FORSYTH – NORTHWEST MITIGATION SITES: FORSYTH WEST, MIDDLE, AND EAST

Project Overview

Watershed: Watershed #14 – Middle Yellowstone

Monitoring Year: 2019

Years Monitored: 7th year of monitoring

Corps Permit Number: NWO-2002-90-599 and NWO-2006-906-76 MTB

Monitoring Conducted By: RESPEC/HDR for MDT

Dates Monitoring Was Conducted: July 11, 2019

Purpose of the Approved Project:

The Forsyth – Northwest (FNW) sites were developed to mitigate for a cumulative total of 8.98 acres of wetland impacts associated with two Montana Department of Transportation (MDT) highway construction projects: (1) the Volborg – North and South project constructed in 2004 and (2) the FNW project constructed in2012. Applying standard wetland compensatory mitigation ratios [US Army Corps of Engineers, 2005], the total area of required mitigation presented in the approved wetland mitigation plan was 11 acres. Four individual mitigation sites in close proximity to each other were constructed as part of this project and include the Treasure County Line, Forsyth West, Forsyth Middle, and Forsyth East. Monitoring at the Treasure County Line site was completed in 2017, and monitoring at the three other sites continued in 2019. The results of the 2019 monitoring are presented in this report.

Site Location:

Latitude: 46.33927 **Longitude:** –106.876743

County: Rosebud **Nearest Town:** Forsyth, MT

Map Included: Yes

Mitigation Site Construction Started: Spring 2012 **Construction Ended:** Fall 2012

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: 13.57

Wetland Credit Acres Generated to Date: 14.60

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). The monitoring period was extended because of adaptive management actions in 2017 to repair a failed dike structure at the FNW-West mitigation site.

Summary of Performance Standards: Formal performance standards were not developed as part of the mitigation plan for these sites. All three sites have developed wetland habitat as intended with positive indicators for wetland vegetation, soils, and hydrology. All of the sites are stable, have less than 5 percent total noxious weed cover, and are functioning as designed.

Summary Data: Combined West, Middle, and East Sites

Wetland Delineation – The total wetland acreage delineated in 2019 at the three sites is 11.69 acres (see the delineation maps in Appendix A), which is the same acreage as 2018 but a 4.66-acre increase since 2017. The adaptive management strategies implemented in 2017 at the FNW-West site 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/open water in 2019. Wetland acreages for all three sites are provided in Table 1.

Table 1. Wetland Habitat Acreages Delineated at the FNW Sites (2013–2019)

Wetland and Upland Habitats	2013 (acres)	2014 (acres)	2015 (acres)	2016 (acres)	2017 (acres)	2018 (acres)	2019 (acres)
FNW-West	5.44	5.85	6.01	6.01	5.89	10.55[(a)]	10.55[(a)]
FNW-Middle	0.49	0.49	0.49	0.49	0.58	0.58	0.58
FNW-East	1.19	1.19	0.46	0.43	0.43	0.56	0.56
Total	**7.12**	**7.53**	**6.96**	**6.93**	**6.90**	**11.69**	**11.69**

(a) Created wetland acreage includes 6.72 acres of open water that is slowly developing submerged and emergent wetland plant communities.

Functional Assessment – The 2019 results of the functional assessments at all three sites are summarized in the Table 2. Completed Montana Wetland Assessment Method (MWAM) forms for the FNW sites are provided in Appendix B. Overall, all of the sites rate as Category III wetlands and have generated 73.79 Functional Units. Functional Assessment ratings have remained relatively consistent at the three sites since monitoring began in 2013.

Table 2. 2019 Montana Wetland Assessment Method Summary for the Forsyth Northwest Sites

Function and Value Parameters From the 2008 Montana Wetland Assessment Method	FNW-West	FNW-Middle	FNW-East
Listed/Proposed Threatened & Endangered (T&E) Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)
Montana Natural Heritage Program (MTNHP) Species Habitat	High (0.9)	High (0.9)	High (0.9)
General Wildlife Habitat	Mod (0.5)	Mod (0.4)	Mod (0.4)
General Fish/Aquatic Habitat	Low (0.3)	N/A	N/A
Flood Attenuation	Mod (0.5)	N/A	N/A
Short- and Long-Term, Surface-Water Storage	High (0.9)	Mod (0.6)	Low (0.3)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	High (0.8)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	Mod (0.6)	Mod (0.6)
Production Export/Food Chain Support	Mod (0.7)	Low (0.3)	Low (0.3)
Groundwater Discharge/Recharge	Mod (0.7)	N/A	Mod (0.7)
Uniqueness	Mod (0.5)	Low (0.2)	Low (0.2)
Recreation/Education Potential (bonus points)	High (0.15)	N/A	N/A
Actual Points/Possible Points	**6.45/11**	**3.8/9**	**4.4/9**
% of Possible Score Achieved	**59.0%**	**42.2%**	**48.9%**
Overall Category	**III**	**III**	**III**
Total Acreage of Assessed Wetlands Within Site Boundaries	**10.55**	**0.58**	**0.56**
Functional Units (acreage × actual points)	**68.09**	**2.2**	**2.5**

Photographs – Photographs were taken at photo points, transect endpoints, and data points at all three FNW sites in 2019 and 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).

Wildlife – Wildlife species that were observed directly or indirectly at the three monitoring sites during the 2019 field surveys are listed in the Wetland Mitigation Site Monitoring forms for each site (Appendix B). Wildlife observations at the FNW-Middle and FNW-East sites were minimal in 2019 because the surveys were completed in the middle of the day and the sites are relatively small and not diverse. Nine bird species were recorded at the FNW-West site during the field investigation along with deer tracks and one northern leopard frog (*Lithobates pipiens*).

Summary Data: Specific to the FNW-West Site

FNW-West Site Vegetation – A total of 79 plant species were identified on the site from 2013 through 2019. No new species were identified at the site in 2019 (see the plant list in Appendix B). Vegetation plant communities were identified by plant composition and dominance. This site underwent extensive changes to the vegetation communities following repair of the dike and subsequent flooding of the site in 2018 and 2019. Wetland Type 17 – Open Water/Aquatic Macrophytes replaced a number of wetland and upland communities across the site. Mature cottonwood trees and willows toward the center of the site have also shown signs of stress from the flooding during the last two monitoring events and will likely die if flooding behind the dike continues into the future. The following vegetation community types were identified in 2019:

- Upland Type 1 – *Bromus tectorum*/*Sarcobatus vermiculatus*
- Upland Type 5 – *Symphoricarpos albus*/*Pascopyrum smithii*
- Upland Type 6 – *Pascopyrum smithii*/*Bromus tectorum*
- Wetland Type 8 – *Typha latifolia*/*Eleocharis palustris*
- Wetland Type 9 – *Eleocharis palustris*/Open Water
- Wetland Type 16 - *Alopecurus arundinaceus/Hordeum jubatum*
- Wetland Type 17 – Open Water/Aquatic Macrophytes.

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 two transects in 2019 (Figure A-2, Appendix A). Details of each transect are provided in the Wetland Mitigation 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 282 feet long and intersected upland community Type 5 and wetland community Type 17; 95 percent of the transect crossed open water habitat in 2019 and is a result of ponding across the site that resulted from 2017 adaptive management activities at the site. Total vegetative cover has remained constant at 5 percent since the dike was reconstructed.

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

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**282**	**282**	**282**	**282**
Vegetation Community Transitions Along Transect	7	5	1	1
Vegetation Communities Along Transect	5	5	1	1
Hydrophytic Vegetation Communities Along Transect	4	2	0	1
Total Vegetative Species	26	18	5	4
Total Hydrophytic Species	5	4	0	1
Total Upland Species	21	14	5	4
Estimated % Total Vegetative Cover	90	46	5	10
Estimated % Unvegetated	10	54	95	65
% Transect Length Comprising Hydrophytic Vegetation Communities	37	34	0	30
% Transect Length Comprising Upland Vegetation Communities	63	66	5	5
% Transect Length Comprising Unvegetated Open Water	0	0	95	65
% 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 261 feet long and intersects upland community Types 5 and 6, and wetland community Type 9; 90 percent of the transect crossed wetland habitat in 2019. Total vegetative cover decreased in 2018 and 2019 to 20 percent because water levels increased across the site after dike repair in 2017.

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

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**261**	**261**	**261**	**261**
Vegetation Community Transitions Along Transect	2	3	2	2
Vegetation Communities Along Transect	3	4	3	3
Hydrophytic Vegetation Communities Along Transect	1	2	1	1
Total Vegetative Species	28	19	13	15
Total Hydrophytic Species	8	9	4	5
Total Upland Species	20	10	9	10
Estimated % Total Vegetative Cover	82	92	20	20
Estimated % Unvegetated	13	8	80	80
% Transect Length Comprising Hydrophytic Vegetation Communities	87	87	90	90
% Transect Length Comprising Upland Vegetation Communities	13	13	10	10
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0

Infestations of two Priority 2B noxious weeds (Canada thistle [*Cirsium arvense*] and leafy spurge [*Euphorbia esula*]) were mapped at the site in 2018 but were not observed in 2019. Ongoing weed-spraying efforts and elevated water levels across the site have essentially eradicated noxious weeds from the site in the last 2 years.

FNW-West Site Hydrology – The main source of hydrology at the FNW-West site is runoff from precipitation events in the East Spring Coulee Watershed. Surface runoff from East Spring Coulee flows directly into the site. Additional hydrology is provided by a seasonally high groundwater table and flood flows from nearby Porcupine Creek. In both 2018 and 2019, the mitigation site received heavy runoff from Porcupine Creek and East Spring Coulee and filled the mitigation site with water to full capacity. Since 2013 (when monitoring began), 2019 was only the second year that this site has been completely flooded during the monitoring event. The dike and overflow structure that were repaired in 2016 appeared to be in good condition and functioning as designed.

FNW-West Site Soils – Soil test pits were excavated at two locations, and both locations were within what was originally mapped as the Marvan silty clay soil series (DP-1W and DP-1U; Figure A-2, Appendix A and USACE data forms, Appendix B). DP-1W is located on the edge of the wetland depression. The soil profile revealed a 10YR 5/1 clay loam from 0 to 20 inches with 10 percent prominent 10YR 5/6 mottles. This soil qualifies as a Hydric Soil Indicator (F3) Depleted Matrix. DP-1U is located in upland community Type 5 – *Symphoricarpos albus*/*Pascopyrum smithii*. The soil profile revealed a brown (10YR 3/2) clay loam and did not meet the criteria for any hydric soil indicators. Because of the extensive surface water at the site in 2018 and 2019, the matched data point location was moved to the west side of the depression as the original location for DP-1W was under 2 feet of water.

Summary Data: Specific to FNW-Middle Site

FNW-Middle Site Vegetation – A total of 57 plant species were identified on the site from 2013 through 2019. No new species were identified at the site in 2019 (see the plant list in Appendix B). Vegetation plant communities were identified by plant composition and dominance. The following vegetation community types were identified in 2019:

- Upland Type 3 – *Pascopyrum smithii/Elymus canadensis*
- Wetland Type 4 – *Puccinellia nuttalliana/Hordeum jubatum.*

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 one transect in 2019 (Figure A-2, Appendix A). Details of the vegetation transect are provided in the Wetland Mitigation Site Monitoring form in Appendix B. Photographs of the transect end points are provided in Appendix C. Table 5 summarizes the data for T-1. T-1 is 50 feet long and intersected upland community Type 3 and wetland community Type4; 38 percent of the transect crossed wetland habitat in 2019. Total vegetative cover has remained constant at 85 percent from 2016 to 2019. Infestations of two Priority 2B noxious weeds were identified at the site in 2019: salt-cedar and Canada thistle (Figure A-6, Appendix A).

Table 5. Data Summary for T-1 From 2016 Through 2019 at the FNW-Middle Site

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**50**	**50**	**50**	**50**
Vegetation Community Transitions Along Transect	2	2	2	2
Vegetation Communities Along Transect	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1
Total Vegetative Species	11	17	17	16
Total Hydrophytic Species	3	4	5	4
Total Upland Species	8	13	12	12
Estimated % Total Vegetative Cover	85	83	85	85
Estimated % Unvegetated	15	17	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	30	38	38	38
% Transect Length Comprising Upland Vegetation Communities	70	62	62	62
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0

FNW-Middle Site Hydrology – This site is situated near abandoned meander bends associated with Big Porcupine Creek that exhibit wetland characteristics. The site may experience occasional flooding during high flows in Big Porcupine Creek but is not intended to exhibit perennial hydrology because of its proximity to Montana Highway 12. The excavated depression exhibited signs of inundation that persisted for an extended period before the field survey. Positive hydrologic indicators that were observed at this site included surface soil cracks, and geomorphic position. The site was not inundated at the time of the 2019 field survey.

FNW-Middle Site Soils – Soil test pits were examined at two locations, and both locations were within what was originally mapped as the Harlem silty clay soil series (DP-1W and DP-1U; Figure A-5, Appendix A and USACE data forms, Appendix B). DP-1W is located in an excavated depression near the center of the site. The soil profile revealed a dark olive-brown (2.5Y 3/2) clay loam from 0 to 2 inches with a dark gray (10YR 4/1) clay loam from 2 to 20 inches that had faint (10YR 5/8) mottles. This soil qualifies as a Hydric Soil Indicator (F3) Depleted Matrix. DP-1U is located in upland community Type 3 – *Pascopyrum smithii/Elymus canadensis*, approximately 10 feet northeast of DP-1W. The soil profile revealed a dark olive-brown (2.5Y 3/2) clay loam and did not meet the criteria for any hydric soil indicators.

Summary Data: Specific to FNW-East Site

FNW-East Site 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 (see the plant list in Appendix B). Vegetation plant communities were identified by plant composition and dominance. The following vegetation community types were identified in 2019:

- Upland Type 3 – *Pascopyrum smithii/Elymus spp.*
- Wetland Type 4 – *Hordeum jubatum/Eleocharis palustris.*

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 two transects in 2019 (Figure A-2, Appendix A). Details of each transect are provided in the Wetland Mitigation Site Monitoring form in Appendix B.

Photographs of the transect end points are provided in Appendix C. Table 6 summarizes the data for T-1. T-1 is 125 feet long and intersected upland community Type 3, and wetland community Type 4; 52 percent of the transect crossed wetland habitat, which is consistent with previous years. Total vegetative cover has remained constant at 95 percent from 2016 to 2019.

Table 6. Data Summary for T-1 From 2016 Through 2019 at the FNW-East Site

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**125**	**125**	**125**	**125**
Vegetation Community Transitions Along Transect	2	2	2	2
Vegetation Communities Along Transect	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1
Total Vegetative Species	22	17	17	16
Total Hydrophytic Species	9	7	7	7
Total Upland Species	11	10	10	9
Estimated % Total Vegetative Cover	90	95	95	95
Estimated % Unvegetated	10	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	50	50	52	52
% Transect Length Comprising Upland Vegetation Communities	50	50	48	48
% 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 7. T-2 is 181 feet long and intersects upland community Type 3 and wetland community Type 4; 55 percent of the transect crossed wetland habitat in 2019. Total vegetative cover has remained constant at 98percent from 2017 to 2019.

Table 7. Data Summary for T-2 From 2016 Through 2019 at the FNW-East Site

Monitoring Year	2016	2017	2018	2019
Transect Length (feet)	**181**	**181**	**181**	**181**
Vegetation Community Transitions Along Transect	2	2	2	2
Vegetation Communities Along Transect	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1
Total Vegetative Species	26	11	14	15
Total Hydrophytic Species	6	4	6	6
Total Upland Species	20	7	8	9
Estimated % Total Vegetative Cover	94	98	98	98
Estimated % Unvegetated	6	2	2	2
% Transect Length Comprising Hydrophytic Vegetation Communities	44	55	55	55
% Transect Length Comprising Upland Vegetation Communities	56	45	45	45
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0

Infestations of two Priority 2B noxious weed (salt-cedar) and field bindweed were mapped in several locations and are shown in Figure A-9 (Appendix A). No woody plants were installed at the FNW-East site. Mature cottonwoods and willows in the area appear to be providing natural regeneration of cottonwoods and willows; seedlings of both genera were documented within the wetland community.

FNW-East Site Hydrology – The FNW-East site is very similar to the FNW-Middle site. The main sources of hydrology at the FNW-East site are shallow groundwater, direct precipitation, and surface runoff from adjacent uplands. Old meander scars of Big Porcupine Creek with relic and contemporary wetland characteristics are located directly adjacent to the site. Positive hydrologic indicators that were observed at this site included surface soil cracks and geomorphic position.

FNW-East Site Soils – Soil test pits were examined at four locations, and all locations were within what was originally mapped as the Harlem silty clay soil series (DP-1W, DP-1U, DP-2W, and DP-2U; Figure A-8, Appendix A and USACE data forms, Appendix B). DP-1W is located in the western edge of the wetland depression within an area that met the wetland criteria. The soil profile revealed a dark grayish-brown (2.5Y 3/2) clay loam with very dark grayish-brown (2.5 Y 4/4) redoximorphic concentrations along pore linings. The soil met the criteria for redox dark surface (F6) and classification as a hydric soil. DP-1U is located approximately 10 feet northwest of DP-1W on the side slope of the excavated basin in the adjacent uplands. The soil profile revealed a dark olive-brown (2.5Y 3/3) clay loam and did not meet the criteria for any hydric soil indicators. DP-2W is located in the eastern edge of the wetland depression within an area that met the wetland criteria. The soil profile revealed a 2.5YR 4/2 clay loam with bright 10YR 5/8 redoximorphic concentrations along pore linings. The soil met the criteria for depleted matrix (F3) and classification as a hydric soil.

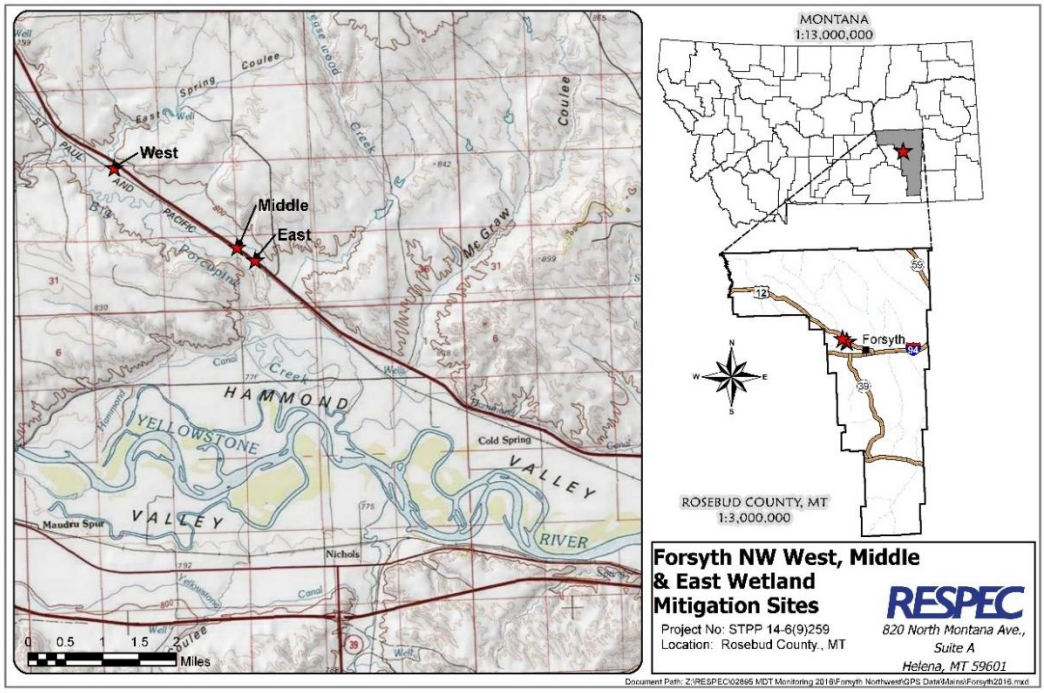
Credit Summary – Table 8 summarizes the estimated wetland credits at all three sites based on the USACE-approved credit ratios and the wetland delineation completed in July 2019. Table 8 also includes credits already approved from the Treasure County Line site. A wetland debit summary from the Volborg – North and South project and Forsyth Northwest project are provided in Table 8. The site has generated an excess of 1.82 credit acres to offset losses from these two construction projects.

Table 8. Credit/Debit Summary for the Forsyth – Northwest Project

Project Site	Actual Acres	Type	Debit Ratio	Debit Acres
Volborg – North and South	6.80	Debit	1.5:1	10.20
FNW Previously Mitigated	1.78	Debit	1:1[(a)]	1.78
FNW Remaining	0.40	Debit	2:1	0.80
Total	**8.98**	**Total Debits**		**12.78**
Mitigation Site	**Actual Acres**	**Mitigation Type**	**Credit Ratio**	**Credit Acres**
Site 1: West	9.26	Creation Credit	1:1	9.26
	1.29	Preservation Credit	4:1	0.32
	3.16	Upland Buffer Credit	5:1	0.63
Site 2: Middle	0.58	Creation Credit	1:1	0.58
	1.22	Upland Buffer Credit	5:1	0.24
Site 3: East	0.56	Creation Credit	1:1	0.56
	2.18	Upland Buffer Credit	5:1	0.44
Site 4: Treasure County Line	1.74	Previous Creation Credit	1:1	1. 74
	4.15	Upland Buffer Credit	5:1	0.83
Total	**24.14**	**Total Credits**		**14.60**
Net Credits				**1.82**

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

Formal performance standards were not developed as part of the mitigation plan for these sites. All three sites have developed wetland habitat as intended with positive indicators for wetland vegetation, soils, and hydrology. All sites are stable, have less than 5 percent total noxious weed cover, and are functioning as designed. To date, the sites have developed enough mitigation credits to satisfy the required 12.78 acres of wetland debits (Table 8) and generated an additional 1.82 credit acres at the sites.

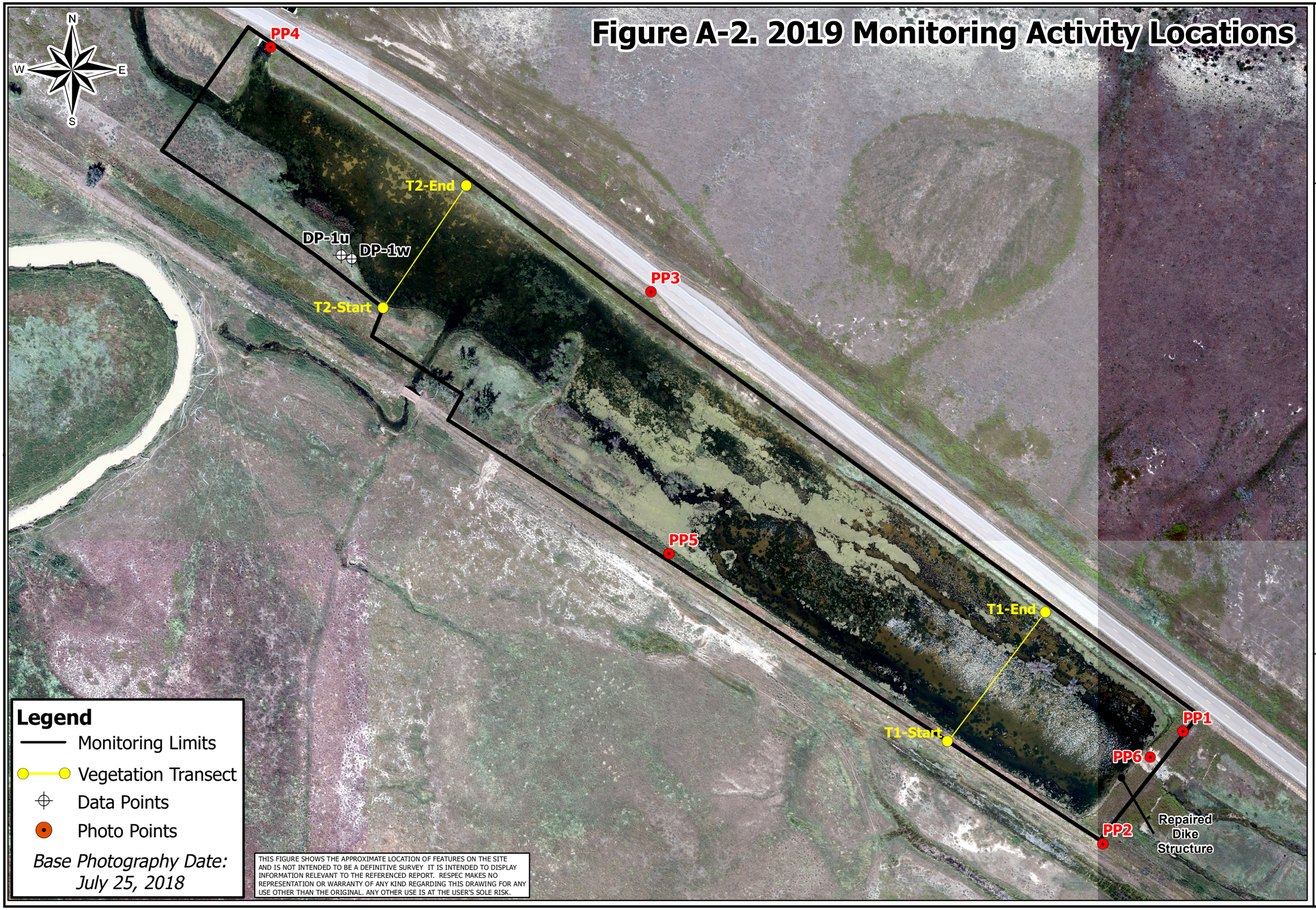
References

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
Forsyth Northwest – West, Middle, and East Sites
Rosebud County, Montana

Figure A-2. 2019 Monitoring Activity Locations



Legend

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

Base Photography Date: July 25, 2018

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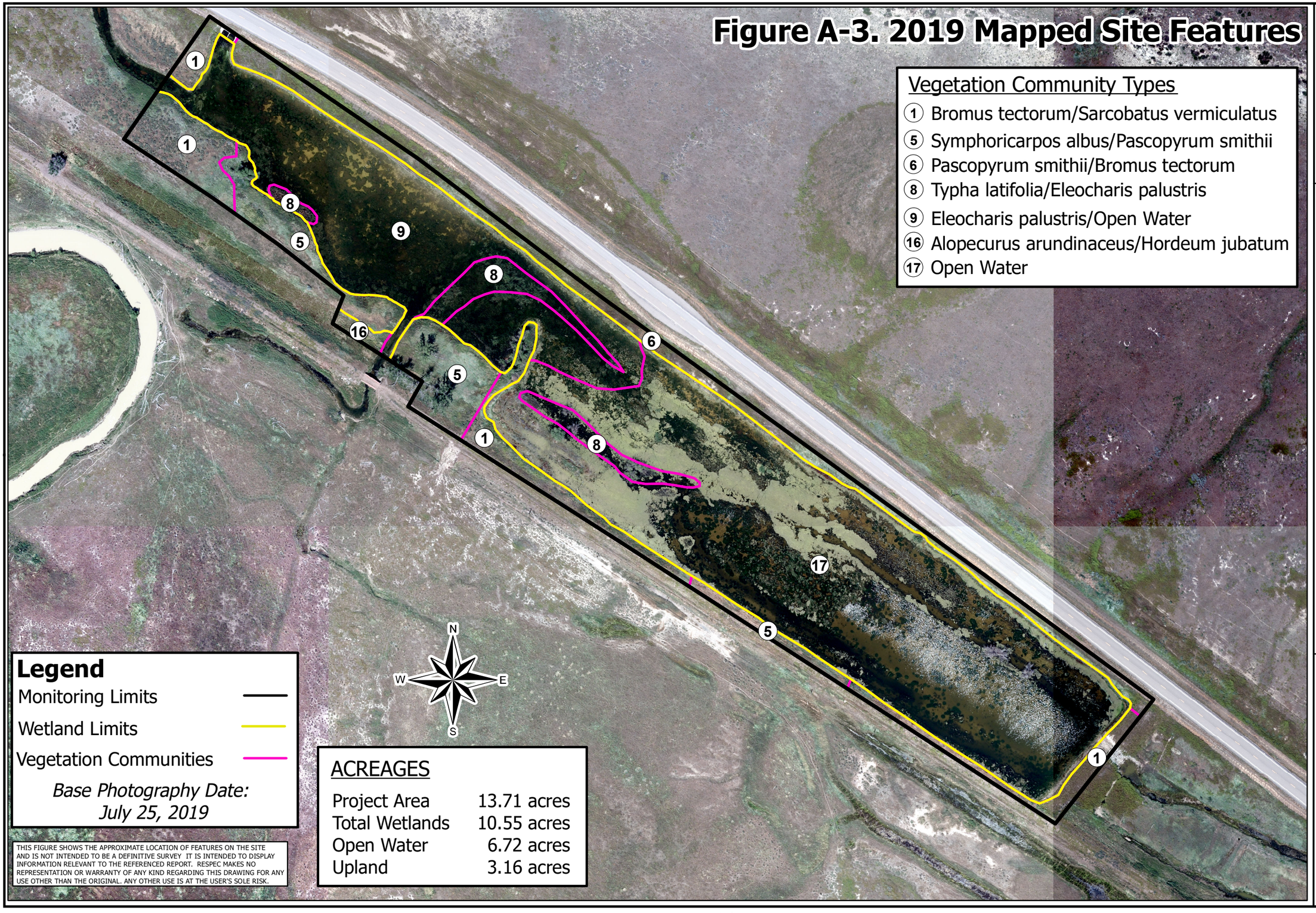
Forsyth NW - West Site
2019 Monitoring Activity Locations

0 65 130 260 390 520 650 Feet

Project: STPP 14-6(9)259
Location: Rosebud Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Wains\West Site\Monitor2019.mxd

Figure A-3. 2019 Mapped Site Features



Vegetation Community Types

1. Bromus tectorum/Sarcobatus vermiculatus
5. Symphoricarpos albus/Pascopyrum smithii
6. Pascopyrum smithii/Bromus tectorum
8. Typha latifolia/Eleocharis palustris
9. Eleocharis palustris/Open Water
16. Alopecurus arundinaceus/Hordeum jubatum
17. Open Water

Legend

Monitoring Limits

Wetland Limits

Vegetation Communities

Base Photography Date: July 25, 2019

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ACREAGES

Project Area	13.71 acres
Total Wetlands	10.55 acres
Open Water	6.72 acres
Upland	3.16 acres

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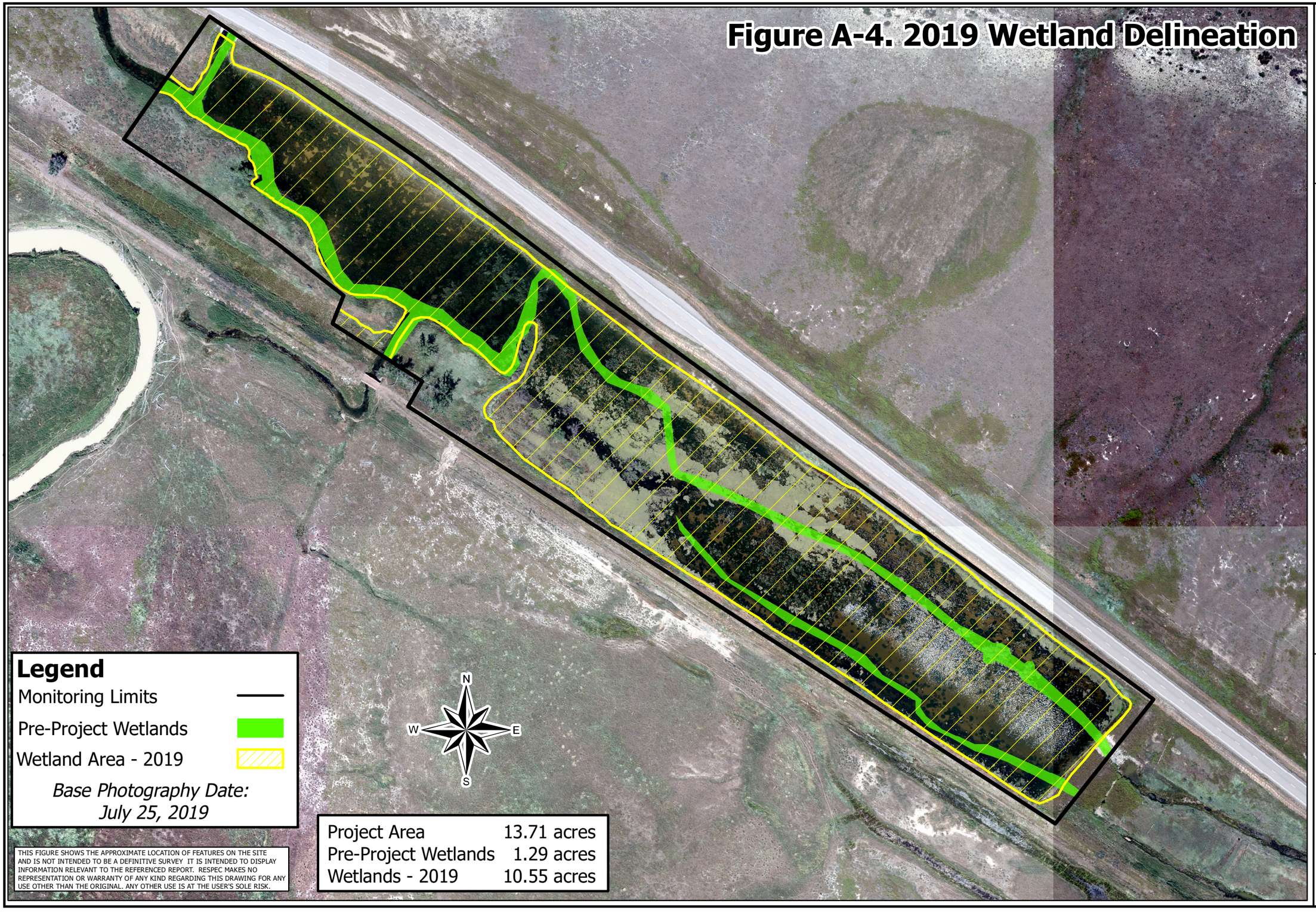
Forsyth NW - West Site
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File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\West Site\Veg2019.mxd

Figure A-4. 2019 Wetland Delineation



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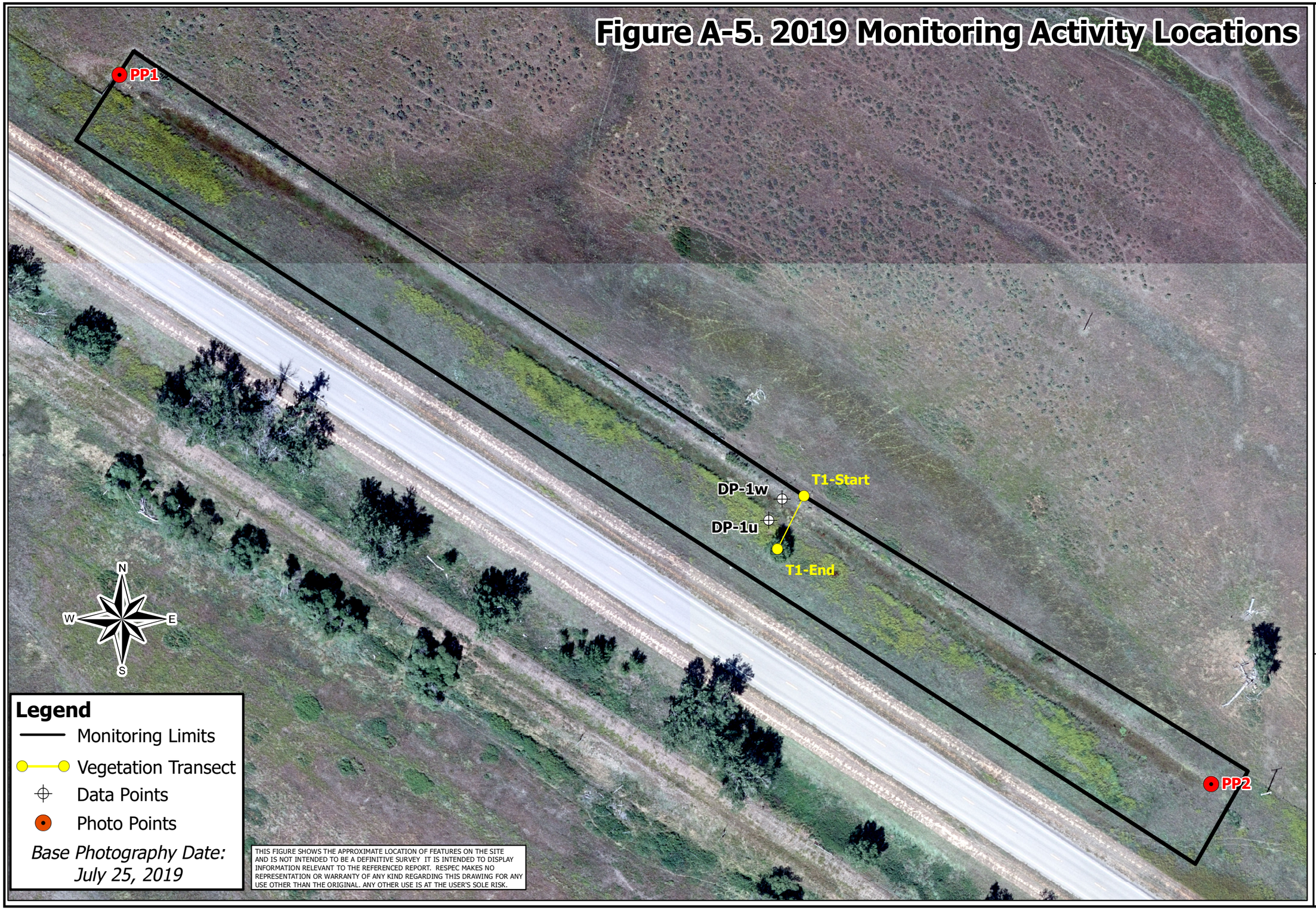
Forsyth NW - West Site
2019 Wetland Delineation

0 65 130 260 390 520 650 Feet

Project: STPP 14-6(9)259
Location: Rosebud Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\West Site\Delin2019.mxd

Figure A-5. 2019 Monitoring Activity Locations



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

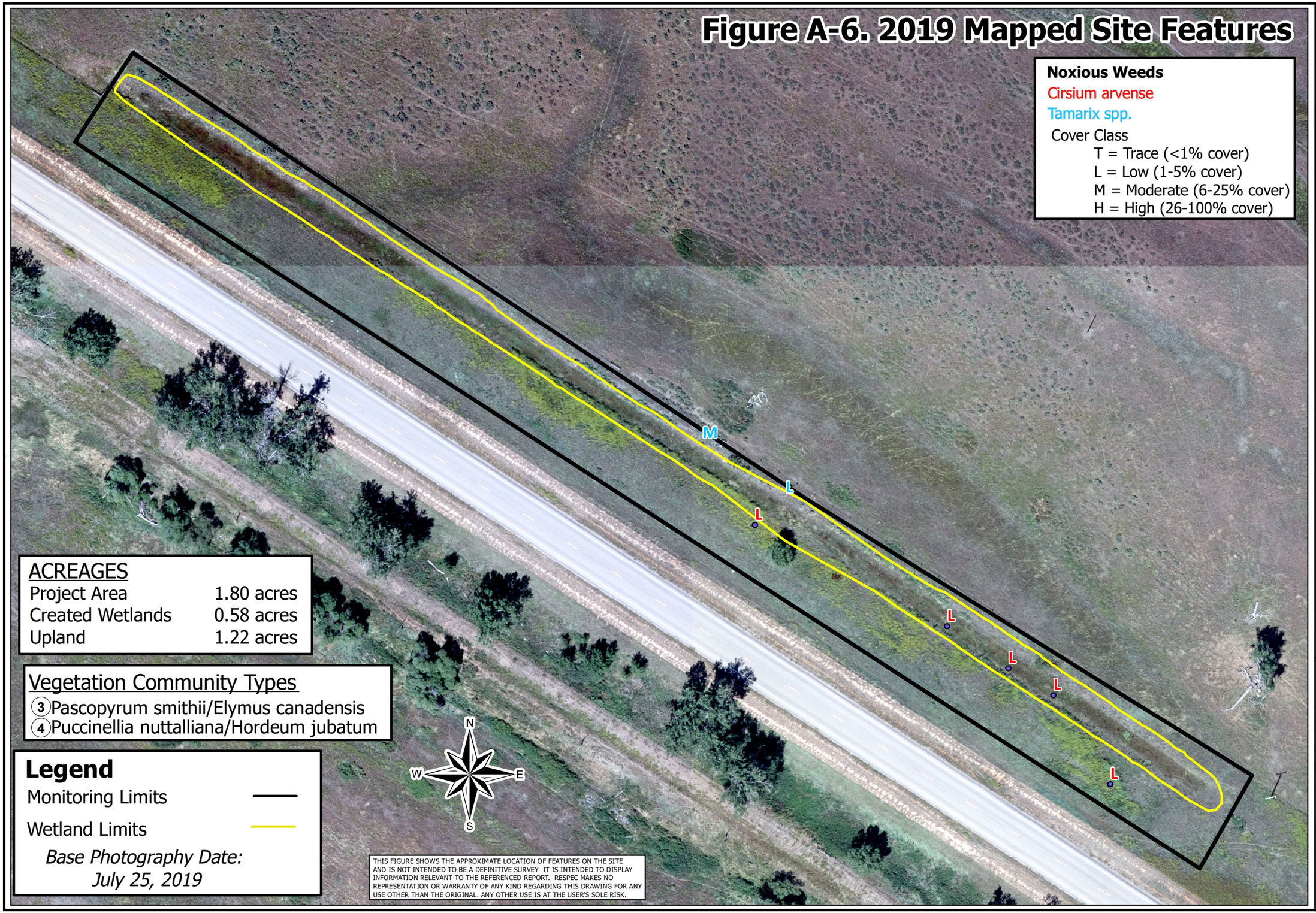
Forsyth NW - Middle Site
2019 Monitoring Activity Locations

0 30 60 120 180 240 300 Feet

Project:	STPP 14-6(9)259
Location:	Rosebud Co., Montana
Date:	October 2019
Project Manager:	M. Traxler
Drawn By:	JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\Middle Site\Monitor2019.mxd

Figure A-6. 2019 Mapped Site Features



Noxious Weeds
Cirsium arvense
Tamarix spp.
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (6-25% cover)
H = High (26-100% cover)

ACREAGES

Project Area	1.80 acres
Created Wetlands	0.58 acres
Upland	1.22 acres

Vegetation Community Types
(3) Pascopyrum smithii/Elymus canadensis
(4) Puccinellia nuttalliana/Hordeum jubatum

Legend
Monitoring Limits
Wetland Limits
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.

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Forsyth NW - Middle Site
2019 Mapped Site Features

0 30 60 120 180 240 300 Feet

Project: STPP 14-6(9)259
Location: Rosebud Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\Middle Site\Veg2019.mxd

Figure A-7. 2019 Wetland Delineation

Project Area	1.80 acres
Pre-Project Wetlands	0.0 acres
Wetlands - 2019	0.58 acres

Legend

- Monitoring Limits
- Pre-Project Wetlands
- Wetland Area - 2019

Base Photography Date: July 25, 2019

N W E S

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.

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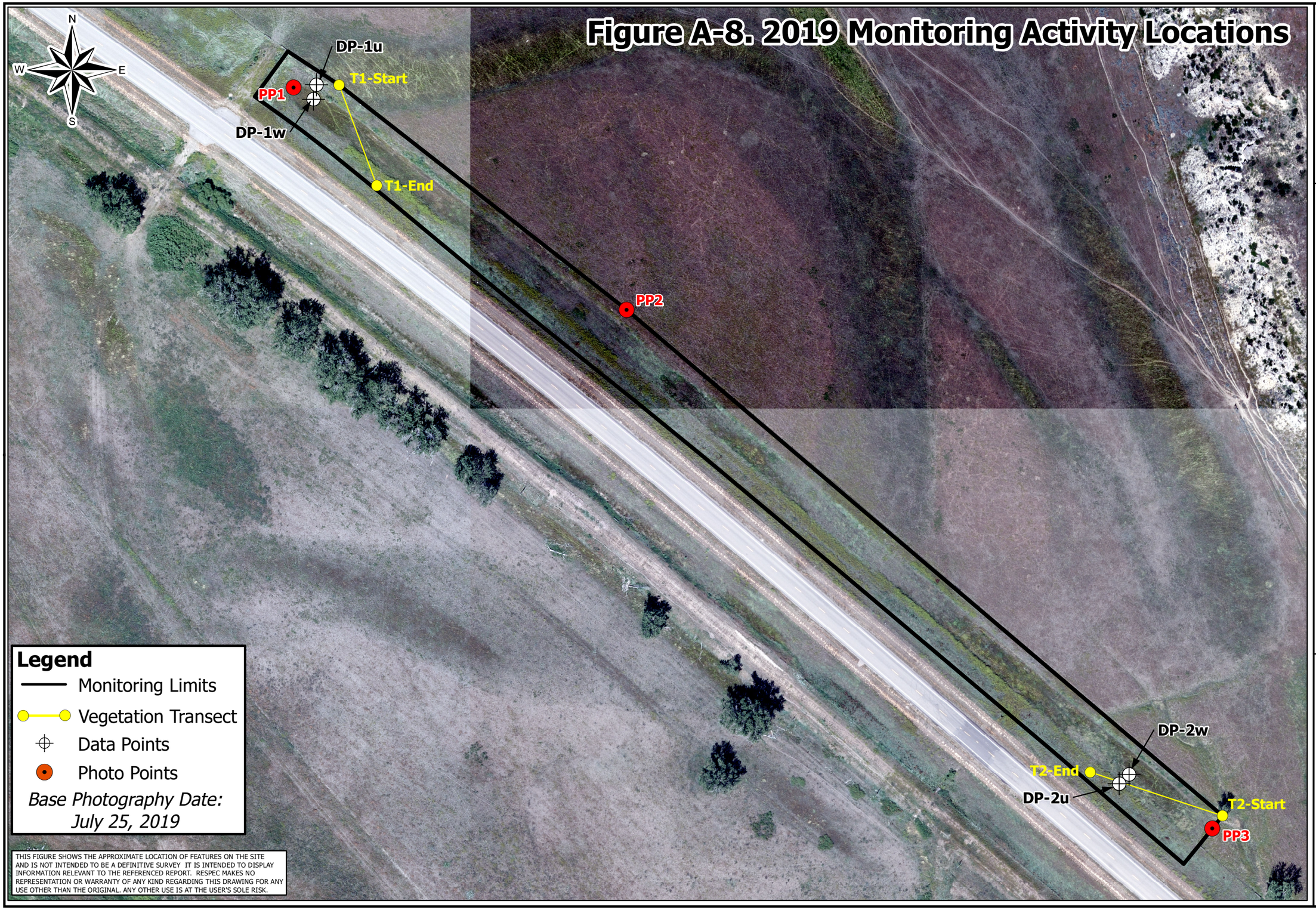
Forsyth NW - Middle Site
2019 Wetland Delineation

0 30 60 120 180 240 300 Feet

Project:	STPP 14-6(9)259
Location:	Rosebud Co., Montana
Date:	October 2019
Project Manager:	M. Traxler
Drawn By:	JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\Middle Site\Delin2019.mxd

Figure A-8. 2019 Monitoring Activity Locations



Legend

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

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.

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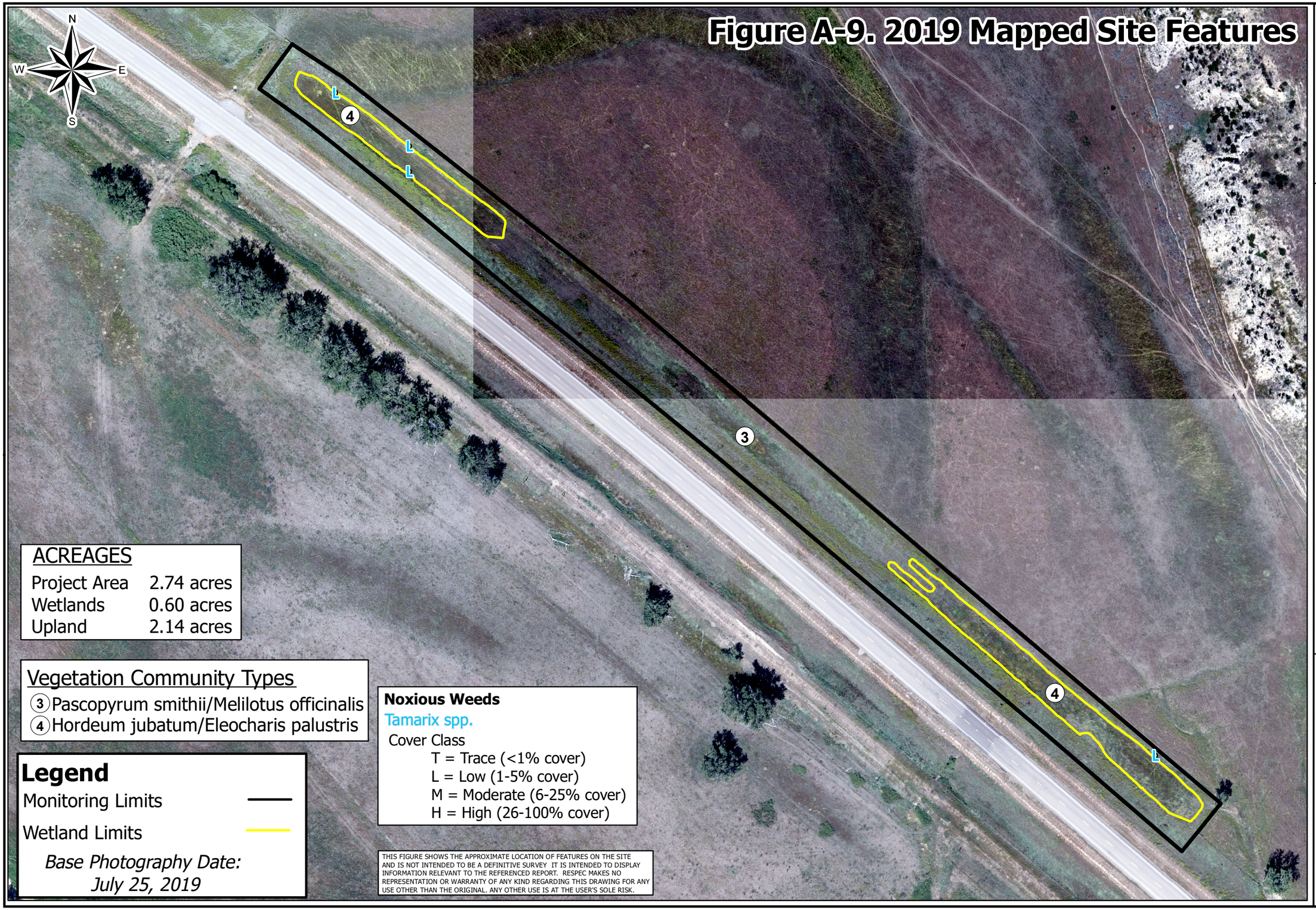
Forsyth NW - East Site
2019 Monitoring Activity Locations

0 50 100 200 300 400 500 Feet

Project: STPP 14-6(9)259
Location: Rosebud Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\East Site\Monitor2019.mxd

Figure A-9. 2019 Mapped Site Features



ACREAGES	
Project Area	2.74 acres
Wetlands	0.60 acres
Upland	2.14 acres

Vegetation Community Types

(3) Pascopyrum smithii/Melilotus officinalis
(4) Hordeum jubatum/Eleocharis palustris

Legend

Monitoring Limits

Wetland Limits

Base Photography Date: July 25, 2019

Noxious Weeds

Tamarix spp.

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

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.

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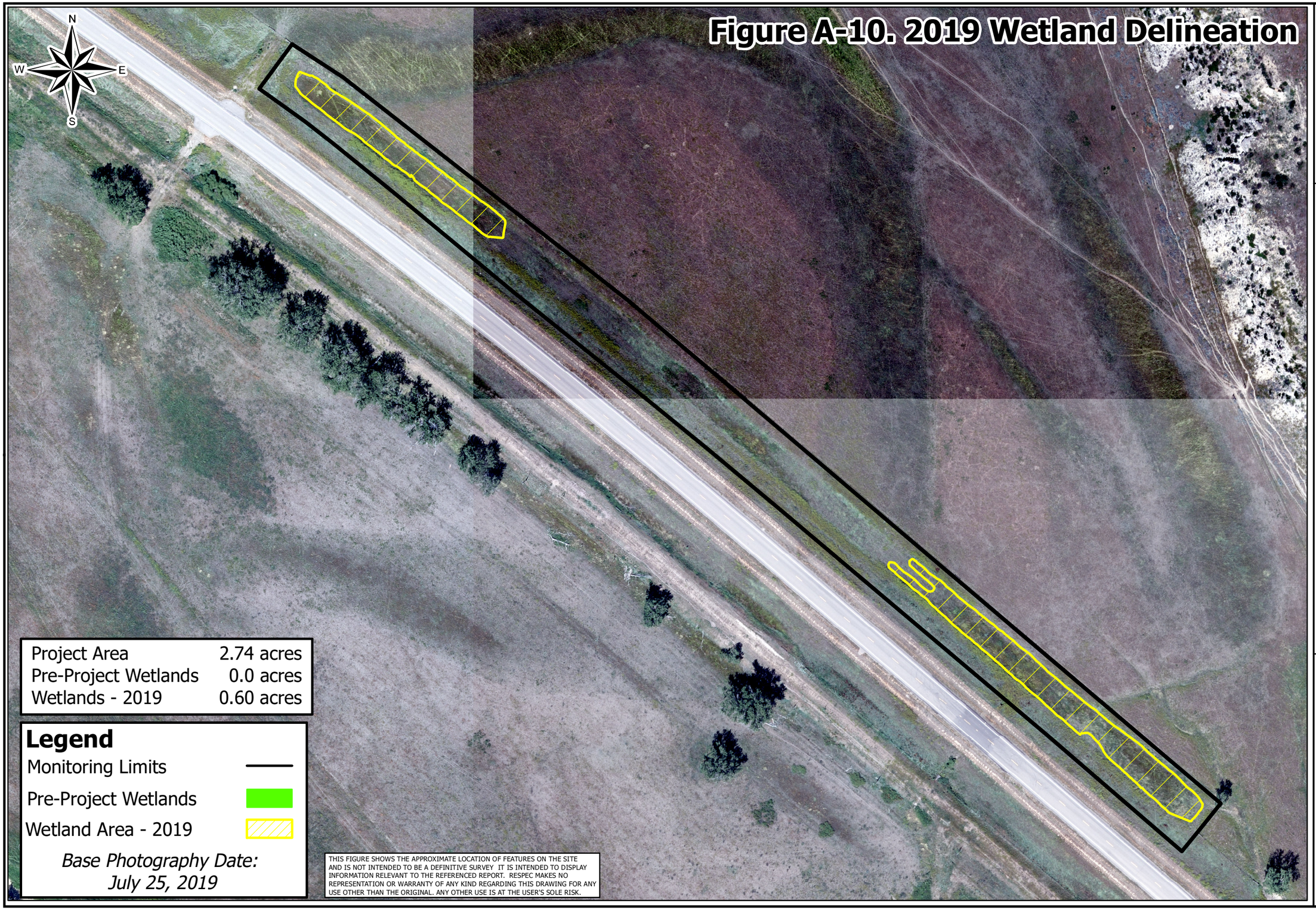
Forsyth NW - East Site
2019 Mapped Site Features

0 50 100 200 300 400 500 Feet

Project: STPP 14-6(9)259
Location: Rosebud Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\East Site\Veg2019.mxd

Figure A-10. 2019 Wetland Delineation



Project Area	2.74 acres
Pre-Project Wetlands	0.0 acres
Wetlands - 2019	0.60 acres

Legend

- Monitoring Limits
- Pre-Project Wetlands
- Wetland Area - 2019

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.

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Forsyth NW - East Site
2019 Wetland Delineation

0 50 100 200 300 400 500 Feet

Project: STPP 14-6(9)259
Location: Rosebud Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: C:\Projects\02895 MDT Monitoring 2016-2019\Forsyth Northwest\GPS Data\Mains\East Site\Delin2019.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Forsyth Northwest – West, Middle, and East Sites
Rosebud County, Montana

RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Forsyth NW - West** Project Number: _____
Assessment Date: **July 11, 2019** Person(s) conducting the assessment: **M. Traxler, T. Traxler**
Location: **~15 miles NW of Forsyth** MDT District: **Glendive**
Milepost: **RP 280 on US 12**
Legal Description: T **7N** R **39E** Section **20 & 29**
Weather Conditions: **sunny, 90 degrees, breezy** Time of Day: **2:00 PM**
Initial Evaluation Date: **August 15, 2013** Monitoring Year: **7** # Visits in Year: **1**
Size of evaluation area: **13.71 acres** Land use surrounding wetland: **Agriculture, grazing, US 12**

HYDROLOGY

Surface Water Source: **Periodic flooding from Big Porcupine Creek, surface runoff from East Spring Coulee, and seasonal high groundwater**
Inundation: **Present** Average Depth: **1 feet** Range of Depths: **0.5-3.5 ft**
Percent of assessment area under inundation: **80%**
Depth at emergent vegetation-open water boundary: **2 feet**
If assessment area is not inundated then are the soils saturated within 12 inches of surface: **No**
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):
Entire wetland area inundated in 2019.

Groundwater Monitoring Wells: **Absent**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth

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:
Mitigation area receives surface water when East Spring Creek Coulee produces surface flow and from periodic flooding of Big Porcupine Creek with potential for high water velocities through constructed wetland. The entire site was flooded at the time of assessment due to 2019 being a high water year.

VEGETATION COMMUNITIES

Community Number: **1** Community Title (main spp): **Bromus tectorum / Sacobatus vermiculatus**

Dominant Species	% Cover	Dominant Species	% Cover
Bromus tectorum	2 = 6-10%	Elymus repens	1 = 1-5%
Pascopyrum smithii	3 = 11-20%	Euphorbia esula	1 = 1-5%
Sarcobatus vermiculatus	2 = 6-10%	Thalspi arvense	1 = 1-5%
Schedonorus pratensis	2 = 6-10%	Bassia scoparia	1 = 1-5%
Bare Ground	1 = 1-5%	Chenopodium album	1 = 1-5%
Bromus inermis	1 = 1-5%	Hordeum jubatum	1 = 1-5%

Comments / Problems: _____

Community Number: **5** Community Title (main spp): **Symphoricarpos albus / Pascopyrum smithii**

Dominant Species	% Cover	Dominant Species	% Cover
Pascopyrum smithii	5 = > 50%	Hordeum jubatum	1 = 1-5%
Symphoricarpos albus	2 = 6-10%	Chenopodium album	1 = 1-5%
Bassia scoparia	1 = 1-5%	Poa pratensis	3 = 11-20%
Bromus japonicus	1 = 1-5%	Sarcobatus vermiculatus	3 = 11-20%
Cirsium arvense	+ = < 1%	Thlaspi arvense	2 = 6-10%
Poa compressa	2 = 6-10%	Bromus inermis	1 = 1-5%

Comments / Problems: _____

Community Number: **6** Community Title (main spp): **Pascopyrum smithii / Bromus tectorum**

Dominant Species	% Cover	Dominant Species	% Cover
Bromus tectorum	3 = 11-20%	Elymus trachycaulus	1 = 1-5%
Pascopyrum smithii	5 = > 50%	Lepidium perfoliatum	2 = 6-10%
Bromus japonicus	1 = 1-5%	Hordeum jubatum	1 = 1-5%
Melilotus officinalis	3 = 11-20%	Linum lewisii	1 = 1-5%
Bassia scoparia	2 = 6-10%	Thlaspi arvense	+ = < 1%
Elymus canadensis	1 = 1-5%	Hordeum marinum	+ = < 1%

Comments / Problems: _____

Community Number: **7** Community Title (main spp): **Puccinellia nuttalliana / Hordeum jubatum**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Schedonorus pratensis	+ = < 1%
Hordeum jubatum	+ = < 1%	Bare Ground	+ = < 1%
Puccinellia nuttalliana	+ = < 1%	Elymus repens	+ = < 1%
Bassia scoparia	+ = < 1%	Glycyrrhiza lepidota	+ = < 1%
Grindelia squarrosa	+ = < 1%	Helianthus annuus	+ = < 1%
Lactuca serriola	+ = < 1%	Pascopyrum smithii	+ = < 1%

Comments / Problems: **Entire community under standing water in 2019. All vegetation dead. 2017 species left in table for reference purposes.**

VEGETATION COMMUNITIES (continued)

Community Number: **8** Community Title (main spp): **Typha latifolia / Elocharis palustris**

Dominant Species	% Cover	Dominant Species	% Cover
Eleocharis palustris	5 = > 50%		
Typha latifolia	3 = 11-20%		
Schoenoplectus acutus	+ = < 1%		
Typha angustifolia	2 = 6-10%		
Salix amygdaloides	1 = 1-5%		
Spartina pectinata	1 = 1-5%		

Comments / Problems: **Populus deltoides (2ft tall)-<1%; Schoenoplectus maritimus-1; Sonchus arvensis-<1**

Community Number: **9** Community Title (main spp): **Eleocharis palustris / Open Water**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%		
Eleocharis palustris	3 = 11-20%		
Typha latifolia	1 = 1-5%		
Schoenoplectus maritimus	3 = 11-20%		
Polygonum aviculare	+ = < 1%		
Populus deltoides	+ = < 1%		

Comments / Problems: _____

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

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Lactuca serriola	+ = < 1%
Pascopyrum smithii	+ = < 1%	Populus deltoides	+ = < 1%
Schedonorus pratensis	+ = < 1%	Tragopogon dubius	+ = < 1%
Chenopodium album	+ = < 1%	Bromus tectorum	+ = < 1%
Elymus repens	+ = < 1%	Spartina pectinata	+ = < 1%
Grindelia squarrosa	+ = < 1%	Glycyrrhiza lepidota	+ = < 1%

Comments / Problems: **Entire community under standing water in 2019. All vegetation dead. 2017 species left in table for reference purposes.**

Community Number: **12** Community Title (main spp): **Hordeum jubatum/Elymus trachycaulus**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Muhlenbergia asperifolia	+ = < 1%
Elymus repens	+ = < 1%		
Glycyrrhiza lepidota	+ = < 1%		
Hordeum jubatum	+ = < 1%		
Elymus trachycaulus	+ = < 1%		
Grindelia squarrosa	+ = < 1%		

Comments / Problems: **Entire community under standing water in 2019. All vegetation dead. 2017 species left in table for reference purposes.**

VEGETATION COMMUNITIES (continued)

Community Number: **13** Community Title (main spp): **Elymus trachycaulus/Bromus tectorum**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Euphorbia esula	+ = < 1%
Poa pratensis	+ = < 1%	Eymus lanceolatus	
Populus deltoides	+ = < 1%	Elymus repens	
Bromus tectorum	+ = < 1%	Puccinellia nuttalliana	
Elymus trachycaulus	+ = < 1%		
Tragopogon dubius	+ = < 1%		

Comments / Problems: **Entire community under standing water in 2019. All vegetation dead. 2017 species left in table for reference purposes.**

Community Number: **14** Community Title (main spp): **Pascopyrum smithii/Elymus lanceolatus**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%	Ribes cereum	+ = < 1%
Bromus tectorum	+ = < 1%	Pascopyrum smithii	+ = < 1%
Elymus lanceolatus	+ = < 1%		
Symphoriocarpos albus	+ = < 1%		
Elymus trachycaulus	+ = < 1%		
Linum lewisii	+ = < 1%		

Comments / Problems: **Entire community under standing water in 2019. All vegetation dead. 2017 species left in table for reference purposes.**

Community Number: **16** Community Title (main spp): **Alopecurus arundinaceus/Hordeum jubatum**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus arundinaceus	4 = 21-50%		
Hordeum jubatum	4 = 21-50%		
Sagittaria cuneata	3 = 11-20%		
Rumex crispus	3 = 11-20%		
Bare Ground	3 = 11-20%		

Comments / Problems: _____

Community Number: **17** Community Title (main spp): **Open Water/Aquatic Macrophytes**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%		
Typha latifolia	+ = < 1%		
Eleocharis palustris	+ = < 1%		
Schoenoplectus maritimus	+ = < 1%		
Aquatic Macrophytes	3 = 11-20%		

Comments / Problems: **Nearly the entire SE half of the wetland was under open water at time of survey.**

Additional Activities Checklist:

☒ Record and map vegetative communities on aerial photograph.

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes

Comments / Problems: **No woody vegetation planted at site. Natural recruitment of cottonwoods and willows is occurring.**

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Forsyth NW - West** Date: **July 11, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **282 feet** Compass Direction from Start: **25˚** Note: _____

Transect Interval Length: **14 feet (station 0-14)**	
Vegetation Community Type: 5: Symphoriocarpos albus/Pascopyum smithii	
Plant Species	**Cover**
Bromus tectorum	5 = > 50%
Poa pratensis	2 = 6-10%
Pascopyrum smithii	2 = 6-10%
Lepidium perfoliatum	1 = 1-5%
Bare Ground	2 = 6-10%
Total Vegetative Cover:	95%

Transect Interval Length: **268 feet (station 14-282)**	
Vegetation Community Type: 17: Open Water/Aquatic Macrophytes	
Plant Species	**Cover**
Open Water	5 = > 50%
Dead Vegetation	+ = < 1%
Aquatic Macrophytes	2 = 6-10%
Total Vegetative Cover:	10%

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: **Forsyth NW - West** Date: **July 11, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **261 feet** Compass Direction from Start: **25˚** Note: _____

Transect Interval Length: **7 feet (station 0-7)**	
Vegetation Community Type: 5: Symphoricarpos albus / Pascopyrum smithii	
Plant Species	**Cover**
Symphoricarpos albus	+ = < 1%
Elymus repens	4 = 21-50%
Lepidium perfoliatum	3 = 11-20%
Poa compressa	4 = 21-50%
Thlapsi arvensis	1 = 1-5%
Pascopyrum smithii	1 = 1-5%
Bare Ground	1 = 1-5%
Cirsium arvense	+ = < 1%
Total Vegetative Cover:	95%

Transect Interval Length: **235 feet (station 7-242)**	
Vegetation Community Type: 9: Eleocharis palustris / Open Water	
Plant Species	**Cover**
Eleocharis palustris	1 = 1-5%
Schoenoplectus maritimus	1 = 1-5%
Open Water	5 = > 50%
Typha latifolia	1 = 1-5%
Total Vegetative Cover:	5%

Transect Interval Length: **19 feet (station 242-261)**	
Vegetation Community Type: 6: Pascopyrum smithii / Bromus tectorum	
Plant Species	**Cover**
Elymus lanceoatus	1 = 1-5%
Bromus arvensis	1 = 1-5%
Bare Ground	1 = 1-5%
Melilotus officinale	5 = > 50%
Lepidium perfoliatum	1 = 1-5%
Pascopyrum smithii	3 = 11-20%
Bassia scoparia	1 = 1-5%
Hordeum jubatum	1 = 1-5%
Total Vegetative Cover:	95%

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): 46.336914 / -106.871132	270
PP-2		Photo Point 2 (Pano): 46.336468 / -106.871811	350
PP-3		Photo Point 3 (Pano): 46.339088 / -106.874611	230
PP-4		Photo Point 4 (Pano): 46.340237 / -106.877312	210
PP-5		Photo Point 5 (Pano): 46.337817 / -106.874587	45
PP-6		Completed Dike: 46.3368 / -106.8714	300
PP-6a		Completed Dike: 46.3368 / -106.8714	120
T-1 start		Transect 1 start: 46.33691 / -106.872772	25
T-1 end		Transect 1 end: 46.337456 / -106.872063	205
T-2 start		Transect 2 start: 46.339001 / -106.87645	25
T-2 end		Transect 2 end: 46.339561 / -106.875854	205
DP-1W		Wetland soil pit: 46.33925 / -106.876672	
DP-1U		Upland soil pit: 46.33927 / -106.876743	

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? **NA**
If yes, do they need to be repaired? **NA**
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: **The repaired dike was visually inspected during the site visit and photos taken. Water had clearly spilled over the spillway earlier in the spring/summer and the structure and overflow held up well to the flow of water. No damage to the dike was observed. upland vegetation that was seeded following construction is doing well and no noxious weeds were noted on the dike.**

WILDLIFE

Birds

Were man-made nesting structures installed? **No**
If yes, type of structure: _____ How many? **0**
Are the nesting structures being used? **NA**
Do the nesting structures need repairs? **NA**

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
Deer sp.		☒	☐	☐	
Northern Leopard Frog	1	☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: _____

BIRD SURVEY – FIELD DATA SHEET

Site: **Forsyth NW - West** Date: **7/11/19**
Survey Time: **2:00 pm** to **3:15 pm**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Red-winged Blackbird	4	F FO	UP OW				
Western Meadowlark	1	FO L	UP				
Cliff Swallow	6	FO F	OW UP				
Yellow-headed Blackbird	4	F FO	OW UP				
Common Nighthawk	1	FO	UP OW				
Killdeer	2	FO	UP OW				
Duck sp.	6	F L	OW				
Wilson's Phalarope	2	BP FO	OW SS UP				
Brewer's Blackbird	2	FO	UP OW				

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: **90 degrees, sunny**

Notes: _____

Forsyth NW – West Site Plant List (2013-2019)

Scientific Names	Common Names	GP Indicator Status[(a)]
Agropyron cristatum	Crested Wheatgrass	NL
Alisma triviale	Northern Water-Plantain	OBL
Amaranthus retroflexus	Red-Root	FACU
Ambrosia psilostachya	Perennial Ragweed	FACU
Ammannia robusta	Grand Redstem	OBL
Aquatic macrophytes	Aquatic macrophytes	NL
Artemesia biennis	Biennial Wormwood	FACU
Asclepias speciosa	Showy Milkweed	FAC
Atriplex argentea	Silverscale	FAC
Bassia scoparia	Mexican-Fireweed	FACU
Bromus carinatus	California Brome	NL
Bromus inermis	Smooth Brome	UPL
Bromus arvensis	Japanese Brome	NL
Bromus tectorum	Cheatgrass	NL
Carex sp.	Sedge	NL
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium rubrum	Red Goosefoot	OBL
Cichorium intybus	Chicory	FACU
Cirsium arvense	Canadian Thistle	FACU
Comandra umbellata	Bastard-Toadflax	UPL
Convolvulus arvensis	Field Bindweed	NL
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	NL
Distichlis spicata	Coastal Salt Grass	FACW
Echinochloa crus-galli	Large Barnyard Grass	FAC
Elaeagnus angustifolia	Russian-Olive	FACU
Eleocharis palustris	Common Spike-Rush	OBL
Elymus canadensis	Nodding Wild Rye	FACU
Elymus hispidus	Intermediate Wheatgrass	NL
Elymus repens	Creeping Wild Rye	FACU
Elymus lanceolatus	Streamside Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Euphorbia esula	Leafy Spurge	NL
Glyceria elata	Tall Manna Grass	OBL
Glycyrrhiza lepidota	American Licorice	FACU
Grindelia squarrosa	Curly-Cup Gumweed	UPL
Helianthus annuus	Common Sunflower	FACU
Hordeum brachyantherum	Meadow Barley	FAC
Hordeum jubatum	Fox-Tail Barley	FACW
Hordeum marinum	Seaside Barley	FACU
Iva axillaris	Deer-root	FAC
Lactuca serriola	Prickly Lettuce	FAC
Lepidium perfoliatum	Clasping Pepperwort	FAC
Linum lewisii	Prairie Flax	NL

Scientific Names	Common Names	GP Indicator Status[(a)]
Melilotus officinalis	Yellow Sweet-Clover	FACU
Muhlenbergia asperifolia	Alkali Muhly	FDCW
Nassella viridula	Green Needle Grass	NL
Pascopyrum smithii	Western-Wheat Grass	FACU
Phalaris arundinacea	Reed Canary Grass	FACW
Poa compressa	Flat-Stem Blue Grass	FACU
Poa palustris	Fowl Blue Grass	FACW
Poa pratensis	Kentucky Blue Grass	FACU
Polygonum aviculare	Yard Knotweed	FACU
Populus deltoides	Eastern Cottonwood	FAC
Puccinellia nuttalliana	Nuttall's Alkali Grass	OBL
Ratibida columnifera	Mexican Coneflower	NL
Ribes aureum	Golden Currant	FACU
Ribes cereum	Wax Currant	NL
Rosa arkansana	Prairie Rose	FACU
Rumex crispus	Curly Dock	FAC
Sagittaria cuneata	Arum-Leaf Arrowhead	OBL
Salicornia rubra	Red Saltwort	OBL
Salix fragilis	Fragile Willow	FAC
Sarcobatus vermiculatus	Greasewood	FAC
Schedonorus pratensis	False Meadow Rye Grass	FACU
Schoenoplectus acutus	Hard-Stem Club-Rush	OBL
Schoenoplectus maritimus	Saltmarsh Club-Rush	OBL
Setaria pumila	Yellow Bristle Grass	FACU
Sonchus arvensis	Field Sow-Thistle	FAC
Spartina pectinata	Freshwater Cord Grass	FACW
Sporobolis airoides	Alkali-Sacaron	FAC
Symphoricarpos albus	Common Snowberry	UPL
Tamarix chinensis	Salt-cedar	NL
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	NL
Typha angustifolia	Narrow-Leaf Cat-Tail	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Xanthium strumarium	Rough Cockleburr	FAC
Yucca glauca	Small Soapweed Yucca	NL

(a) 2016 NWPL (Lichvar et al., 2016)

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - West **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 20 T 7N R 39E

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

Subregion (LRR): LRR G **Lat.:** 46.33927 **Long.:** -106.876743 **Datum:** WGS84

Soil Map Unit Name: Marvan silty clay, 0-2 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:
Point on southwest side of open water on hillside above DP-1W.

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. Sarcobatus vermiculatus	20	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	20	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Bromus arvensis	20	☑	30.8%	FACU
2. Pascopyrum smithii	20	☑	30.8%	FACU
3. Bassia scoparia	10	☐	15.4%	FACU
4. Hordeum jubatum	10	☐	15.4%	FACW
5. Lactuca serriola	5	☐	7.7%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	65	= 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	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	85 (A)		295 (B)

Prevalence Index = B/A = 3.471

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 includes various upland grasses and forbs.

*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
0-4	10YR	3/2	100					Loam	roots
4-20	10YR	3/2	100					Clay Loam	salt crystals

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. Salt crystals are likely gypsum crystals formed through periodic wetting and drying of the soil.

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. Soil moist to surface from recent precipitation.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - West **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 20 T 7N R 39E

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

Subregion (LRR): LRR G **Lat.:** 46.33925 **Long.:** -106.876672 **Datum:** WGS84

Soil Map Unit Name: Marvan silty clay, 0-2 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:
Point on southwest side of open water.

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. Spartina pectinata	80	☑	87.0%	FACW
2. Rumex crispus	10	☐	10.9%	FAC
3. Eleocharis palustris	2	☐	2.2%	OBL
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%	
	92	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 8

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	2	x 1 =	2
FACW species	80	x 2 =	160
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	92 (A)		192 (B)

Prevalence Index = B/A = 2.087

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:
Narrow wetland fringe around perimeter of open water.

*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
0-20	10YR	5/1	90	10YR	5/6	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:

Soil meets criteria for depleted matrix.

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):	4
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Soil saturated to the surface and standing water in pit at 4".

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Forsyth NW - West **2. MDT Project #:** STPP 14-6(9)259 **3. Control #:** 4059

3. Evaluation Date: 7/11/19 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Forsyth NW - West

6. Wetland Location(s): Township 7 N, Range 39 E, Section 20; Township 7 N, Range 39 E, Section 29

Approximate Stationing or Roadposts: RP 280 on US 12

Watershed: 14 - Middle Yellowstone **County:** Rosebud

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)
10.55 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): >10.55 (visually estimated)
(see manual for determining AA) _____ (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
Riverine	Emergent Wetland		Permanent / Perennial	5
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	31
Depressional	Unconsolidated Bottom	Diked	Seasonal / Intermittent	64

Comments: In 2018 the entire site flooded to the top of the dike. Emergent wetland and unconsolidated bottom habitat were present.

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.)**:** Construction activities in 2017 to repair the dike structure temporarily increased disturbance rating at the site to high in 2017 but was reduced to moderate in 2018 and remains moderate in 2019.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Euphorbia esula, Convolvulus arvensis, Cirsium arvense, and Tamarix ramosissima are species identified at this site in the past and may still occur on the site. No noxious weeds were observed in 2019.

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: AA includes existing and constructed wetlands within floodplain of an Unnamed Tributary of Big Porcupine. Surrounding land includes US 12 and livestock grazing.

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	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: Emergent wetland with occasional trees and shrubs, as well as open water with aquatic macrophytes.

Wetland/Site #(s): Forsyth NW - West

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): _____

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 Ammannia robusta (S2)
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☒ S Great Blue Heron (S3)
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	---	---	---	---	---	---	.0L
S2 and S3 Species Functional Point/Rating	.9H	---	---	---	---	---	---

Sources for documented use (e.g. observations, records): Ammannia observed within AA in previous year.

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: Several bird species observed. Also observed a northern leopard frog and deer tracks.

Wetland/Site #(s): Forsyth NW - West

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	---	---	---	---	---	---	---	---	---	.3L	---	---	---	---	---	---	---	---

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: .3L **Comments:** Unidentified 3-inch fish observed during field survey in 2015 and 2018.

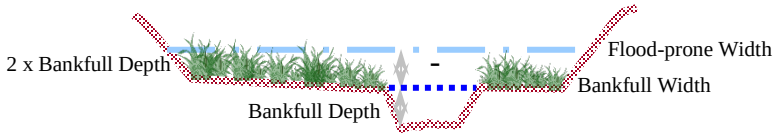
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

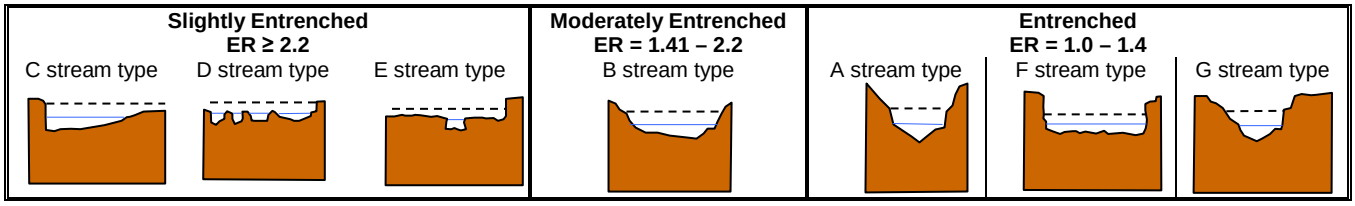
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

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.

70 / 35 = 2.0

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**	---	---	---	---	---	.5M	---	---	---
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:** Surface water enters AA via box culvert and from overbank flow from Big Porcupine Creek; dike repaired on SE end of wetland in 2017.

Wetland/Site #(s): Forsyth NW - West

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: A large area of the AA is seasonally flooded by East Spring Coulee.

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**	---	---	.7M	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: Open/standing water was present across entire site in 2019 with wetland vegetation cover estimated at 40 percent site wide.

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%**	---	---	---
☒ **35-64%**	---	.6M	---
☐ **< 35%**	---	---	---

Comments: AA is subject to surface water flows during runoff in UT-Big Porcupine Creek.

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**	---	M	---
☐ **NA**	---	---	---

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): Forsyth NW - West

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** = .8H ☐ **NO**

iv. Final Score and Rating: .8H **Comments:** Upland buffer between northern boundary of AA and highway greater than 50ft.

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: Site hydrology is combination of seasonally high groundwater table and runoff.

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)	---	---	---	---	.5M	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: AA with several mature trees and is managed in a natural state.

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)	---	.15H
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Property owned by MDT.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Forsyth NW - West

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	9.50	*
C. General Wildlife Habitat	mod 0.50	1.00	5.28	*
D. General Fish Habitat	low 0.30	1.00	3.17	
E. Flood Attenuation	mod 0.50	1.00	6.33	
F. Short and Long Term Surface Water Storage	high 0.90	1.00	9.50	*
G. Sediment / Nutrient / Toxicant Removal	mod 0.70	1.00	7.39	*
H. Sediment / Shoreline Stabilization	mod 0.60	1.00	6.33	
I. Production Export / Food Chain Support	mod 0.70	1.00	7.39	
J. Groundwater Discharge / Recharge	mod 0.70	1.00	7.39	*
K. Uniqueness	mod 0.50	1.00	5.28	
L. Recreation / Education Potential (bonus point)	high 0.15		1.58	
Total Points	**6.45**	**11**	**68.09 Total Functional Units**	
Percent of Possible Score 59% (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**

RESPEC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Forsyth NW - Middle** Project Number: _____
Assessment Date: **July 11, 2019** Person(s) conducting the assessment: **M. Traxler, T. Traxler**
Location: **~8 miles NW of Forsyth** MDT District: **Glendive**
Milepost: **~262 on US 12**
Legal Description: T **7N** R **39E** Section **33**
Weather Conditions: **85 degrees, sunny** Time of Day: **9:30AM-10:30 AM**
Initial Evaluation Date: **August 15, 2013** Monitoring Year: **7** # Visits in Year: **1**
Size of evaluation area: **1.8 acres** Land use surrounding wetland: **Ag, grazing, US Hwy 12**

HYDROLOGY

Surface Water Source: **Precipitation, runoff, shallow groundwater**
Inundation: **Absent** Average Depth: **0 feet** Range of Depths: **0**
Percent of assessment area under inundation: **0%**
Depth at emergent vegetation-open water boundary: **0 feet**
If assessment area is not inundated then are the soils saturated within 12 inches of surface: **No**
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):
Geomorphic position, surface soil cracks

Groundwater Monitoring Wells: **Absent**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth

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:
Soil not saturated during mid-July survey but soil was moist to surface due to recent precipitation.

VEGETATION COMMUNITIES

Community Number: **3** Community Title (main spp): **Pascopyrum smithii / Elymus canadensis**

Dominant Species	% Cover	Dominant Species	% Cover
Bare Ground	+ = < 1%	Symphoricarpos albus	1 = 1-5%
Bromus arvensis	+ = < 1%	Lactuca serriola	1 = 1-5%
Cirsium arvense	1 = 1-5%	Linum lewisii	1 = 1-5%
Elymus canadensis	1 = 1-5%	Pascopyrum smithii	4 = 21-50%
Populus deltoides	2 = 6-10%	Rumex crispus	1 = 1-5%
Sarcobatus vermiculatus	1 = 1-5%	Thlaspi arvense	1 = 1-5%

Comments / Problems: **Elymus trachycaulus-2; Bromus inermis-1; Grindelia squarrosa-1**

Community Number: **4** Community Title (main spp): **Puccinellia nuttalliana / Hordeum jubatum**

Dominant Species	% Cover	Dominant Species	% Cover
Bare ground	2 = 6-10%	Populus deltoides	+ = < 1%
Bromus arvensis	1 = 1-5%	Hordeum jubatum	2 = 6-10%
ELymus repens	1 = 1-5%	Puccinellia nuttalliana	3 = 11-20%
Pascopyrum smithii	2 = 6-10%	Schedonorus pratensis	2 = 6-10%
Rumex crispus	2 = 6-10%	Schoenoplectus maritimus	2 = 6-10%
Eleocharis palustris	4 = 21-50%	Salix lutea	1 = 1-5%

Comments / Problems: **Alopecurus arundinaceus-1; Poa pratensis-1; Muhlenbergia asperifolia <1**

Community Number: ___ Community Title (main spp): _____

Dominant Species	% Cover	Dominant Species	% Cover

Comments / Problems: _____

Community Number: ___ Community Title (main spp): _____

Dominant Species	% Cover	Dominant Species	% Cover

Comments / Problems: _____

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes

Comments / Problems: **No planted woody vegetation. Young volunteer cottonwoods doing well around edge of wetland, especially on south side of east end.**

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Forsyth NW - Middle** Date: **July 11, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **50 feet** Compass Direction from Start: **205**° Note: _____

Transect Interval Length: **14 feet (station 0-14)**	
Vegetation Community Type: 3 - Pascopyrum smithii / Elymus canadensis	
Plant Species	**Cover**
Bassia scoparia	1 = 1-5%
Pascopyrum smithii	2 = 6-10%
Schedonorus pratensis	1 = 1-5%
Lepidium perfoliatum	1 = 1-5%
Bare Ground	1 = 1-5%
Bromus tectorum	4 = 21-50%
Chenopodium album	3 = 11-20%
Elymus canadensis	2 = 6-10%
Total Vegetative Cover:	80%

Transect Interval Length: **19 feet (station 14-33)**	
Vegetation Community Type: 4 - Puccinellia nuttalliana / Hordeum jubatum	
Plant Species	**Cover**
Bare Ground	1 = 1-5%
Hordeum jubatum	3 = 11-20%
Puccinellia nuttalliana	2 = 6-10%
Elymus repens	2 = 6-10%
Schedonorus pratensis	4 = 21-50%
Eleocharis palustris	2 = 6-10%
Rumex crispus	2 = 6-10%
Total Vegetative Cover:	90%

Transect Interval Length: **17 feet (station 33-50)**	
Vegetation Community Type: 3 - Pascopyrum smithii / Elymus spp.	
Plant Species	**Cover**
Bare Ground	+ = < 1%
Elymus canadensis	+ = < 1%
Melilotus officinalis	5 = > 50%
Schedonorus pratensis	2 = 6-10%
Elymus trachycaulus	2 = 6-10%
Pascopyrum smithii	1 = 1-5%
Symphoricarpos albus	1 = 1-5%
Populus deltoides	4 = 21-50%
Poa pratensis	+ = < 1%
Hordeum jubatum	+ = < 1%
Total Vegetative Cover:	95%

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: 46.322174 / -106.840996	300
PP-2		Photo Point 2: 46.323803 / -106.844337	120
T-1 start		Transect 1 start: 46.322948 / -106.842323	205
T-1 end		Transect 1 end: 46.322754 / -106.842438	25
DP-1W		Wetland soil pit: 46.322942 / -106.842481	
DP-1U		Upland soil pit: 46.322911 / -106.842492	
		W & E along road buffer	

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? **NA**
If yes, do they need to be repaired? **NA**
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? **NA**
If yes, are the structures working properly and in good working order? **NA**
If no, describe the problems below.

Comments / Problems: _____

WILDLIFE

Birds

Were man-made nesting structures installed? **No**
If yes, type of structure: _____ How many? **0**
Are the nesting structures being used? **NA**
Do the nesting structures need repairs? **No**

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: Very little wildlife or sign of wildlife noted during the 2019 field survey.

BIRD SURVEY – FIELD DATA SHEET

Site: **Forsyth NW - Middle** Date: **7/11/19**
Survey Time: **9:30** to **10:30** **am**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat

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: _____

Forsyth NW – Middle Site Plant List (2013-2019)

Scientific Names	Common Names	GP Indicator Status[(a)]
Alisma triviale	Northern Water-Plantain	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Ambrosia psilostachya	Perennial Ragweed	FACU
Ammannia robusta	Grand Redstem	OBL
Avena fatua	Wild Oats	NL
Bassia scoparia	Mexican-Fireweed	FACU
Bromus carinatus	California Brome	NL
Bromus arvensis	Japanese Brome	NL
Bromus tectorum	Cheatgrass	NL
Chenopodium album	Lamb's-Quarters	FACU
Cirsium arvense	Canadian Thistle	FACU
Convolvulus arvensis	Field Bindweed	NL
Deschampsia caespitosa	Tufted Hair Grass	FACW
Deschampsia elongata	Slender Hair Grass	FAC
Echinochloa crus-galli	Large Barnyard Grass	FAC
Eleocharis palustris	Common Spike-Rush	OBL
Elymus canadensis	Nodding Wild Rye	FACU
Elymus lanceolatus	Streamside Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Euphorbia esula	Leafy Spurge	NL
Filago arvensis	Field Fluffweed	NL
Glyceria grandis	American Manna Grass	OBL
Grindelia squarrosa	Curly-Cup Gumweed	UPL
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FACW
Lactuca serriola	Prickly Lettuce	FAC
Lepidium perfoliatum	Clasping Pepperwort	FAC
Linum lewisii	Prairie Flax	NL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Muhlenbergia asperifolia	Alkali Muhly	FAC
Panicum capillare	Common Panic Grass	FAC
Pascopyrum smithii	Western-Wheat Grass	FACU
Poa compressa	Flat-Stem Blue Grass	FACU
Poa palustris	Fowl Blue Grass	FACW
Polygonum aviculare	Yard Knotweed	FACU
Populus deltoides	Eastern Cottonwood	FAC
Puccinellia nuttalliana	Nuttall's Alkali Grass	OBL
Ratibida columnifera	Prairie Coneflower	NL
Rosa arkansana	Prairie Rose	FACU
Rumex acetosella	Common Sheep Sorrel	FAC
Rumex crispus	Curly Dock	FAC
Salix amygdaloides	Peach-Leaf Willow	FACW
Salix exigua	Narrow-Leaf Willow	FACW

Scientific Names	Common Names	GP Indicator Status[(a)]
Salix fragilis	Fragile Willow	FAC
Sarcobatus vermiculatus	Greasewood	FAC
Schedonorus pratensis	Meadow False Rye Grass	FACU
Schoenoplectus maritimus	Saltmarsh Club-Rush	OBL
Setaria pumila	Yellow Bristle Grass	FACU
Solanum rostratum	Buffalo Bur	NL
Symphoricarpos albus	Common Snowberry	UPL
Tamarix chinensis	Salt-cedar	NL
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	NL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Xanthium strumarium	Rough Cockleburr	FAC

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

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - Middle **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 33 T 7N R 39E

Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** convex **Slope:** 5.0 % / 2.9 °

Subregion (LRR): LRR G **Lat.:** 46.322943 **Long.:** -106.842479 **Datum:** WGS84

Soil Map Unit Name: Harlem silty clay, 0 to 2 percent slopes, occasionally flooded **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:
DP on slope above depression where no positive hydrology indicators are evident to date.

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. Populus deltoides	1	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	1	= Total Cover		
Herb Stratum (Plot size: 5 Foot Radius)				
1. Melilotus officinale	70	☑	72.9%	FACU
2. Elymus trachycaulus	20	☑	20.8%	FACU
3. Schedonorus pratensis	2	☐	2.1%	FACU
4. Elymus lanceolatus	2	☐	2.1%	FACU
5. Helianthus annuus	2	☐	2.1%	FACU
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	96	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 4

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	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	96	x 4 =	384
UPL species	0	x 5 =	0
Column Totals:	97 (A)		387 (B)

Prevalence Index = B/A = 3.99

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:

Well-vegetated upland buffer. Melilotus dominant in 2019.

*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	2.5Y	3/2	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. Soil moist from recent precipitation.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - Middle **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 33 T 7N R 39E

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

Subregion (LRR): LRR G **Lat.:** 46.322913 **Long.:** -106.842487 **Datum:** WGS84

Soil Map Unit Name: Harlem silty clay, 0 to 2 percent slopes, occasionally flooded **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:
Data point occurs in wetland depression immediately west of the vegetation transect.

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. Eleocharis palustris	40	☑	44.4%	OBL
2. Hordeum jubatum	20	☑	22.2%	FACW
3. Rumex crispus	20	☑	22.2%	FAC
4. Elymus repens	10	☐	11.1%	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%	
	90	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 10

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	40	x 1 =	40
FACW species	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	90 (A)		180 (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:
Hydrophytic vegetation dominant in depression.

*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
0-2	2.5Y	3/2	100						Clay Loam	
2-20	10YR	4/1	95	10YR	5/8	5	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:

Soil meets criteria for a depleted matrix.

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:

Three secondary indicators present. Soil moist to surface.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Forsyth NW - Middle **2. MDT Project #:** STPP 14-6(9)259 **3. Control #:** 4059

3. Evaluation Date: 7/11/19 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Forsyth NW - Middle

6. Wetland Location(s): Township 7 N, Range 39 E, Section 33; Township 7 N, Range 39 E, Section 34

Approximate Stationing or Roadposts: ~262 on US 12

Watershed: 14 - Middle Yellowstone **County:** Rosebud

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)
0.58 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 0.58 (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
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	100

Comments: _____

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

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.)**:** AA vegetation recovering from construction disturbance.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: All noxious weeds have decreased: Cirsium arvense and Tamarix spp. still persist

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: AA very similar to Forsyth NW - East, only smaller. AA includes a linear, excavated roadside depression parallel to US 12. Surrounding land includes agriculture (grazing) and highway.

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	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: Emergent veg class present. Several cottonwood seedlings present in herbaceous layer.

Wetland/Site #(s): Forsyth NW - Middle

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): USF&WS T&E list for Rosebud County

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 Scarlet Ammannia - Ammannia robusta (S2)
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☒ S Great Blue Heron (S3)
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): MTNHP SOC report for T7N R39E, direct observation of Ammannia in 2013.

14C. GENERAL WILDLIFE HABITAT RATING

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

☐ ***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)	---	---	---	---	---	---	---	---	---	H	---	---	---	---	---	---	---	---	---	---
☐ **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**	---	---	---	---
☒ **Minimal**	---	.4M	---	---

Comments: Very few signs of wildlife observed during field survey. This area is close to the roadway and will likely never achieve a high wildlife habitat rating.

Wetland/Site #(s): Forsyth NW - Middle

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**

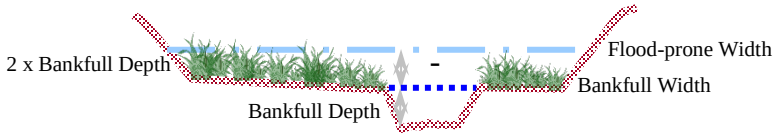
iii. Final Score and Rating: _ **Comments:** _____

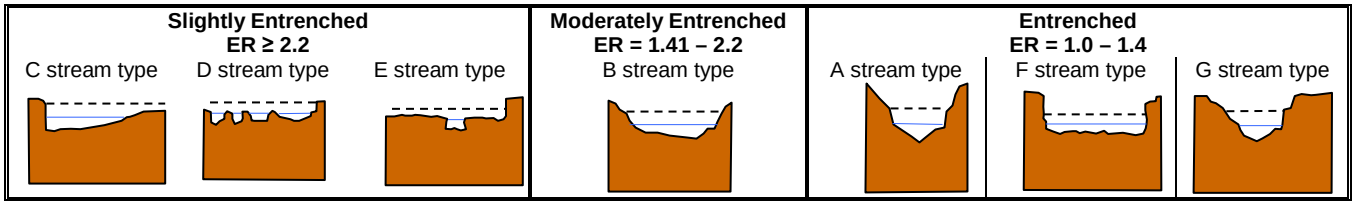
14E. FLOOD ATTENUATION ☒ **NA** (proceed to 14F)

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:** AA not subject to flooding from Big Porcupine Creek.

Wetland/Site #(s): Forsyth NW - Middle

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**	---	---	---	---	---	---	---	.3L	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: AA subject to pond from precipitation and upland surface flow.

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**	---	.8H	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: AA more than 70% vegetated. Only minor impairment from highway and overland runnoff

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%**	---	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: _____

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	---	---	---	---	---	---	---	---	---	.3L	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Forsyth NW - Middle

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** = ___ ☒ **NO**

iv. Final Score and Rating: .3L **Comments:**

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**	---	---	---	---
☒ **Insufficient Data/Information**	NA			

Comments: AA w/out permeable substrate, holds surface water eventually lost to evaporation.

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)	---	---	---	---	---	---	---	---	.2L
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: Habitat within AA typical of roadside ditch.

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	---	---

Comments: AA small, adjacent to highway, and with little to no recreation or education potential.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Forsyth NW - Middle

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	0.52	*
C. General Wildlife Habitat	mod 0.40	1.00	0.23	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	NA	1.00	0	
F. Short and Long Term Surface Water Storage	low 0.30	1.00	0.17	*
G. Sediment / Nutrient / Toxicant Removal	high 0.80	1.00	0.46	*
H. Sediment / Shoreline Stabilization	NA	NA	0	
I. Production Export / Food Chain Support	low 0.30	1.00	0.17	
J. Groundwater Discharge / Recharge	NA	NA	0	
K. Uniqueness	low 0.20	1.00	0.12	
L. Recreation / Education Potential (bonus point)	NA		0	
Total Points	**2.9**	**8**	**1.67 Total Functional Units**	
Percent of Possible Score 36% (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**

RESPEC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Forsyth NW - East** Project Number: _____
Assessment Date: **July 11, 2019** Person(s) conducting the assessment: **M. Traxler, T. Traxler**
Location: **~8 miles NW of Forsyth** MDT District: **Glendive**
Milepost: **~262.3 on US 12**
Legal Description: T **7N** R **39E** Section **34**
Weather Conditions: **80 degrees, sunny** Time of Day: **11:00 AM-12:30 PM**
Initial Evaluation Date: **August 15, 2013** Monitoring Year: **7** # Visits in Year: **1**
Size of evaluation area: **2.74 acres** Land use surrounding wetland: **Ag., US Highway 12**

HYDROLOGY

Surface Water Source: **Precipitation, runoff, shallow groundwater**
Inundation: **Absent** Average Depth: **0 feet** Range of Depths: **0**
Percent of assessment area under inundation: **0%**
Depth at emergent vegetation-open water boundary: **0 feet**
If assessment area is not inundated then are the soils saturated within 12 inches of surface: **No**
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):
geomorphic position, surface soil cracks

Groundwater Monitoring Wells: **Absent**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth

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:
Site dry on day of investigation. Recent rain prior to site visit.

VEGETATION COMMUNITIES

Community Number: **2** Community Title (main spp): **Rumex crispus/Eleopcharis palustris**

Dominant Species	% Cover	Dominant Species	% Cover
Eleocharis palustris	4 = 21-50%	Taraxacum officinalis	1 = 1-5%
Bare Ground	2 = 6-10%	Broumus arvensis	1 = 1-5%
Alopecurus pratensis	1 = 1-5%	Pascopyrum smithii	2 = 6-10%
Hordeum jubatum	1 = 1-5%	Rumex crispus	1 = 1-5%
Poa pratensis	1 = 1-5%	Tragopogon dubius	1 = 1-5%
Schoenoplectus maritimus	1 = 1-5%	Elymus repens	1 = 1-5%

Comments / Problems: **This community type has been replaced by CT4 but was left in the monitoring form for reference purposes only.**

Community Number: **3** Community Title (main spp): **Pascopyrum smithii / Elymus spp.**

Dominant Species	% Cover	Dominant Species	% Cover
Pascopyrum smithii	5 = > 50%	Ambrosia psilostachya	1 = 1-5%
Elymus canadensis	1 = 1-5%	Bare Ground	1 = 1-5%
Elymus trachycaulus	3 = 11-20%	Chenopodium album	1 = 1-5%
Bromus arvensis	1 = 1-5%	Elymus repens	1 = 1-5%
Alopecurus arundinaceus	1 = 1-5%	Lactuca serriola	1 = 1-5%
Agropyron cristatum	1 = 1-5%	Linum lewisii	1 = 1-5%

Comments / Problems: _____

Community Number: **4** Community Title (main spp): **Hordeum jubatum/Eleocharis palustris**

Dominant Species	% Cover	Dominant Species	% Cover
Eleocharis palustris	4 = 21-50%	Populus deltoides	+ = < 1%
Bare Ground	1 = 1-5%	Salix fragilis	+ = < 1%
Alopecurus pratensis	2 = 6-10%	Pascopyrum smithii	2 = 6-10%
Hordeum jubatum	2 = 6-10%	Rumex crispus	+ = < 1%
Poa pratensis	1 = 1-5%	Spartina pectinata	2 = 6-10%
Schoenoplectus maritimus	2 = 6-10%	Elymus repens	1 = 1-5%

Comments / Problems: **Tamarix ramosissima (<1); Convolvulus arvensis (<1)**

Community Number: ___ Community Title (main spp): _____

Dominant Species	% Cover	Dominant Species	% Cover

Comments / Problems: _____

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes

Comments / Problems: **No planted woody vegetation.**

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Forsyth NW - East** Date: **July 11, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **125 feet** Compass Direction from Start: **145**° Note: _____

Transect Interval Length: **32 feet (station 0-32)**	
Vegetation Community Type: Pascopyrum smithii/Elymus spp.	
Plant Species	**Cover**
Lactuca serriola	1 = 1-5%
Pascopyrum smithii	5 = > 50%
Bromus tectorum	2 = 6-10%
Melilotus officinale	2 = 6-10%
Helianthus annus	+ = < 1%
Populus deltoides	+ = < 1%
Rumex crispus	1 = 1-5%
Total Vegetative Cover:	90%

Transect Interval Length: **65 feet (station 32-97)**	
Vegetation Community Type: Hordeum jubatum/Eleocharis palustris	
Plant Species	**Cover**
Eleocharis palustris	5 = > 50%
Alopecurus arundinaceus	4 = 21-50%
Elymus repens	1 = 1-5%
Hordeum jubatum	1 = 1-5%
Schoenoplectus maritimus	+ = < 1%
Tamarix ramosissima	1 = 1-5%
bare ground	1 = 1-5%
Rumex crispus	1 = 1-5%
Total Vegetative Cover:	95%

Transect Interval Length: **28 feet (station 97-125)**	
Vegetation Community Type: Pascopyrum smithii/Elymus spp	
Plant Species	**Cover**
Elymus trachycaulus	1 = 1-5%
Pascopyrum smithii	2 = 6-10%
Melilotus officinale	5 = > 50%
Chenopodium album	1 = 1-5%
Alopecurus arundinaceus	1 = 1-5%
Bromus tectorum	2 = 6-10%
Poa compressa	1 = 1-5%
Total Vegetative Cover:	100%

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

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Forsyth NW - East** Date: **July 11, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **181 feet** Compass Direction from Start: **280˚** Note: _____

Transect Interval Length: **30 feet (station 0-30)**	
Vegetation Community Type: Pascopyrum smithii / Elymus spp.	
Plant Species	**Cover**
Elymus tracycaulus	4 = 21-50%
Melilotus officinale	3 = 11-20%
Bare Ground	1 = 1-5%
Hordeum jubatum	2 = 6-10%
Pascopyrum smithii	4 = 21-50%
Convolvulus arvensis	1 = 1-5%
Rumex crispus	1 = 1-5%
Total Vegetative Cover:	95%

Transect Interval Length: **100 feet (station 30-130)**	
Vegetation Community Type: Hordeum jubatum / Eleocharis palustris	
Plant Species	**Cover**
Eleocharis palustris	4 = 21-50%
Schedonorus pratensis	2 = 6-10%
Helianthus annus	1 = 1-5%
Poa compressa	1 = 1-5%
Bare ground	1 = 1-5%
Hordeum jubatum	5 = > 50%
Pascopyrum smithii	1 = 1-5%
Salix fragilis	1 = 1-5%
Alopecurus arundinaceus	1 = 1-5%
Rumex crispus	2 = 6-10%
Total Vegetative Cover:	98%

Transect Interval Length: **51 feet (station 130-181)**	
Vegetation Community Type: Pascopyrum smithii / Elymus spp.	
Plant Species	**Cover**
Pascopyrum smithii	5 = > 50%
Rumex crispus	1 = 1-5%
Linum lewisii	1 = 1-5%
Bare Ground	1 = 1-5%
Lepidium perfoliatum	1 = 1-5%
Helianthus anuus	1 = 1-5%
Medicago sativa	+ = < 1%
Melilotus officinale	4 = 21-50%
Total Vegetative Cover:	98%

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: 46.321003 / -106.838814	125
PP-2		Photo Point 2: 46.320068 / -106.837128	210
PP-3		Photo Point 3: 46.318233 / -106.834335	305
T-1 start		Transect 1 start: 46.321045 / -106.838486	145
T-1 end		Transect 1 end: 46.320297 / -106.838493	325
T-2 start		Transect 2 start: 46.318336 / -106.834175	280
T-2 end		Transect 2 end: 46.318417 / -106.834923	100
DP-1W		Wetland soil pit #1: 46.320943 / -106.838674	
DP-1U		Upland soil pit #1: 46.320920 / -106.838707	
DP-2W		Wetland soil pit #1: 46.318503 / -106.834643	
DP-2U		Upland soil pit #2: 46.318471 / -106.834693	

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

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

Comments / Problems: **Middle section of project area remains upland.**

WILDLIFE

Birds

Were man-made nesting structures installed? **No**
If yes, type of structure: _____ How many? **0**
Are the nesting structures being used? **NA**
Do the nesting structures need repairs? **No**

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
none observed		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: _____

BIRD SURVEY – FIELD DATA SHEET

Site: **Forsyth NW - East** Date: **7/11/19**
Survey Time: **11:00 am** to **12:30 pm**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Eastern Kingbird	2	BP N	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: **sunny, 80 degrees**

Notes: _____

Forsyth NW – East Site Plant List (2013-2019)

Scientific Names	Common Names	GP Indicator Status[(a)]
Agropyron cristatum	Crested Wheatgrass	NL
Algae, green	Algae, green	NL
Alisma triviale	Northern Water-Plantain	OBL
Alopecurus arundinaceus	Creeping Meadow-Foxtail	FACW
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Ambrosia psilostachya	Perennial Ragweed	FACU
Ammannia robusta	Grand Redstem	OBL
Artemisia frigida	Fringed Sage	NL
Bassia scoparia	Mexican-Fireweed	FACU
Bromus carinatus	California Brome	NL
Bromus inermis	Smooth Brome	UPL
Bromus arvensis	Japanese Brome	NL
Bromus tectorum	Cheatgrass	NL
Chenopodium album	Lamb's-Quarters	FACU
Convolvulus arvensis	Field Bindweed	NL
Descurainia sophia	Herb Sophia	NL
Echinochloa crus-galli	Large Barnyard Grass	FAC
Eleocharis palustris	Common Spike-Rush	OBL
Elymus canadensis	Nodding Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Elymus sp.	Wild Rye	NL
Filago arvensis	Field Fluffweed	NL
Glyceria elata	Tall Manna Grass	OBL
Grindelia squarrosa	Curly-Cup Gumweed	UPL
Helianthus annuus	Common Sunflower	FACU
Hesperostipa comata	Needle-and-Thread	NL
Hordeum jubatum	Fox-Tail Barley	FACW
Lactuca serriola	Prickly Lettuce	FAC
Lepidium perfoliatum	Clasping Pepperwort	FAC
Linum lewisii	Prairie Flax	NL
Medicago sativa	Alfalfa	UPL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Muhlenbergia asperifolia	Alkali Muhly	FACW
Pascopyrum smithii	Western-Wheat Grass	FACU
Poa compessa	Flat-stem Blue Grass	FACU
Poa pratensis	Kentucky Blue Grass	FACU
Polygonum aviculare	Yard Knotweed	FACU
Populus deltoides	Eastern Cottonwood	FAC
Puccinellia nuttalliana	Nuttall's Alkali Grass	OBL
Ratibida columnifera	Prairie Coneflower	NL
Rumex acetosella	Common Sheep Sorrel	FAC
Rumex crispus	Curly Dock	FAC
Sagittaria cuneata	Arum-Leaf Arrowhead	OBL

Scientific Names	Common Names	GP Indicator Status[(a)]
Salix exigua	Narrow-Leaf Willow	FACW
Salix fragilis	Fragile Willow	FAC
Schedonorous pratensis	Meadow Fescue	FACU
Schoenoplectus maritimus	Saltmarsh Club-Rush	OBL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Solanum rostratum	Buffalo Bur	NL
Spartina pectinata	Freshwater Cord Grass	FACW
Tamarix chinensis	Salt-cedar	NL
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	NL
Typha angustifolia	Narrow-Leaf Cat-Tail	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Veronica sp.	Speedwell	NL

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

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - East **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 34 T 7N R 39E

Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** concave **Slope:** 5.0 % / 2.9 °

Subregion (LRR): LRR G **Lat.:** 46.32092 **Long.:** -106.838707 **Datum:** WGS84

Soil Map Unit Name: Harlem silty clay, 0 to 2 percent slopes, occasionally flooded **NWI classification:** PEM

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

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

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

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

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:
Upland data point. Slope above wetland.

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. Pascopyrum smithii	65	☑	67.0%	FACU
2. Elymus trachycaulus	25	☑	25.8%	FACU
3. Rumex crispus	5	☐	5.2%	FAC
4. Melilotus officinale	2	☐	2.1%	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%	
	97	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 3

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (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	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	92	x 4 =	368	
UPL species	0	x 5 =	0	
Column Totals:	97	(A)	383	(B)

Prevalence Index = B/A = 3.948

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:

Slope well-vegetated, dominated by FACU species.

*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	2.5Y	3/3	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. Soil moist to surface due to recent precipitation but not saturated.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - East **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 34 T 7N R 39E

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

Subregion (LRR): LRR G **Lat.:** 46.320943 **Long.:** -106.838674 **Datum:** WGS84

Soil Map Unit Name: Harlem silty clay, 0 to 2 percent slopes, occasionally flooded **NWI classification:** PEM

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

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

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Wetland data 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. Eleocharis palustris	80	☑	87.0%	OBL
2. Rumex crispus	5	☐	5.4%	FAC
3. Hordeum jubatum	5	☐	5.4%	FACW
4. Schoenoplectus maritimus	2	☐	2.2%	OBL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	92	= Total Cover		
Woody Vine Stratum (Plot size: 30 Foot Radius)				
1.	0	☐		
2.	0	☐		
	0	= Total Cover		

% Bare Ground in Herb Stratum 8

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	82	x 1 =	82
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	92 (A)		107 (B)

Prevalence Index = B/A = 1.163

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:

Similar to 2018. Cottonwood saplings starting to develop in wetland but none occur within this data point.

*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
0-20	2.5YR	3/2	90	2.5Y	4/4	10	C	PL	Clay	

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 concentrations noted.

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):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Soil saturated to the surface due to recent precipitation.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Forsyth NW - East **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 34 T 7N R 39E

Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** concave **Slope:** 5.0 % / 2.9 °

Subregion (LRR): LRR G **Lat.:** 46.318471 **Long.:** -106.834693 **Datum:** WGS84

Soil Map Unit Name: Harlem silty clay, 0 to 2 percent slopes, occasionally flooded **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:
Upland data 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. Melilotus officinale	75	☑ 76.5%	FACU
2. Pascopyrum smithii	10	☐ 10.2%	FACU
3. Alopecurus arundinaceus	5	☐ 5.1%	FACW
4. Rumex crispus	5	☐ 5.1%	FAC
5. Medicago sativa	3	☐ 3.1%	UPL
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	98	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐	
2.	0	☐	
	0	= Total Cover	

% Bare Ground in Herb Stratum 2

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	5	x 2 =	10	
FAC species	5	x 3 =	15	
FACU species	85	x 4 =	340	
UPL species	3	x 5 =	15	
Column Totals:	98	(A)	380	(B)

Prevalence Index = B/A = 3.878

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:

Upland vegetation on slope from road down to wetland.

*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
0-20	2.5Y	3/2	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: Forsyth NW - East **City/County:** Rosebud **Sampling Date:** 11-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 34 T 7N R 39E

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

Subregion (LRR): LRR G **Lat.:** 46.318503 **Long.:** -106.834643 **Datum:** WGS84

Soil Map Unit Name: Harlem silty clay, 0 to 2 percent slopes, occasionally flooded **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:
Second year at this wetland data 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. Eleocharis palustris	70	☑	73.7%	OBL
2. Hordeum jubatum	15	☐	15.8%	FACW
3. Elymus trachycaulus	5	☐	5.3%	FACU
4. Schoenoplectus maritimus	5	☐	5.3%	OBL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	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: 1 (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	75	x 1 =	75	
FACW species	15	x 2 =	30	
FAC species	0	x 3 =	0	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Column Totals:	95	(A)	125	(B)

Prevalence Index = B/A = 1.316

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:

Cottonwood saplings starting to develop in wetland but none occur within this data point.

*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	2.5YR	4/2	95	10YR	5/8	5	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:

Soil meets criteria for Depleted Matrix.

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:

Soil moist to surface due to recent precipitation. Water clearly flowed through wetland in spring.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Forsyth NW - East **2. MDT Project #:** STPP 14-6(9)259 **3. Control #:** 4059

3. Evaluation Date: 7/11/19 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Forsyth NW - East

6. Wetland Location(s): Township 7 N, Range 39 E, Section 34; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: ~262.3 on US 12

Watershed: 14 - Middle Yellowstone **County:** _ Rosebud _ _____

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)
0.56 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 0.56 (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
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	100

Comments: _____

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

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.)**:** AA vegetation cover has increased since 2013, following construction of wetland basin, bare ground <5%. Center of basin, area intended to convert to wetland, continues to qualify as upland.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Convolvulus arvensis, Tamarix ramosissima (both have decreased since 2016 but still persist)

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: AA includes a linear, excavated roadside depression parallel to US 12. Surrounding land includes agriculture (grazing) and highway.

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	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: Emergent vegetation class present, with several cottonwood maturing saplings though does not qualify as PSS yet.

Wetland/Site #(s): Forsyth NW - East

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): USF&WS T&E list for Rosebud County

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 Scarlet Ammannia - Ammannia robusta (S2), Western Hog-nosed Snake
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☒ S Great Blue Heron (S3)
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): MTNHP SOC report for T7N R39E, direct observation of Ammannia in 2013.

14C. GENERAL WILDLIFE HABITAT RATING

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

☐ ***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)	---	---	---	---	---	---	---	---	---	H	---	---	---	---	---	---	---	---	---	---
☐ **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**	---	---	---	---
☒ **Minimal**	---	.4M	---	---

Comments: Very few signs of wildlife observed during field survey. This area is close to the roadway and will likely never achieve a high wildlife habitat rating.

Wetland/Site #(s): Forsyth NW - East

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**

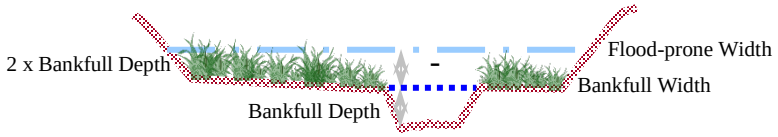
iii. Final Score and Rating: _ **Comments:** _____

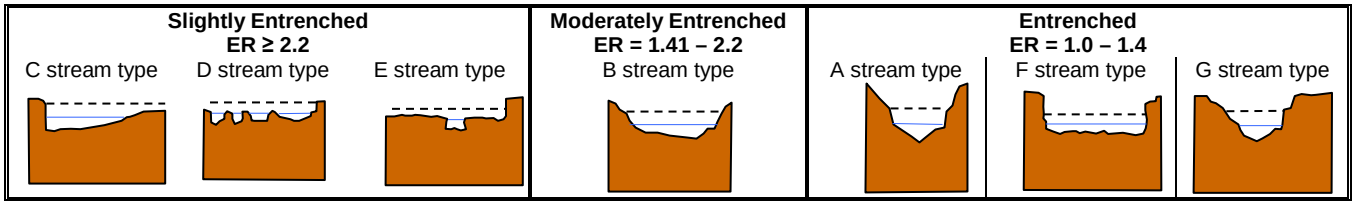
14E. FLOOD ATTENUATION ☒ **NA** (proceed to 14F)

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:** AA not subject to flooding from Big Porcupine Creek.

Wetland/Site #(s): Forsyth NW - East

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**	---	---	---	---	---	---	---	.3L	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: AA subject to pond from precipitation and upland surface flow.

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: AA achieved greater than 70% vegetation cover, with early succession annuals, native perennial, rhizomotous and bunch grasses, and natural Populus deltoides recruitment.

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%**	---	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: _____

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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	.3L	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Forsyth NW - East

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** = ___ ☒ **NO**

iv. Final Score and Rating: .3L **Comments:**

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: AA hydrologically connected to a historic oxbow.

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: Ponding was observed on site in 2014, but not observed in 2015, 2016, 2017, 2018, or 2019.

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)	---	---	---	---	---	---	---	---	.2L
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: AA resembles a roadside ditch.

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	---	---

Comments: AA small, adjacent to highway, and with little to no recreation or education potential.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Forsyth NW - East

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	0.50	*
C. General Wildlife Habitat	mod 0.40	1.00	0.22	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	NA	NA	0	
F. Short and Long Term Surface Water Storage	low 0.30	1.00	0.17	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	0.56	*
H. Sediment / Shoreline Stabilization	NA	NA		
I. Production Export / Food Chain Support	low 0.30	1.00	0.17	
J. Groundwater Discharge / Recharge	mod 0.70	1.00	0.39	*
K. Uniqueness	low 0.20	1.00	0.11	
L. Recreation / Education Potential (bonus point)	NA		0	
Total Points	**3.8**	**8**	**2.12 Total Functional Units**	
Percent of Possible Score 48% (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
Forsyth Northwest – West, Middle, and East Sites
Rosebud County, Montana

Forsyth Northwest – West Site: Photo Point Photographs



Photo Point 1; Location: NE Corner of SE End; Bearing 270 degrees; Year 2013



Photo Point 1; Location: NE Corner of SE End; Bearing 270 degrees; Year 2019



Photo Point 2; Location: SW Corner of SE End; Bearing 350 degrees; Year 2013



Photo Point 2; Location: SW Corner of SE End; Bearing 350 degrees; Year 2019

Forsyth Northwest – West Site: Photo Point Photographs



Photo Point 3; Location: NE side near middle of site; Bearing 230 degrees; Year 2013



Photo Point 3; Location: NE side near middle of site; Bearing 230 degrees; Year 2019

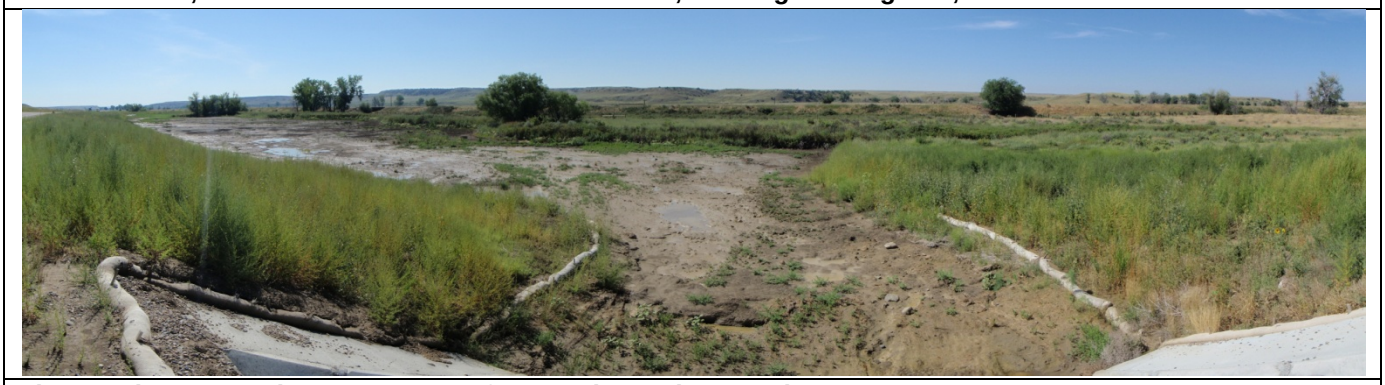


Photo Point 4; Location: NE corner of NW end; Bearing 210 degrees; Year 2013



Photo Point 4; Location: NE corner of NW end; Bearing 210 degrees; Year 2019

Forsyth Northwest – West Site: Photo Point Photographs



Photo Point 5; Location: SW side near middle of site; Bearing 45 degrees; Year 2013

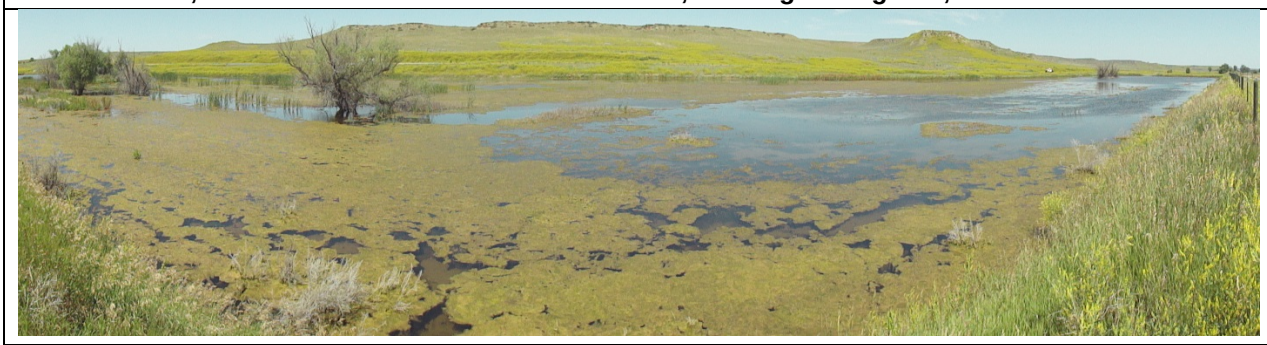


Photo Point 5; Location: SW side near middle of site; Bearing 45 degrees; Year 2019



Photo Point 6 Location: Center of new dike
Bearing: 300 degrees Year: 2017



Photo Point 6 Location: Center of new dike
Bearing: 300 degrees Year: 2019

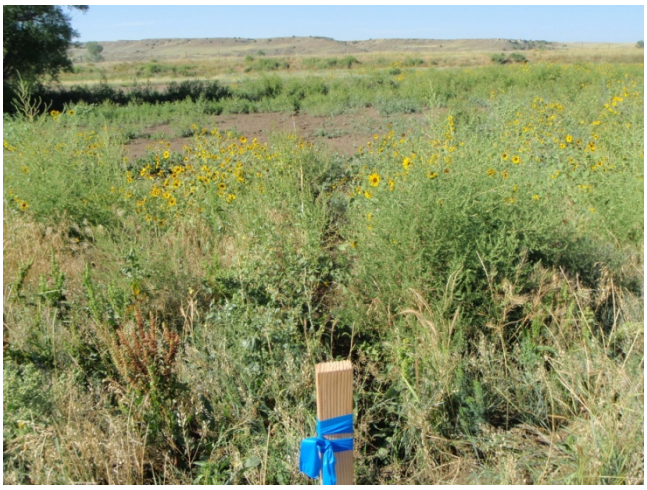


Photo Point 6 Location: Center of new dike
Bearing: 120 degrees Year: 2017

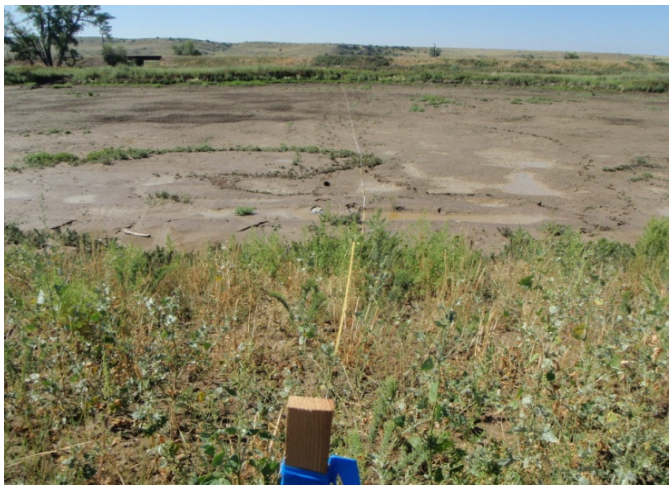


Photo Point 6 Location: Center of new dike
Bearing: 120 degrees Year: 2019

Forsyth Northwest – West Site: Transect Photographs

	
Transect 1: Start Bearing: 25 degrees Location: SE end Year: 2013	Transect 1: Start Bearing: 25 degrees Location: SE end Year: 2019
	
Transect 1: End Bearing: 205 degrees Location: SE end Year: 2013	Transect 1: End Bearing: 205 degrees Location: SE end Year: 2019
	
Transect 2: Start Bearing: 25 degrees Location: NW End Year: 2013	Transect 2: Start Bearing: 25 degrees Location: NW End Year: 2019

Forsyth Northwest – West Site: Transect and Data Point Photographs



Transect 2: End Location: Northwest End
Bearing: 205 degrees Year: 2013



Transect 2: End Location: Northwest End
Bearing: 205 degrees Year: 2019



Data Point: DP-1W Location: NW part of site
Year: 2019



Data Point: DP-1U Location: NW part of site
Year: 2019

Forsyth Northwest – Middle: Photo Point and Transect Photographs



Photo Point: 1 Location: Northwest End
Bearing: 120 degrees Year: 2013



Photo Point: 1 Location: Northwest End
Bearing: 120 degrees Year: 2019



Photo Point: 2 Location: Southeast end
Bearing: 300 degrees Year: 2013



Photo Point: 2 Location: Southeast end
Bearing: 300 degrees Year: 2019



Transect 1: Start Location: Middle of Site
Bearing: 205 degrees Year: 2013



Transect 1: Start Location: Middle of Site
Bearing: 205 degrees Year: 2019

Forsyth Northwest – Middle: Transect and Data Point Photographs



Transect 1: End
Bearing: 25 degrees
Location: Middle of Site
Year: 2013



Transect 1: End
Bearing: 25 degrees
Location: Middle of Site
Year: 2019



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



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

Forsyth Northwest – East Site: Photo Point Photographs



Photo Point: 1 Location: NW end of site
Bearing: 125 degrees Year 2013



Photo Point: 1 Location: NW end of site
Bearing: 125 degrees Year 2019



Photo Point: 3 Location: Southeast end of site
Bearing: 305 degrees Year 2013



Photo Point: 3 Location: Southeast end of site
Bearing: 305 degrees Year 2019

Forsyth Northwest – East Site: Photo Point Photographs



Photo Point 2; Location: Near Center of Site; Bearing 210 degrees; Year 2013



Photo Point 2; Location: Near Center of Site; Bearing 210 degrees; Year 2019

Forsyth Northwest – East Site: Transect Photographs

	
Transect 1: Start Bearing: 145 degrees Location: Northwest End Year 2013	Transect 1: Start Bearing: 145 degrees Location: Northwest End Year 2019
	
Transect 1: End Bearing: 325 degrees Location: Northwest End Year 2013	Transect 1: End Bearing: 325 degrees Location: Northwest End Year 2019
	
Transect 2: Start Bearing: 280 degrees Location: Southeast End Year 2013	Transect 2: Start Bearing: 280 degrees Location: Southeast End Year 2019

Forsyth Northwest – East Site: Transect and Data Point Photographs



Transect 2: End Location: Southeast End
Bearing:100 degrees Year 2013



Transect 2: End Location: Northwest End
Bearing: 100 degrees Year 2019



Data Point: DP-1W Location: Northwest end of site
Year: 2019



Data Point: DP-1U Location: Northwest end of site
Year: 2019



Data Point: DP-2W Location: Central part of site
Year: 2019



Data Point: DP-2U Location: Central part of site
Year: 2019