditions)

Monitoring Period: 5 years from construction completion or until concurrence by the US Army Corps of Engineers (USACE).

Performance Standards: A summary of performance standards established for the Rostad site and whether or not they are being achieved is provided in Table 1.

Table 1. Summary of Performance Standards

Performance Standards	Sucess 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 GP 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	Irrigation water was turned into the site on May 10 and turned off on July 5, 2019. All wetlands within the project area were saturated for greater than the minimum 12.5 percent of growing season.
Hydric Soil	Hydric soil conditions are present or appear to be forming.	Y	The constructed wetland complex is beginning to exhibit hydric soil development in areas originally identified as nonhydric 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.	Y	Plant cover has continued to develop across disturbed soils.
Hydrophytic Vegetation	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) with absolute cover exceeding 70 percent.
	Noxious weeds do not exceed 5 percent cover.	Y	Noxious weed infestations have been mapped across this site, primarily outside of wetland areas. Noxious weed infestations continue to receive annual treatment and are decreasing site-wide. Estimated noxious weed cover within delineated wetlands is below 5 percent.
Woody Plants	Plantings exceed 50 percent survival after 5 years.	Y	Approximately 50 percent of the woody plantings observed were alive in 2019, which meets 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 exhibited greater than 90 percent vegetation cover during the 2019 monitoring event.
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	Small pockets of perennial open water occur behind recently constructed spreader berms towards the center of the site, while seasonal open water occurs in the northeast corner of the site. In 2019, less than 10 percent of the total wetland acreage across the site was considered open water.
Upland Buffer	Success will be achieved when noxious weeds do not exceed 5 percent cover within the buffer areas on the site.	Y	Noxious weed infestations, including Canada thistle, spotted knapweed, and hoary alyssum were mapped within the site in 2019. Although a variety of noxious weeds are present throughout the site, aerial coverage does not exceed 5 percent.
	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 2019.

Performance Standards	Suscess Criteria	Criteria Achieved Y/N	Discussion
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 2 percent absolute cover in 2019.
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.

Summary Data

Wetland Delineation – The total wetland acreage delineated in 2019, including preexisting wetland areas, was 28.86 acres (see maps in Appendix A), which is the same acreage as 2018, but a 13.96-acre increase since 2016. The adaptive management strategies implemented in 2017 resulted in broader inundation across the site, and in response to the inundation, some areas that were previously delineated as upland were delineated as wetland in 2019. Certain areas across the site, like near vegetation transect T-4, have yet to develop a prevalence of wetland vegetation in spite of being inundated for much of the growing season.

Functional Assessment – The 2019 results of the functional assessments are summarized in the Table 2. Completed Montana Wetland Assessment Method (MWAM) forms for the Rostad Ranch Site are provided in Appendix B. Overall, the site rates as a Category III wetland and has generated 175.59 Functional Units.

Table 2. Montana Wetland Assessment Method Summary for the Rostad Ranch Site

Function and Value Parameters From the 2008 Montana Wetland Assessment Method	2016	2017	2018	2019
Listed/Proposed Threatened & Endangered (T&E) Species Habitat	Low (0)	Low (0)	Low (0)	Low (0)
Montana Natural Heritage Program (MTNHP) Species Habitat	High (0.9)	High (0.9)	High (0.9)	High (0.9)
General Wildlife Habitat	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A
Flood Attenuation	N/A	N/A	N/A	N/A
Short- and Long-Term, Surface-Water Storage	Mod (0.6)	High (0.9)	High (0.9)	High (0.9)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Production Export/Food Chain Support	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points/Possible Points	**5.75/9**	**6.05/9**	**6.05/9**	**6.05/9**
% of Possible Score Achieved	**63.9%**	**67%**	**67%**	**67%**
Overall Category	**III**	**II**	**II**	**II**
Total Acreage of Assessed Wetlands Within Site Boundaries	**14.96**	**26.42**	**28.86**	**28.86**
Functional Units (acreage × actual points)	**86.02**	**159.85**	**175.59**	**175.59**

Vegetation – A total of 70 plant species were identified on the site from 2013 through 2019. No new species were identified at the site in 2019. Vegetation plant communities were identified by plant composition and dominance. The following vegetation community types were identified in 2019:

- Upland Type 8 – *Bromus inermis/Trifolium spp.*
- Upland Type 11 – Elymus trachycaulus/*Pascopyrum smithii*
- 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 10 – *Alopecurus pratensis.*

The community composition for each community type 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).

Vegetation cover was measured along four transects in 2019 (Figure A-2, Appendix A). Details of each transect are provided in the site monitoring form in Appendix B. Photographs of the transect end points are provided in Appendix C. Table 3 summarizes the data for T-1. T-1 is 422 feet long and intersected upland community Types 8 and 11, and wetland community Types 2, 5, 6, and 7; 62 percent of the transect crossed wetland habitat, which is a 6 percent increase since 2017. Total vegetative cover has remained constant at 95 percent from 2016 to 2019.

Table 3. Data Summary for T-1 From 2016 Through 2019 at the Rostad Ranch Site

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**422**	**422**	**422**	**422**
Vegetation Community Transitions Along Transect	4	5	5	5
Vegetation Communities Along Transect	5	5	5	5
Hydrophytic Vegetation Communities Along Transect	4	4	4	4
Total Vegetative Species	26	23	26	23
Total Hydrophytic Species	10	10	11	10
Total Upland Species	16	13	15	13
Estimated % Total Vegetative Cover	95	95	95	95
Estimated % Unvegetated	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	59.0	56.0	62	62
% Transect Length Comprising Upland Vegetation Communities	41.0	44.0	38	38
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0

Data collected on T-2 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 4. T-2 is 453 feet long and intersects upland community Type 8 and wetland community Types 2 and 7; 78 percent of the transect crossed wetland habitat in 2019, which is a 2 percent increase from 2018. Total vegetative cover has remained constant at 95 percent from 2016 to 2019.

Table 4. Data Summary for T-2 From 2016 Through 2019 at the Rostad Ranch Site

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**453**	**453**	**453**	**453**
Vegetation Community Transitions Along Transect	2	2	3	3
Vegetation Communities Along Transect	2	2	3	3
Hydrophytic Vegetation Communities Along Transect	1	1	2	2
Total Vegetative Species	25	17	16	16
Total Hydrophytic Species	7	6	7	9
Total Upland Species	18	11	9	7
Estimated % Total Vegetative Cover	95	95	95	95
Estimated % Unvegetated	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	70	76	76	78
% Transect Length Comprising Upland Vegetation Communities	30	24	24	22
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0

Data collected on T-3 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 5. T-3 is 320 feet long and intersects wetland community Types 2, 5, and 7; 100 percent of the transect crossed wetland habitat in 2019.

Table 5. Data Summary for T-3 From 2016 Through 2019 at the Rostad Ranch Site

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**320**	**320**	**320**	**320**
Vegetation Community Transitions Along Transect	4	3	3	3
Vegetation Communities Along Transect	4	3	3	3
Hydrophytic Vegetation Communities Along Transect	3	2	3	3
Total Vegetative Species	30	23	23	21
Total Hydrophytic Species	16	15	16	16
Total Upland Species	14	8	7	5
Estimated % Total Vegetative Cover	90	80	85	85
Estimated % Unvegetated	10	20	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	93.4	91	100	100
% Transect Length Comprising Upland Vegetation Communities	6.6	9	0	0
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0

Data collected on T-4 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 6. T-4 was established in 2017 following adaptive management actions at the site and is 412 feet long. T-4 intersects upland community Type 8 and 11 and wetland community Type 7; 21 percent of the transect crossed wetland habitat in 2019, which is an increase of 9 percent since 2018.

Approximately 2,000 willow cuttings were planted throughout the excavated areas. An estimated 50 percent of the willow cuttings survived through 2019. 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 2019. A new area of community Type 3 – *Salix exigua* was mapped in the northeastern portion of the site in 2019 as a result of continued willow development in this area.

Table 6. Data Summary for T-4 From 2016 Through 2019 at the Rostad Ranch Site

Monitoring Year	2017	2018	2019
Transect Length (feet)	**412**	**412**	**412**
Vegetation Community Transitions Along Transect	4	3	3
Vegetation Communities Along Transect	3	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1
Total Vegetative Species	10	16	14
Total Hydrophytic Species	1	3	5
Total Upland Species	10	13	9
Estimated % Total Vegetative Cover	70	80	80
Estimated % Unvegetated	30	20	20
% Transect Length Comprising Hydrophytic Vegetation Communities	12	12	21
% Transect Length Comprising Upland Vegetation Communities	88	88	79
% Transect Length Comprising Unvegetated Open Water	0	0	0
% Transect Length Comprising of Mudflat	0	0	0

Hydrology – 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 southern portion of the site, direct precipitation, surface runoff, and surface-water diversion out of an adjacent irrigation canal. Irrigation water was first diverted into the site on May 10, 2019, and turned off on July 5, 2019. Adaptive management activities in the spring of 2017 created areas of open water toward the middle of the site and helped distribute water to other areas of the mitigation site. Overall, inundation increased from approximately 15 acres in 2016 to more than 25 acres across the site in 2017 and nearly 29 acres in 2018 and 2019. Because of the late monitoring date in 2019, the lower wetland cell in the northeast corner of the site did not contain standing water, but soils were saturated to the surface and drift lines in the vegetation indicate standing water was present during much of the early growing season. One groundwater monitoring well remains at the site and is monitored monthly by the US Geological Survey (USGS). Groundwater elevations at this well were relatively constant at 4.0–4.5 feet below land surface from July through September.

Photographs – Photographs were taken at photo points 1–10 (PP1 to PP10), transect endpoints, and data points are provided in Appendix C with comparisons between 2019 and the first year of monitoring. Please refer to previous years' monitoring reports for all previous annual photographs (https://www.mdt.mt.gov/publications/brochures/wetland_mitigation.shtml).

Soils – Soil test pits were excavated at six locations and all were within what was originally mapped as the Delpoint variant-Marmarth-Cabbart loam soil series (Figure A-2, Appendix A). DP-1W, DP-2W, and DP-3W are located in areas that exhibited hydric soils. The soil at DP-1W, which is located at the edge of an excavated depression, consisted of an upper 4-inch brown (10YR 4/3) loam and a lower 16-inch dark gray (10YR 4/1) clay loam with 10 percent yellowish-brown (10YR 5/6) redoximorphic concentrations. The soil met the criteria for depleted matrix (F3) and classification as a hydric soil. DP-1U, which is located upslope from DP-1W, displayed a dark grayish-brown (10YR 4/2) clay loam and did not meet the criteria for any hydric soil indicators. The soil profile at DP-2W, which was a new location in 2018,

revealed a single 20-inch layer of 10YR 4/2 clay loam with 20 percent 10YR 5/8, redoximorphic concentrations. The soil met the criteria for depleted matrix (F3) and classification as a hydric soil. DP-2U, which is located upslope from DP-2W, exhibited a dark grayish-brown (10YR 4/2) clay loam and did not meet the criteria for any hydric soil indicators. The soil profile at DP-3W, which was a new data point in 2018, revealed a 10-inch A Horizon of 10YR4/2 loam over a 10-inch layer of 10YR 3/2 clay loam with 10 percent 10YR 5/8, redoximorphic concentrations. The soil met the criteria for depleted matrix (F3) and classification as a hydric soil. DP-3U, which is located upslope from DP-3W, exhibited a dark grayish-brown (10YR 4/2) clay loam and did not meet the criteria for any hydric soil indicators.

Credit Summary – Table 7 summarizes the estimated wetland credits based on the USACE-approved credit ratios and the wetland delineation completed in August 2019. Proposed mitigation credits from the 2007 *Rostad Ranch Mitigation Plan, Meagher County, Montana* [Montana Department of Transportation, 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. The wetland acreages that were delineated in 2019 included 14.62 acres of reestablished wetlands, 0.81 acre of rehabilitated wetland, 13.18 acres of created wetland, and 0.25 acre of preservation wetland (community Type 3 – *Salix exigua*). Adaptive management activities on the site in 2017 resulted in a shift of crediting, which decreased the overall rehabilitated wetland acreage and increased the reestablished and created wetland acreage. The total mitigation credit estimated in 2019, including the upland buffer credit and the deduction for the 0.41-acre wetland impact incurred during mitigation construction, totaled 29.34 credit acres, which is an increase of 14.15 acres since 2016. The site is still approximately 10.36 acres short of the original goal of 39.70 acres of credit.

Wildlife – Seven bird species were identified in 2019. Six of the seven bird boxes installed at the site are functional and all appeared to be used in 2019 by a variety of species including tree swallows (*Tachycineta bicolor*). In addition to the bird species, deer and raccoon (*Procyon lotor*) tracks were noted across the site.

Table 7. Wetland Mitigation Credits Estimated for the Rostad Ranch Site (2017–2019)

Compensatory Mitigation Type	Wetland Type[a]	Approved Mitigation Ratio[b]	Anticipated Mitigation Area (acres)	Anticipated Mitigation Credit (acres)	2017 Delineated Mitigation Areas (acres)	2017 Estimated Mitigation Credit (acres)	2018 Delineated Mitigation Areas (acres)	2018 Estimated Mitigation Credit (acres)	2019 Delineated Mitigation Areas (acres)	2019 Estimated Mitigation Credit (acres)
Restoration (Reestablishment)	Palustrine emergent	1:1	27.11	27.11	14.62	14.62	14.62	14.62	14.62	14.62
Creation (Establishment)	Palustrine emergent	1:1	9.84	9.84	10.74	10.74	13.18	13.18	13.18	13.18
Restoration (Rehabilitation)	Palustrine emergent	1.5:1	2.63	1.75	0.81	0.54	0.81	0.54	0.81	0.54
Preservation	Palustrine, scrub/shrub	4:1	0.25	0.06	0.25	0.06	0.25	0.06	0.25	0.06
Upland Buffer	N/A	5:1	6.76[c]	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
Totals			**46.59**	**39.70**	**33.18**	**26.90**	**35.62**	**29.34**	**35.62**	**29.34**

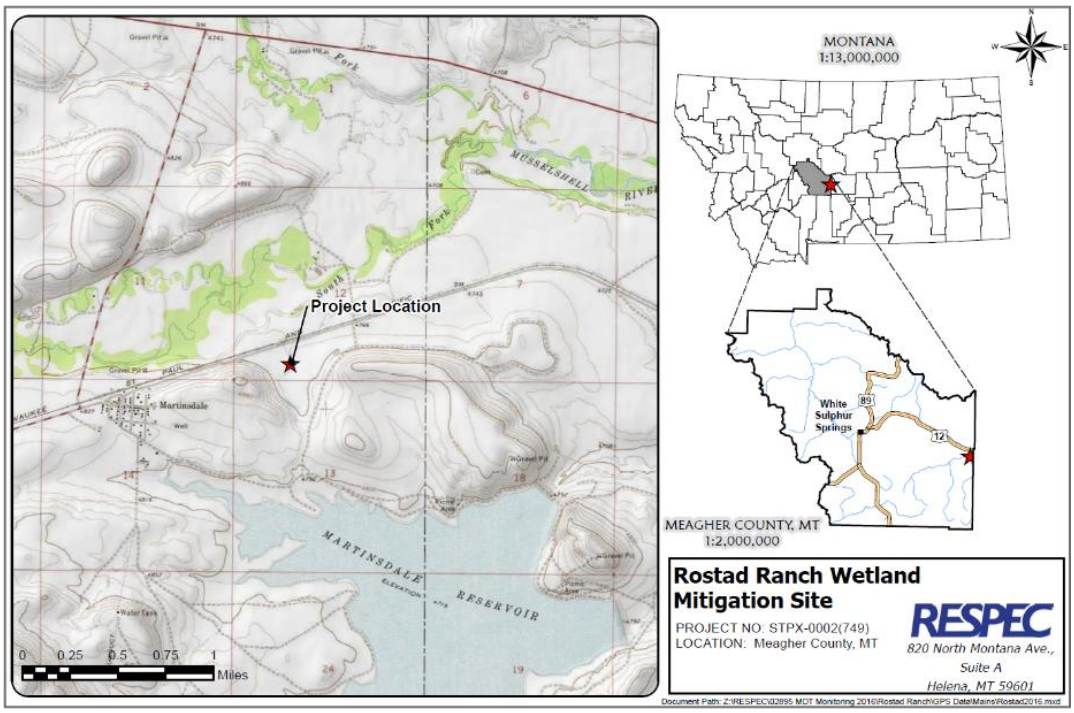
(a) Cowardin et al. [1979].

(b) The mitigation credit ratios that were used are from the Montana Corps Regulatory Programs 2005 Wetland Credit Ratios [USACE, 2005].

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

Maps, Plans, Photos

Site Location Map



Project Area Maps/Figures: See Appendix A

Data Forms: See Appendix B (Site Monitoring form, plant list, USACE data forms, and MWAM forms)

Photos: See Appendix C

Plans: See Appendix D of 2018 Monitoring Report
https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2018-REPORTS/2018-FINAL-Rostad-Ranch.PDF

Conclusions

Based on the results of the seventh year of monitoring, the Rostad Ranch mitigation site is continuing to develop into a diverse wetland ecosystem. Since adaptive management actions were implemented to spread hydrology across the site in 2017, the site is meeting all of the project's performance standards but is approximately 10.36 acres short of the original goal of 39.70 acres of credit. The site is trending positively toward planned wetlwand credit acreage goals. Since 2016, a total of 29.34 wetland credit acres have developed across the Rostad Ranch site.

References

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States,* FWS/OBS-79-31, prepared by the US Department of the Interior, Fish and Wildlife Service, Washington, DC.

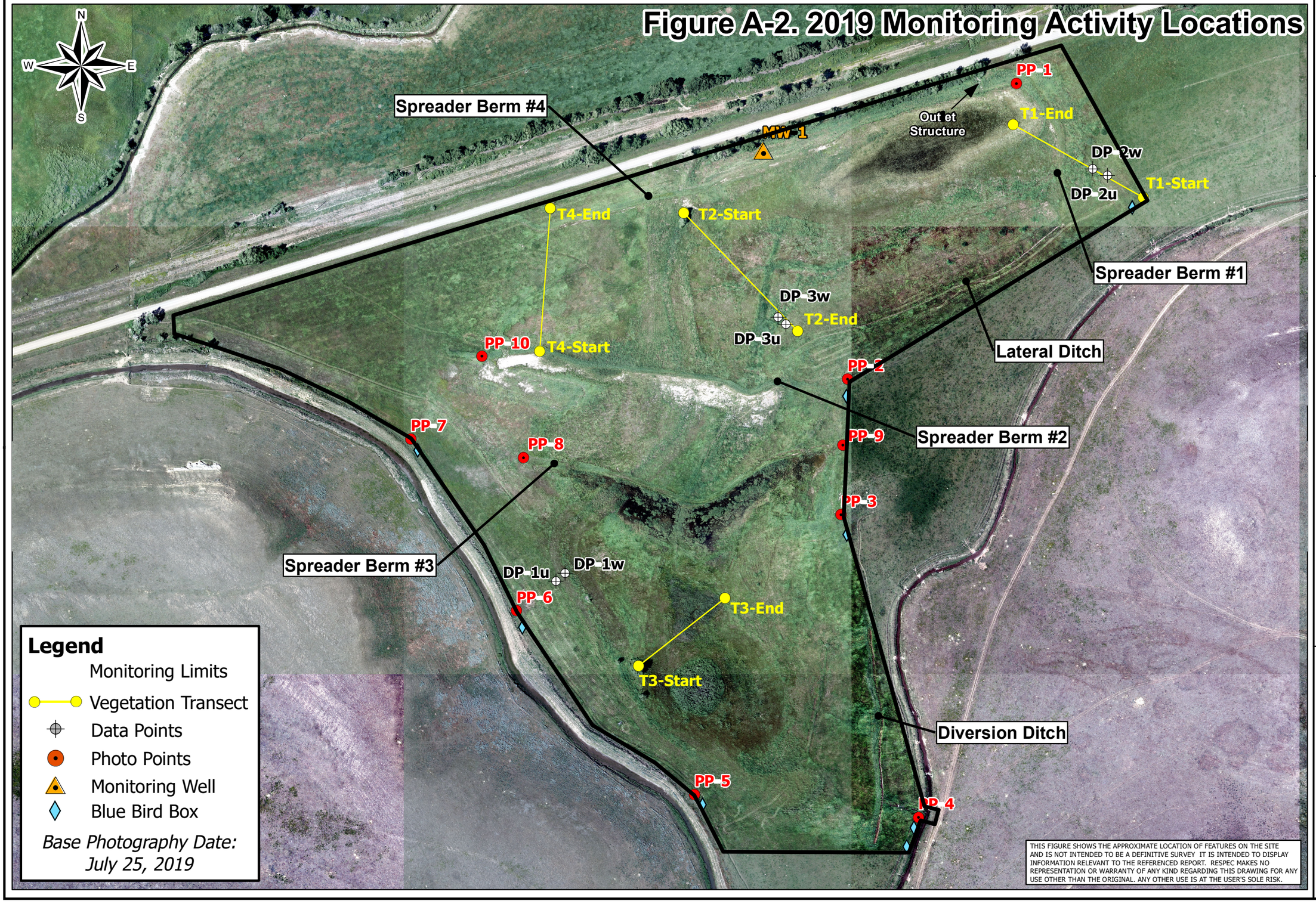
Montana Department of Transportation, 2007. *Rostad Ranch Wetland Mitigation Plan, Meagher County, Montana*, prepared by the Montana Department of Transportation, Helena, MT.

US Army Corps of Engineers, 2005. "Montana Mitigation Information," *army.mil*, retrieved October 10, 2016, from *http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/Mitigation*

APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Rostad Ranch
Meagher County, Montana

Figure A-2. 2019 Monitoring Activity Locations



RESPEC
815 E. Front Street
Suite 3
Missoula, MT 59802

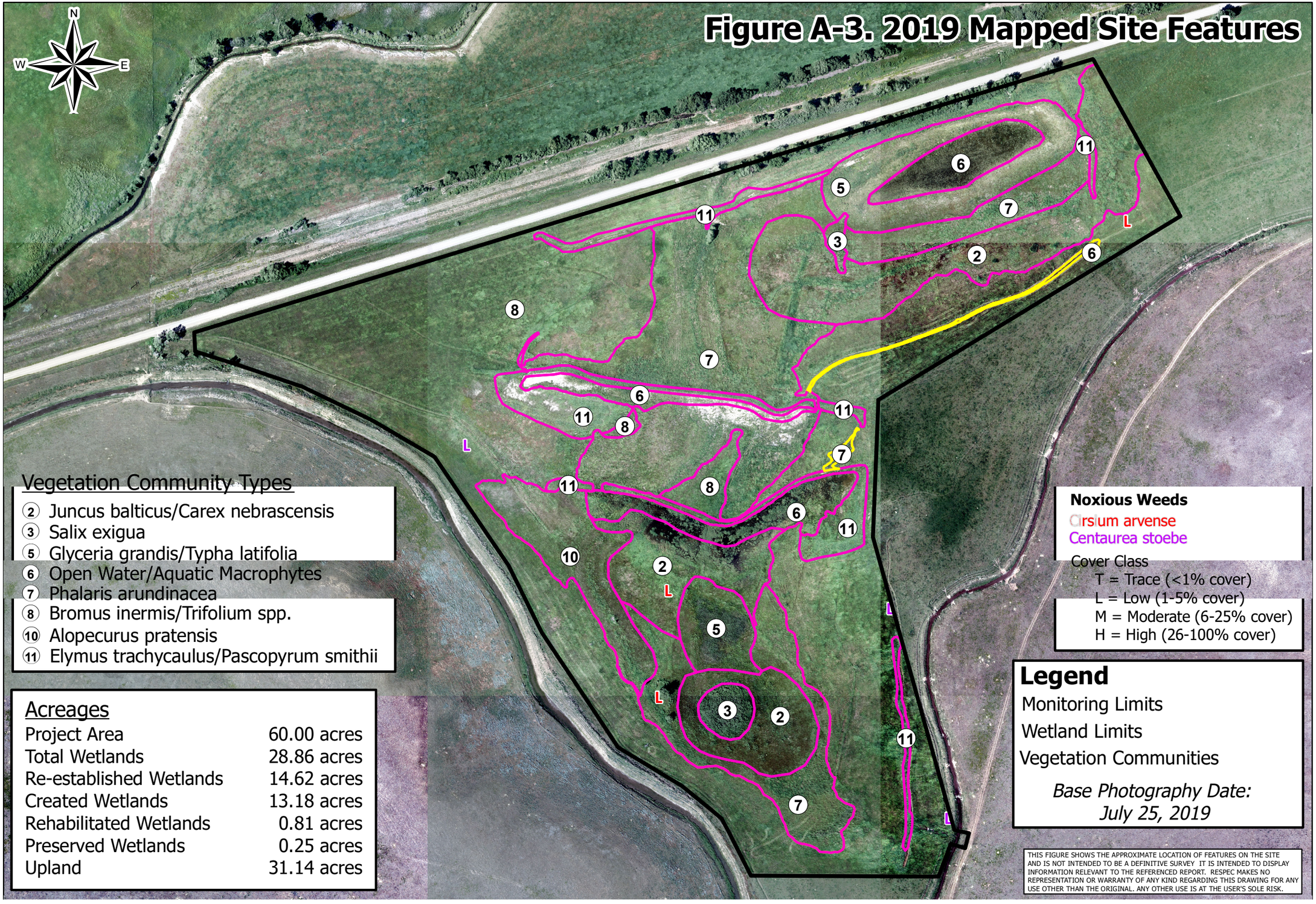
Rostad Ranch Wetland Mitigation Site
2019 Monitoring Activity Locations

0 100 200 400 600 800 1,000 Feet

Project: STPX-0002 (749)
Location: Meagher Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Rostad Ranch\GPS Data\Mains\Monitor2019.mxd

Figure A-3. 2019 Mapped Site Features



Vegetation Community Types

- (2) Juncus balticus/Carex nebrascensis
- (3) Salix exigua
- (5) Glyceria grandis/Typha latifolia
- (6) Open Water/Aquatic Macrophytes
- (7) Phalaris arundinacea
- (8) Bromus inermis/Trifolium spp.
- (10) Alopecurus pratensis
- (11) Elymus trachycaulus/Pascopyrum smithii

Acreages

Project Area	60.00 acres
Total Wetlands	28.86 acres
Re-established Wetlands	14.62 acres
Created Wetlands	13.18 acres
Rehabilitated Wetlands	0.81 acres
Preserved Wetlands	0.25 acres
Upland	31.14 acres

Noxious Weeds

Cirsium arvense

Centaurea stoebe

Cover Class

T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (6-25% cover)
H = High (26-100% cover)

Legend

Monitoring Limits

Wetland Limits

Vegetation Communities

Base Photography Date: July 25, 2019

THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

RESPEC
815 E. Front Street
Suite 3
Missoula, MT 59802

Rostad Ranch Wetland Mitigation Site

2019 Mapped Site Features

0 100 200 400 600 800 1,000 Feet

Project: STPX-0002 (749)

Location: Meagher Co., Montana

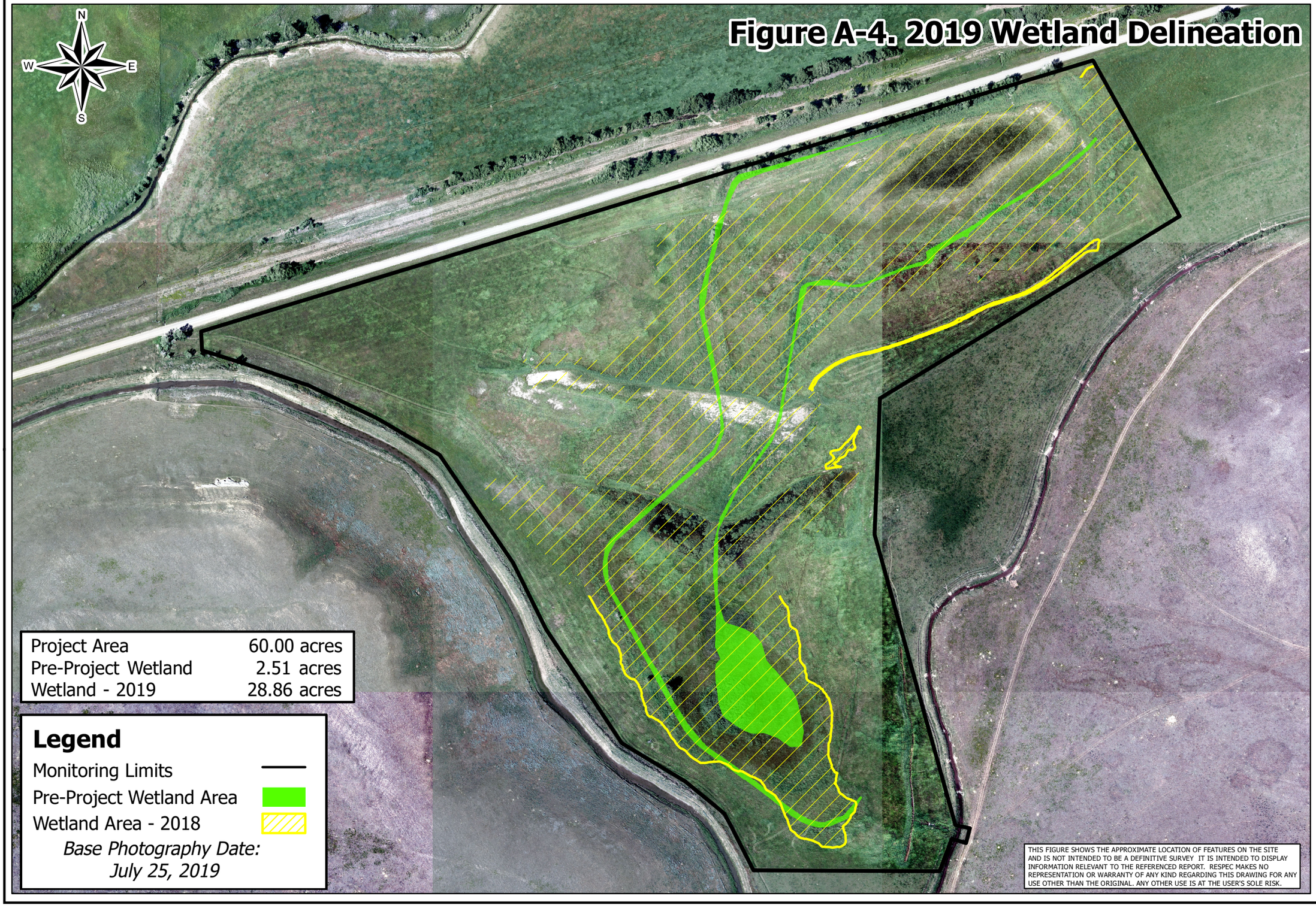
Date: October 2019

Project Manager: M. Traxler

Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Rostad Ranch\GPS Data\Mains\Veg2019.mxd

Figure A-4. 2019 Wetland Delineation



RESPEC
815 E. Front Street
Suite 3
Missoula, MT 59802

Rostad Ranch Wetland Mitigation Site
2019 Wetland Delineation

0 100 200 400 600 800 1,000 Feet

Project: STPX-0002 (749)
Location: Meagher Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Rostad Ranch\GPS Data\Mains\Delin2019.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Rostad Ranch
Meagher County, Montana

RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Rostad Ranch** Project Number: _____
Assessment Date: **August 8, 2019** Person(s) conducting the assessment: **M. Traxler, T. Traxler**
Location: **Martinsdale, Montana** MDT District: **Billings**
Milepost: _____
Legal Description: T **8N** R **11E** Section **12 and 13**
Weather Conditions: **Sunny, 85 degrees** Time of Day: **10:00 AM**
Initial Evaluation Date: **August 21, 2013** Monitoring Year: **7** # Visits in Year: **1**
Size of evaluation area: **60 acres** Land use surrounding wetland: **Agriculture**

HYDROLOGY

Surface Water Source: **Groundwater, supplemental hydrology from ditch/headgate, surface runoff**
Inundation: **Present** Average Depth: **1.0 feet** Range of Depths: **0.25-2 ft.**
Percent of assessment area under inundation: **25%**
Depth at emergent vegetation-open water boundary: **2.0 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: **Present**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth
MW-1					

Additional Activities Checklist:
☒ Map emergent vegetation-open water boundary on aerial photograph.
☒ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)
☐ Use GPS to survey groundwater monitoring well locations, if present.

COMMENTS / PROBLEMS:
Lower impoundment dry at time of survey. Survey completed approximately 1 month later than previous years.

VEGETATION COMMUNITIES

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

Dominant Species	% Cover	Dominant Species	% Cover
Bromus inermis	5 = > 50%	Pascopyrum smithii	1 = 1-5%
Trifolium repens	3 = 11-20%	Phleum pratense	3 = 11-20%
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: **Previously recorded as community Type 1 with a prevalence of Phleum pratense. Upland communities across the site are dominated by Bromus inermis.**

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%
Juncus 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	% Cover
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: **Undisturbed salix community near southern extent of monitoring boundary.**

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: _____

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	2 = 6-10%	Juncus balticus	+ = < 1%
Typha latifolia	3 = 11-20%	Polypogon monspeliensis	+ = < 1%
Beckmannia syzigachne	2 = 6-10%	Downingia laeta	+ = < 1%
Glyceria grandis	1 = 1-5%	Rumex crispus	+ = < 1%
Phalaris arundinacea	+ = < 1%	Veronica peregrina	+ = < 1%

Comments / Problems: **New ponds - Typha, Beckmannia, Eleocharis palustris, Phalaris arundinacea**

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:

Community Number: **11** Community Title (main spp): **Elymus trachycaulus / Pascopyrum smithii**

Dominant Species	% Cover	Dominant Species	% Cover
Bare Ground	2 = 6-10%	Trifolium hybridum	3 = 11-20%
Chenopodium sp.	2 = 6-10%		
Elymus trachycaulus	3 = 11-20%		
Pascopyrum smithii	3 = 11-20%		
Melilotus officinalis	3 = 11-20%		
Sinapis arvensis	3 = 11-20%		

Comments / Problems: **Construction in spring 2017 resulted in several berms and other disturbed areas. In 2019 constructed berms had 80% vegetative cover with planted species and volunteer grasses and forbs.**

Community Number: **10** Community Title (main spp): **Alopecurus pratensis**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	4 = 21-50%		
Phalaris arundinacea	3 = 11-20%		
Agrostis gigantea	2 = 6-10%		
Juncus balticus	2 = 6-10%		
Hordeum jubatum	1 = 1-5%		

Comments / Problems: _____

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 difiicult was locating plants (stems) that had died. Those plants observed looked healthy with minor deer browse noted. Survival in 2019 was estimated at 50% survival based on the number of live stems observed. Willows are naturally expanding around Vegetation Community 3 in the south portion of the site.

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Rostad Ranch** Date: **August 8, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **422 feet** Compass Direction from Start: **290˚** Note: _____

Transect Interval Length: **140 feet (station 0-140)**	
Vegetation Community Type: Bromus inermis / Trifolium spp.	
Plant Species	**Cover**
Bromus inermis	5 = > 50%
Poa palustris	2 = 6-10%
Trifolium pratense	2 = 6-10%
Achillea millefolium	1 = 1-5%
Medicago sativa	1 = 1-5%
Phleum pratense	+ = < 1%
Cirsium arvense	1 = 1-5%
Taraxacum officinale	1 = 1-5%
Juncus balticus	1 = 1-5%
Total Vegetative Cover:	90%

Transect Interval Length: **126 feet (station 140-266)**	
Vegetation Community Type: Juncus balticus / Carex nebrascensis	
Plant Species	**Cover**
Poa palustris	3 = 11-20%
Juncus balticus	4 = 21-50%
Carex nebrascensis	3 = 11-20%
Phalaris arundinacea	3 = 11-20%
Trifolium pratense	2 = 6-10%
Alopecurus pratensis	1 = 1-5%
Total Vegetative Cover:	95%

Transect Interval Length: **20 feet (station 266-286)**	
Vegetation Community Type: Elymus trachycaulus / Pascopyrum smithii	
Plant Species	**Cover**
Bare Ground	2 = 6-10%
Elymus trachycaulus	4 = 21-50%
Melilotus officinalis	1 = 1-5%
Trifolium pratense	1 = 1-5%
Phalaris arundinacea	4 = 21-50%
Pascopyrum smithii	2 = 6-10%
Total Vegetative Cover:	80%

Transect Interval Length: **65 feet (station 286-351)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Elymus trachycaulus	2 = 6-10%
Phleum pratense	+ = < 1%
Rumex crispus	2 = 6-10%
Carex nebrascensis	2 = 6-10%
Cirsium arvense	1 = 1-5%
Agrostis gigantea	1 = 1-5%
Total Vegetative Cover:	90%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Rostad Ranch** Date: **August 8, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **422 feet** Compass Direction from Start: **290˚** Note: _____

Transect Interval Length: **42 feet (station 351-393)**	
Vegetation Community Type: Glyceria grandis / Typah latifolia	
Plant Species	**Cover**
Glyceria grandis	2 = 6-10%
Phalaris arundinacea	4 = 21-50%
Typha latifolia	1 = 1-5%
Eleocharis palustris	3 = 11-20%
Rumex crispus	2 = 6-10%
Total Vegetative Cover:	75%

Transect Interval Length: **29 feet (station 393-422)**	
Vegetation Community Type: Open Water / Aquatic macrophytes	
Plant Species	**Cover**
Bare Ground with algal mats from early open water	4 = 21-50%
Glyceria grandis	1 = 1-5%
Eleocharis palustris	4 = 21-50%
Typha latifolia	2 = 6-10%
Beckmannia syzigachne	2 = 6-10%
Phalaris arundinacea	3 = 11-20%
Total Vegetative Cover:	50%

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** Date: **August 8, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **453 feet** Compass Direction from Start: **120˚** Note: _____

Transect Interval Length: **60 feet (station 0-60)**	
Vegetation Community Type: Bromus inermis / Trifolium spp.	
Plant Species	**Cover**
Bromus inermis	1 = 1-5%
Trifolium pratense	1 = 1-5%
Poa palustris	2 = 6-10%
Elymus repens	2 = 6-10%
Phalaris arundinacea	5 = > 50%
Populus angustifolia	3 = 11-20%
Total Vegetative Cover:	85%

Transect Interval Length: **240 feet (station 60-300)**	
Vegetation Community Type: Juncus balticus / Carex nebrascensis	
Plant Species	**Cover**
Juncus balticus	4 = 21-50%
Carex nebrascensis	4 = 21-50%
Trifolium pratense	1 = 1-5%
Phleum pratense	1 = 1-5%
Phalaris arundinacea	3 = 11-20%
Poa pratensis, Agrostis gigantea	2 = 6-10%
Salix exigua	1 = 1-5%
Pascopyrum smithii	1 = 1-5%
Alopecurus pratensis	3 = 11-20%
Carex stipata	1 = 1-5%
Typha latifolia	1 = 1-5%
Total Vegetative Cover:	90%

Transect Interval Length: **115 feet (station 300-415)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Phleum pratense	2 = 6-10%
Total Vegetative Cover:	80%

Transect Interval Length: **38 feet (station 415-453)**	
Vegetation Community Type: Bromus inermis / Trifolium spp.	
Plant Species	**Cover**
Bromus inermis	3 = 11-20%
Trifolium pratense	1 = 1-5%
Poa pratensis	4 = 21-50%
Elymus trachycaulus	1 = 1-5%
Juncus balticus	2 = 6-10%
Pascopyrum smithii	2 = 6-10%
Elymus repens	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Phleum pratense	1 = 1-5%
Total Vegetative Cover:	75%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Rostad Ranch** Date: **August 8, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **3** Approximate Transect Length: **320 feet** Compass Direction from Start: **30˚** Note: _____

Transect Interval Length: **28 feet (station 0-28)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Populus angustifolia	4 = 21-50%
Phalaris arundinacea	4 = 21-50%
Elymus repens	2 = 6-10%
Amaranthus retroflexus	1 = 1-5%
Phleum pratense	1 = 1-5%
Bare Ground	1 = 1-5%
Total Vegetative Cover:	90%

Transect Interval Length: **107 feet (station 28-135)**	
Vegetation Community Type: Juncus balticus / Carex nebrascensis	
Plant Species	**Cover**
Hordeum jubatum	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Juncus balticus	4 = 21-50%
Phalaris arundinacea	2 = 6-10%
Salix exigua	2 = 6-10%
Agrostis gigantea, Eleocharis palustris	4 = 21-50%
Alopecurus pratensis	2 = 6-10%
Carex nebrascensis	2 = 6-10%
Epilobium ciliatum	1 = 1-5%
Beckmannia syzigachne	1 = 1-5%
Juncus bufonius	1 = 1-5%
Total Vegetative Cover:	90%

Transect Interval Length: **165 feet (station 135-300)**	
Vegetation Community Type: Glyceria grandis / Typha latifolia	
Plant Species	**Cover**
Glyceria grandis	3 = 11-20%
Typha latifolia	5 = > 50%
Eleocharis palustris	4 = 21-50%
Alopecurus pratensis	1 = 1-5%
Beckmannia syzigachne	1 = 1-5%
Salix exigua	2 = 6-10%
Open Water	1 = 1-5%
Total Vegetative Cover:	80%

Transect Interval Length: **20 feet (station 300-320)**	
Vegetation Community Type: Juncus balticus / Carex nebrascensis	
Plant Species	**Cover**
Eleocharis palustris	5 = > 50%
Phalaris arundinacea	2 = 6-10%
Salix exigua	2 = 6-10%
Carex nebrascensis	2 = 6-10%
Juncus balticus	4 = 21-50%
Beckmannia syzigachne	+ = < 1%
Hordeum jubatum	+ = < 1%
Deschampsia caespitosa	+ = < 1%
Total Vegetative Cover:	75%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Rostad Ranch** Date: **August 8, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **4** Approximate Transect Length: **412 feet** Compass Direction from Start: **0˚** Note: _____

Transect Interval Length: **13 feet (station 0-13)**	
Vegetation Community Type: Elymus trachycaulus/Pascopyrum smithii	
Plant Species	**Cover**
Bromus inermis	3 = 11-20%
Elymus trachycaulus	3 = 11-20%
Pascopyrum smithii	3 = 11-20%
Melilotus officinalis	+ = < 1%
Phalaris arundinacea	3 = 11-20%
Total Vegetative Cover:	90%

Transect Interval Length: **87 feet (station 13-100)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	1 = 1-5%
Bromus inermis	1 = 1-5%
Phleum pratense	1 = 1-5%
Poa palustris	5 = > 50%
Alopecurus arundinaceus	2 = 6-10%
Poa pratensis	1 = 1-5%
Typha latifolia	1 = 1-5%
Eleocharis palustris	2 = 6-10%
Total Vegetative Cover:	80%

Transect Interval Length: **192 feet (station 100-292)**	
Vegetation Community Type: Bromus inermis/ Trifolium sp.	
Plant Species	**Cover**
Trifolium pratense	+ = < 1%
Bromus inermis	5 = > 50%
Phleum pratense	1 = 1-5%
Poa pratensis	2 = 6-10%
Poa palustris	3 = 11-20%
Total Vegetative Cover:	90%

Transect Interval Length: **20 feet (station 292-312)**	
Vegetation Community Type: Elymus trachycaulus/Pascopyrum smithii	
Plant Species	**Cover**
Bare Ground	1 = 1-5%
Chenopodium sp.	+ = < 1%
Elymus trachycaulus	4 = 21-50%
Pascopyrum smithii	4 = 21-50%
Bromus inermis	3 = 11-20%
Total Vegetative Cover:	90%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Rostad Ranch** Date: **August 8, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **4** Approximate Transect Length: **412 feet** Compass Direction from Start: **0**˚ Note: _____

Transect Interval Length: **100 feet (station 312-412)**	
Vegetation Community Type: Bromus inermis/Trifolium sp	
Plant Species	**Cover**
Trifolium pratense	1 = 1-5%
Bromus inermis	5 = > 50%
Phleum pratense	2 = 6-10%
Poa pratensis	2 = 6-10%
Total Vegetative Cover:	90%

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

Cover Estimate		**Indicator Class**	**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.

Comments: _____

PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

- ☐ One photograph for each of the four cardinal directions surrounding the wetland.
- ☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.
- ☐ At least one photograph showing the buffer surrounding the wetland.
- ☐ One photograph from each end of the vegetation transect, showing the transect.

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-2		Photo Point 2 (WNW): 46.461612 / -110.294534	275
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
PP-8		Photo Point 8 (E): 46.460987 / -110.298118	90
PP-9		Photo Point 9 (SW): 46.461106 / -110.294579	240
PP-10		Photo Point 10 (ENE): 46.461759 / -110.298593	80
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
T-4 start		Transect 4 start: 46.462945 / -110.297834	0
T-4 end		Transect 4 end: 46.461803 / -110.297953	180
DP-1W		Wetland soil pit #1: 46.462577 / -110.294263	
DP-1U		Upland soil pit #1: 46.462457 / -110.294063	
DP-2W		Wetland soil pit #2: 46.463243 / -110.29184	
DP-2U		Upland soil pit #2: 46.463196 / -110.291675	
DP-3W		Wetland soil pit #3: 46.462084 / -110.295312	
DP-3U		Upland soil pit #3: 46.462029 / -110.295224	

Comments / Problems: _____

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.

GPS Checklist:

- ☒ Upland/wetland boundary.
- ☒ 4-6 landmarks that are recognizable on the aerial photograph.
- ☒ Start and End points of vegetation transect(s).
- ☒ Photograph reference points.
- ☐ Groundwater monitoring well locations.
- ☒ Bird nest boxes.

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? **Yes**
If yes, do they need to be repaired? **No**
If yes, describe the problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? **Yes**
If yes, are the structures working properly and in good working order? **Yes**
If no, describe the problems below.

Comments / Problems: _____

WILDLIFE

Birds

Were man-made nesting structures installed? **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 Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
Deer sp.		☐	☒	☐	
Raccoon		☒	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: One bird box originally located near the start of Transect T-1 in the NE corner of the site is missing. All other boxes in good condition. Periodic cleaning of bird boxes may be useful.

BIRD SURVEY – FIELD DATA SHEET

Site: **Rostad Ranch** Date: **8/8/19**
Survey Time: **10:00 am** to **4:00 pm**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Song sparrow	1	FO	UP				
Common Raven	1	FO	UP				
Brown-headed Cowbird	4	F L FO	UP MA				
Red-winged Blackbird	20	L F FO	UP MA				
Tree Swallow	1	FO	UP				
Brewer's Blackbird	4	F FO L	UP MA				
Wislon's snipe	4	L F FO	MA UP				

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

HABITAT CODES
AB = Aquatic bed
FO = Forested
I = Island
MA = Marsh
MF = Mud Flat
OW = Open Water
SS = Scrub/Shrub
UP = Upland buffer
WM = Wet meadow
US = Unconsolidated shore

Weather: **85 degrees, sunny**

Notes: _____

Rostad Ranch – Plant list (2013-2019)

Scientific Names	Common Names	GP Indicator Status[(a)]
Achillea millefolium	Common Yarrow	FACU
Agropyron cristatum	Crested Wheatgrass	UPL
Agrostis gigantea	Black Bent	FACW
Algae, green	Algae, green	NL
Alopecurus arundinaceus	Creeping-Meadow Foxtail	FACW
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Amaranthus retroflexus	Red-Root	FACU
Ambrosia acanthicarpa	Flat-spine Ragweed	UPL
Aster sp.	Aster	UPL
Bassia scoparia	Mexican-Fireweed	FACU
Beckmannia syzigachne	American Slough Grass	OBL
Berteroa incana	Hoary False-alyssum	UPL
Bromus arvensis	Field Brome	FACU
Bromus carinatus	California Brome	UPL
Bromus inermis	Smooth Brome	UPL
Cardaria draba	Whitetop	UPL
Carex nebrascensis	Nebraska Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Carex stipata	Stalk-Grain Sedge	OBL
Centaurea stoebe	Spotted Knapweed	UPL
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium sp.	Goosefoot	UPL
Cirsium arvense	Canadian Thistle	FACU
Convolvulus arvensis	Field Bindweed	UPL
Cynoglossum officinale	Gypsy-Flower	FACU
Cyrtorhyncha cymbalaria	Alkali Buttercup	OBL
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	UPL
Downingia laeta	Great Basin Calico-Flower	OBL
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

Scientific Names	Common Names	GP Indicator Status[a]
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 Sweetclover	UPL
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
Sinapis arvensis	Wild Mustard	UPL
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	UPL
Trifolium arvense	Rabbit-foot Clover	UPL
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FACU
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Veronica peregrina	Neckweed	FACW

(a) 2016 NWPL [Lichvar *et al.,* 2016]

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch **City/County:** Meagher **Sampling Date:** 08-Aug-19

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-1U**

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 12 T 8N R 11E

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** convex **Slope:** 1.5 % / 0.9 °

Subregion (LRR): LRR F **Lat.:** 46.462457 **Long.:** -110.294063 **Datum:** WGS_19

Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Upland sample point.

VEGETATION - Use scientific names of plants

FWS Region: GP

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
5.	0	☐		
	0	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Bromus inermis	80	☑	80.0%	UPL
2. Poa palustris	15	☐	15.0%	FACW
3. Phleum pratense	5	☐	5.0%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	100	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	0	x 3 =	0	
FACU species	5	x 4 =	20	
UPL species	80	x 5 =	400	
Column Totals:	100	(A)	450	(B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:
Smooth brome is dominant grass in this upland plot.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-1U

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR	4/2	90	10YR	5/8	10	D	M	Clay Loam	mottles

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F,G,H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix S4
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 and 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coastal Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 and 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil meets criteria for Depleted Matrix. This site was historically wet and hydric soils remain, but hydrophytic vegetation and wetland hydrology are not present.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch **City/County:** Meagher **Sampling Date:** 08-Aug-19

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-1W**

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 12 T 8N R 11E

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 1.5 % / 0.9 °

Subregion (LRR): LRR F **Lat.:** 46.462577 **Long.:** -110.294263 **Datum:** WGS_19

Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks:
Wetland sample point.

VEGETATION - Use scientific names of plants

FWS Region: GP

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
5.	0	☐		
	0	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Phalaris arundinacea	25	☑	30.5%	FACW
2. Agrostis gigantea	25	☑	30.5%	FACW
3. Juncus balticus	25	☑	30.5%	FACW
4. Alopecurus pratensis	5	☐	6.1%	FACW
5. Poa pratensis	2	☐	2.4%	FACU
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	82	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 18

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	80	x 2 =	160	
FAC species	0	x 3 =	0	
FACU species	2	x 4 =	8	
UPL species	0	x 5 =	0	
Column Totals:	82	(A)	168	(B)

Prevalence Index = B/A = 2.049

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:

FACW species dominate this plot. Dominance test >50% and Prevalence Index < 3.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-1W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR	4/3	100					Loam	
4-20	10YR	4/1	90	10YR	5/6	10	D	M	Clay Loam	mottles

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F,G,H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix S4
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 and 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coastal Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 and 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Redox features starting at 4 inches.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☑ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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) (LRF F)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 12

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Saturation present at 12 inches.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch **City/County:** Meagher **Sampling Date:** 08-Aug-19

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-2U**

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 12 T 8N R 11E

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR): LRR F **Lat.:** 46.463196 **Long.:** -110.291675 **Datum:** WGS_19

Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks:
Soil moist to surface but no hydrology.

VEGETATION - Use scientific names of plants

FWS Region: GP

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
5.	0	☐		
	0	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Phleum pratense	20	☑	24.1%	FACU
2. Poa palustris	20	☑	24.1%	FACW
3. Bromus inermis	20	☑	24.1%	UPL
4. Elymus trachycaulus	20	☑	24.1%	FACU
5. Alopecurus pratensis	2	☐	2.4%	FACW
6. Juncus balticus	1	☐	1.2%	FACW
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	83	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 17

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	23	x 2 =	46	
FAC species	0	x 3 =	0	
FACU species	40	x 4 =	160	
UPL species	20	x 5 =	100	
Column Totals:	83	(A)	306	(B)

Prevalence Index = B/A = 3.687

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

Plot dominated by FACU and UPL species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-2U

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100					Loam	roots and earthworms
10-20	10YR	4/2	100					Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F,G,H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix S4
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 and 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coastal Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 and 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators observed.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch **City/County:** Meagher **Sampling Date:** 08-Aug-19

Applicant/Owner: MDT **State:** MT **Sampling Point:** DP-2W

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 12 T 8N R 11E

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 1.5 % / 0.9 °

Subregion (LRR): LRR F **Lat.:** 46.463243 **Long.:** -110.291840 **Datum:** WGS_19

Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Wetland data point in NE corner of site.

VEGETATION - Use scientific names of plants

FWS Region: GP

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
5.	0	☐		
	0	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Juncus balticus	50	☑	50.0%	FACW
2. Phalaris arundinacea	50	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	100	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	100	x 2 =	200	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	100	(A)	200	(B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:

Phalaris and Juncus dominant in this plot. Dominance Test >50% and Prevalence Index <3.0.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-2W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR	4/2	80	10YR	5/8	20	D	M	Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F,G,H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix S4
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 and 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coastal Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 and 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Prominent redox features.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☑ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Surveyed late in season. Site known for seasonal high water table and saturation.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch **City/County:** Meagher **Sampling Date:** 08-Aug-19

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-3U**

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 12 T 8N R 11E

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR): LRR F **Lat.:** 46.462029 **Long.:** -110.295224 **Datum:** WGS_19

Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Located near end of Transect 2.

VEGETATION - Use scientific names of plants

FWS Region: GP

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
5.	0	☐		
	0	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Bromus inermis	40	☑	42.1%	UPL
2. Poa palustris	30	☑	31.6%	FACW
3. Phleum pratense	20	☑	21.1%	FACU
4. Phalaris arundinacea	5	☐	5.3%	FACW
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	95	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	35	x 2 =	70	
FAC species	0	x 3 =	0	
FACU species	20	x 4 =	80	
UPL species	40	x 5 =	200	
Column Totals:	95	(A)	350	(B)

Prevalence Index = B/A = 3.684

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

Data point is very close to upland/wetland boundary and includes a co-dominance of upland and wetland species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-3U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/2	100					Clay Loam	earthworms

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F,G,H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix S4
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 and 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coastal Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 and 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators observed. Earthworms in pit.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Rostad Ranch **City/County:** Meagher **Sampling Date:** 08-Aug-19

Applicant/Owner: MDT **State:** MT **Sampling Point:** DP-3W

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 12 T 8N R 11E

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR): LRR F **Lat.:** 46.462084 **Long.:** -110.295312 **Datum:** WGS_19

Soil Map Unit Name: Delpoint variant-Marmarth-Cabbart loam, 2 to 8 percent slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks:
Located near end of Transect 2.

VEGETATION - Use scientific names of plants

FWS Region: GP

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)				
1.	0	☐		
2.	0	☐		
3.	0	☐		
4.	0	☐		
5.	0	☐		
	0	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Phalaris arundinacea	55	☑	57.9%	FACW
2. Juncus balticus	20	☑	21.1%	FACW
3. Phleum pratense	15	☐	15.8%	FACU
4. Poa pratensis	5	☐	5.3%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	95	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	95 (A)		230 (B)

Prevalence Index = B/A = 2.421

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Phalaris-dominated.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-3W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR	4/2	100						Loam	roots
10-20	10YR	3/2	90	10YR	5/8	10	D	M	Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F,G,H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)
- ☐ Sandy Gleyed Matrix S4
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 and 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR I, J)
- ☐ Coastal Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 and 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Prominent redox features below 10".

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Two secondary indicators observed. Survey was completed later in season than usual and area had dried out over the summer. This area is typically saturated during most of growing season.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Rostad Ranch **2. MDT Project #:** STPX-0002(749) **3. Control #:** 5565

3. Evaluation Date: August 8, 2019 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Rostad Mitigation Site

6. Wetland Location(s): Township 8 N, Range 11 E, Section 12; Township 8 N, Range 11 E, Section 13

Approximate Stationing or Roadposts: _____

Watershed: 10 - Musselshell **County:** Meagher _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☒ **Mitigation wetlands; post-construction**
- ☐ **Other** _____

8. Wetland Size (acre): _____ (visually estimated)
28.86 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 28.86 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

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
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	14

Comments: _____

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

12. GENERAL CONDITION OF AA

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

Conditions within AA	Predominant Conditions Adjacent to (within 500 feet of) AA		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is ≤15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is ≤30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is ≤15%.	---	---	---
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 with adaptive management features added to the site in spring 2017. Extensive excavation occurred to create depressional areas and spread out water across the site. Decreased disturbance from cultivation, grazing, and construction since 2017 led to moderate disturbance rating in 2019.

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 preventing (passive) existence of additional vegetated classes?		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 Mitigation Site

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

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☐ D ☐ S _____
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☐ S _____
No usable habitat ☒ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	---	---	0L

Sources for documented use (e.g. observations, records): USFWS list for Meagher County; no habitat specifications present for species or documented occurences.

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

Primary or critical habitat (**list species**) ☒ D ☐ S Downingia laeta (S2S3)
Secondary habitat (**list species**) ☒ D ☐ S Long-billed curlew (S3B); Mountain plover (S2B)
Incidental habitat (**list species**) ☐ D ☐ S _____
No usable habitat ☐ S

ii. Rating: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	.9H	---	---	---	---	---	---

Sources for documented use (e.g. observations, records): Observations of Downingia laeta in wetland during 2013-2015 site visits; long-billed curlews, upland sandpipers, and bobolinks continue to use the site and were observed by MDT staff in the spring of 2019.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of Overall Wildlife Use in the AA: Check substantial, moderate, or low based on supporting evidence.

☐ ***Substantial:*** Based on any of the following [check].
- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interview with local biologist with knowledge of the AA

☐ ***Minimal:*** Based on any of the following [check].
- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interview with local biologist with knowledge of AA

☒ ***Moderate:*** Based on any of the following [check].
- ☒ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☐ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☒ adequate adjacent upland food sources
- ☐ interview with local biologist with knowledge of the AA

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

Structural Diversity (see #13)	☐ **High**								☒ **Moderate**								☐ **Low**			
Class Cover Distribution (all vegetated classes)	☐ **Even**				☐ **Uneven**				☐ **Even**				☒ **Uneven**				☐ **Even**			
Duration of Surface Water in ≥ 10% of AA	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**	**P/P**	**S/I**	**T/E**	**A**
☐ **Low Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☒ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	M	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☐ **Exceptional**	☐ **High**	☒ **Moderate**	☐ **Low**
☐ **Substantial**	---	---	---	---
☒ **Moderate**	---	---	.5M	---
☐ **Minimal**	---	---	---	---

Comments: Site appears to be getting use by white-tailed deer and numerous bird species. Active Sandhill Crane nesting observed in wetlands in 2016, 2018, and 2019 (observed by MDT).

Wetland/Site #(s): Rostad Mitigation Site

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check the NA box and proceed to 14E.

Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier].

Type of Fishery: ☐ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point and rating.

Duration of Surface Water in AA	☐ **Permanent / Perennial**						☐ **Seasonal / Intermittent**						☐ **Temporary / Ephemeral**					
Aquatic Hiding / Resting / Escape Cover	☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**	
Thermal Cover: optimal / suboptimal	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**
FWP Tier I fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 or be less than 0.1.

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity, ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

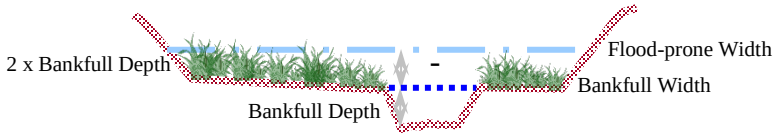
iii. Final Score and Rating: _ **Comments:** No perennially flowing water within AA for fish habitat.

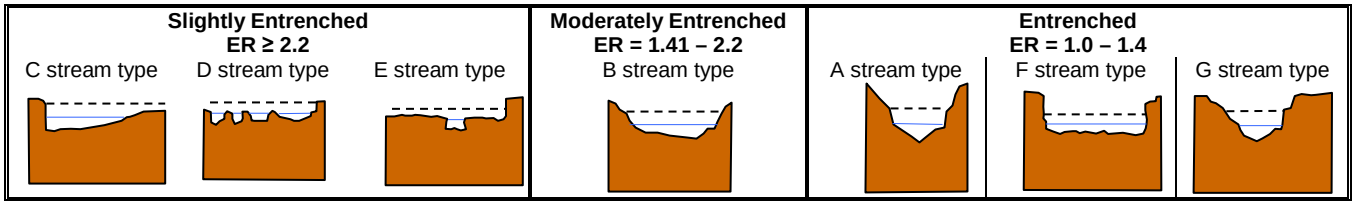
14E. FLOOD ATTENUATION ☒ **NA** (proceed to 14F)

Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

_____ / _____ = _____
flood prone width / bankfull width = entrenchment ratio





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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☐ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
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.

Wetland/Site #(s): Rostad Mitigation Site

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

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

Estimated Maximum Acre Feet of Water Contained in Wetlands within the AA that are Subject to Periodic Flooding or Ponding	☒ **>5 acre feet**			☐ **1.1 to 5 acre feet**			☐ **≤1 acre foot**		
Duration of Surface Water at Wetlands within the AA	☐ **P/P**	☒ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	---	.9H	---	---	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: Depressional area and portions of slope wetlands maintain water seasonally/intermittently. Adaptive management in 2017 resulted in an increased score for this function.

14G. SEDIMENT / NUTRIENT / TOXICANT / RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

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

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**				**Waterbody is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% Cover of Wetland Vegetation in AA	☒ **≥ 70%**		☐ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of Flooding / Ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1H	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: More than 80 percent of the non-open water area is covered with wetland vegetation. A restricted outlet is located on the depressional area as a constructed overflow channel.

14H. SEDIMENT / SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% Cover of Wetland Streambank or **Shoreline by Species with Stability Ratings of ≥6** (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☐ **Permanent / Perennial**	☒ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☒ **≥ 65%**	---	.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 (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☐ **E/H**	☒ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **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 (14Ii); 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].

A	☒ **Vegetated Component >5 acres**						☐ **Vegetated Component 1-5 acres**						☐ **Vegetated Component <1 acre**					
B	☐ **High**		☒ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**	
C	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
P/P	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	.7M	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Rostad Mitigation Site

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average ≥ 50-foot wide vegetated upland buffer around ≥ 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 0.80 ☐ **NO**

iv. Final Score and Rating: .8H **Comments:** Moderate biologial activity; no fish habitat; vegetative component >5 acres with a upland buffer.

14J. GROUNDWATER DISCHARGE / RECHARGE
Check the appropriate indicators in i and ii below.

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

ii. Recharge Indicators
- ☐ Permeable substrate present without underlying impeding layer.
- ☐ Wetland contains inlet but no outlet.
- ☐ Stream is a known 'losing' stream. Discharge volume decreases.
- ☐ Other: _____

iii. Rating: Use the information from i and ii above and the table below to select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☐ **P/P**	☒ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	---	.7M	---	---
☐ **Insufficient Data/Information**	---			

Comments: Seasonal water regime within AA.

14K. UNIQUENESS

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

Replacement Potential	**AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland** OR **plant association listed as "S1" by the MTNHP**			**AA does not contain previously cited rare types** AND **structural diversity (#13) is high** OR **contains plant association listed as "S2" by the MTNHP**			**AA does not contain previously cited rare types** OR **associations** AND **structural diversity (#13) is low-moderate**		
Estimated Relative Abundance (#11)	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☒ Common	☐ Abundant
☐ **Low Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☒ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	.3L	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: PEM and PSS wetlands of this type are common in the area. Structural diversity is not high and there are no bogs, fens, or forested wetlands.

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☐ Educational/Scientific Study ☐ Consumptive Recreational ☒ Non-consumptive recreational ☐ 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: _____

Wetland/Site #(s): Rostad Mitigation Site

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	25.97	*
C. General Wildlife Habitat	mod 0.50	1.00	14.43	
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	NA	NA	0	
F. Short and Long Term Surface Water Storage	high 0.90	1.00	25.97	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	28.86	*
H. Sediment / Shoreline Stabilization	high 0.90	1.00	25.97	*
I. Production Export / Food Chain Support	high 0.80	1.00	23.09	*
J. Groundwater Discharge / Recharge	mod 0.70	1.00	20.20	
K. Uniqueness	low 0.30	1.00	8.66	
L. Recreation / Education Potential (bonus point)	low 0.05		1.44	
Total Points	**6.05**	**9**	**175.59 Total Functional Units**	
Percent of Possible Score 67% (round to nearest whole 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 III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; 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.

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

APPENDIX C
PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Rostad Ranch
Meagher County, Montana

Rostad Ranch: Photo Point Photographs



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



Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2019



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 2019

Rostad Ranch: Photo Point Photographs



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 2019



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 2019

Rostad Ranch: Photo Point Photographs



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 2019



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 2019

Rostad Ranch: Photo Point Photographs



Photo Point 6 Location: West Fence Line
Bearing: 30 degrees Year: 2013



Photo Point 6 Location: West Fence Line
Bearing: 30 degrees Year: 2019



Photo Point 6 Location: West Fence Line
Bearing: 100 degrees Year: 2013



Photo Point 6 Location: West Fence Line
Bearing: 100 degrees Year: 2019



Photo Point 8 Location: West Central
Bearing: 90 degrees Year: 2017



Photo Point 8 Location: West Central
Bearing: 90 degrees Year: 2019

Rostad Ranch: Photo Point Photographs



Photo Point 9 Location: East Fence Line
Bearing: 240 degrees Year: 2017



Photo Point 9 Location: East Fence Line
Bearing: 240 degrees Year: 2019



Photo Point 10 Location: West Central
Bearing: 80 degrees Year: 2017



Photo Point 10 Location: West Central
Bearing: 80 degrees Year: 2019

Rostad Ranch: Transect Photographs



Transect 1: Start
Bearing: 290 degrees
Location: NE Branch of site
Year: 2013



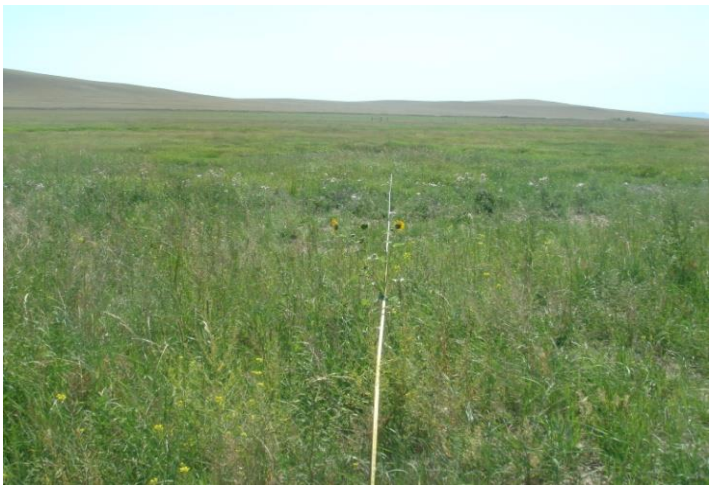
Transect 1: Start
Bearing: 290 degrees
Location: NE Branch of site
Year: 2019



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: 2019



Transect 2: Start
Bearing: 130 degrees
Location: North Central
Year: 2013



Transect 2: Start
Bearing: 130 degrees
Location: North Central
Year: 2019

Rostad Ranch: Transect Photographs



Transect 2: End
Bearing: 310 degrees
Location: North Central
Year: 2013



Transect 2: End
Bearing: 310 degrees
Location: North Central
Year: 2019



Transect 3: Start
Bearing: 30 degrees
Location: South Portion of site
Year: 2013



Transect 3: Start
Bearing: 30 degrees
Location: South Portion of site
Year: 2019



Transect 3: End
Bearing 30: degrees
Location: South Portion of site
Year: 2013



Transect 3: End
Bearing 30: degrees
Location: South Portion of site
Year: 2019

Rostad Ranch: Transect Photographs



Transect 4: Start
Bearing: 0 degrees
Location: Northwest Portion
Year: 2017



Transect 4: Start
Bearing: 0 degrees
Location: Northwest Portion
Year: 2019



Transect 4: End
Bearing: 180 degrees
Location: Northwest Portion
Year: 2017



Transect 4: End
Bearing: 180 degrees
Location: Northwest Portion
Year: 2019

Rostad Ranch: Data Point Photographs



Data Point: DP-1W Location: South portion of site
Year: 2019



Data Point: DP-1U Location: South portion of site
Year: 2019



Data Point: DP-2W Location: NE Branch of site
Year: 2019



Data Point: DP-2U Location: NE Branch of site
Year: 2019



Data Point: DP-3W Location: North Central
Year: 2019



Data Point: DP-3U Location: North Central
Year: 2019