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

Project Overview

Watershed: Watershed #14 – Middle Yellowstone

Monitoring Year: 2020

Years Monitored: 8th year of monitoring

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

Monitoring Conducted By: Confluence Consulting Inc. for MDT

Dates Monitoring Was Conducted: July 7-9, 2020

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 Forsythe North West project, constructed in 2012. 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 remaining sites continued in 2020. The results of the 2020 monitoring efforts are presented in this report.

Site Locations:

West site - Latitude: 46.33927, **Longitude:** –106.876743

Middle site - Latitude: 46.323159**, Longitude:** -106.843010

East site - Latitude: 46.31969, **Longitude:** -106.83657

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: None **Date:** NA **Specific recommendations for corrective actions:** It is recommended that MDT investigate if changes are needed to address the increase in open water at the West site. MDT to may also want to investigate lowering the elevation of the center of the East wetland to generate more wetland habitat.

Anticipated Wetland Credit Acres: 13.57

Wetland Credit Acres Generated to Date: 2.75

Wetland Acreage within the Project Area: 2.79

Open Water within the Project Area: 8.95 acres

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 and contain wetland vegetation, hydric soils, and indicators of wetland hydrology. All of the sites are stable, have less than 5 percent total noxious weed cover. The East and Middle sites are functioning as designed, but the West site has recently lost wetland acreage due to a change in how the USACE is awarding credit for the palustrine aquatic bed wetland type.

Summary Data: Combined West, Middle, and East Sites

Wetland Delineation – The total wetland acreage delineated in 2020 at the three sites was 2.79 acres of palustrine emergent wetland (Table 1; Appendix A). Additionally, 8.9 acres of open water were mapped at the Forsyth NW - West site in 2020. No open water was identified at the Middle or East sites (Table 1). In 2020 the USACE provided guidance on open water, defining it as, "areas of open water of any depth with less than 5% rooted emergent vegetation, no vegetation, submerged non-rooted vegetation, and/or submerged vegetation rooted in the substrate that does not extend above the water surface". 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 wetland were delineated as open water in 2020. As options for inclusion of open water into the crediting scheme are pending, the wetland acreage credited to this site decreased from what was reported in 2019.

Table 1. Wetland Habitat Acreages Delineated at the FNW Sites (2013–2020)

Site	2013 (acres)	2014 (acres)	2015 (acres)	2016 (acres)	2017 (acres)	2018 (acres)	2019 (acres)	2020 (acres)	
								Wetland	Open Water
FNW-West	5.44	5.85	6.01	6.01	5.89	10.55	10.55	1.61	8.9
FNW-Middle	0.49	0.49	0.49	0.49	0.58	0.58	0.58	0.58	-
FNW-East	1.19	1.19	0.46	0.43	0.43	0.56	0.56	0.60	-
Total	**7.12**	**7.53**	**6.96**	**6.93**	**6.90**	**11.69**	**11.69**	**2.79**	

Functional Assessment – The 2020 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 three sites are considered Category III wetlands and generated a total of 69.78 Functional Units in 2020. Functional Assessment ratings have remained relatively consistent at the three sites since monitoring began in 2013.

Photographs – Photographs were taken at all three FNW sites in 2020 and are provided in Appendix C. The photographs were taken at permanent photo points, transect endpoints, and data points are presented alongside photos from the first year of monitoring. Please refer to previous years' monitoring reports for photographs from all other years. (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 2020 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 2020 as the sites are relatively small and not very diverse, and because the surveys were completed in the middle of the day. Ten bird species were recorded at the FNW-West site during the field investigation along with

deer tracks, fox tracks, coyote tracks, one muskrat, one toad, and three northern leopard frogs (*Lithobates pipiens*).

Table 2. 2020 Montana Wetland Assessment Method (MWAM) Functional Value Summary for the Forsyth Northwest Sites. Values shown are the actual functional points scored by each site.

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)	Low (0.3)	Low (0.3)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	Mod (0.7)
Sediment/Shoreline Stabilization	Mod (0.6)	NA	N/A
Production Export/Food Chain Support	Mod (0.7)	Low (0.3)	Mod (0.7)
Groundwater Discharge/Recharge	Mod (0.7)	N/A	Mod (0.7)
Uniqueness	Low (0.3)	Low (0.2)	Low (0.2)
Recreation/Education Potential (bonus points)	High (0.15)	Low (0.05)	Low (0.05)
Actual Points/Possible Points	**6.25/11**	**2.85/7**	**3.65/8**
% of Possible Score Achieved	**56.8%**	**40.7%**	**45.6%**
Overall Category	**III**	**III**	**III**
Total Acreage of Assessed Wetlands Within Site Boundaries	**10.55**	**0.58**	**0.6**
Functional Units (acreage × actual points)	**65.94**	**2.2**	**2.19**

Summary Data: Specific to the FNW-West Site

FNW-West Site Vegetation – A total of 82 plant species have been identified on the site from 2013 through 2020. Three new species were identified at the site in 2020 (see the plant list in Appendix B). Vegetation 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. The site is now extensively inundated, and a large portion of the site was mapped as open water in 2020. Much of the vegetation has died off in the inundated areas of the site, including woody species such as cottonwood and willow. Inundated areas are represented by Community Type 17 – Open Water/Aquatic Macrophytes. Wetland community types are now only found in the fringes around the open water or in areas that are shallow enough to support emergent vegetation. These changes have led to shifts in plant community composition within some of the previously mapped community types, the elimination of some communities types previously observed, and the addition of Community Type 18 – *Hordeum jubatum/Typha sp.* Additional shifts were observed in Community Type 6 including a near absence of broadleaf plants in a large swath that runs parallel to the road. In these areas, nearly 100% of the plant cover was provided by grasses, indicating that these shifts in the community are are likely the result of broadleaf herbicide applications. The following vegetation community types were identified in 2020:

- 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 16 - *Alopecurus arundinaceus/Hordeum jubatum*
- Wetland Type 17 – Open Water/Aquatic Macrophytes.
- Wetland Type 18 – *Hordeum jubatum/Typha sp.*

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). Observed shifts in the community composition of Community Type 6 are likely the result of herbicide application, while shifts in the wetland community types are likely the result of increase inundation across the site.

Vegetation cover was measured along two transects in 2020 (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 1, wetland Community Type 18 Community Type 17 and open water. Ninety-two percent of the transect crossed open water habitat in 2020 as a result of inundation that has occurred since the 2017 adaptive management actions. Increased inundation has also led to a decrease in total vegetative cover along the transect, which was 3 percent in 2020.

Table 3. Data Summary for T-1 From 2016 Through 2020 at the FNW-West Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**282**	**282**	**282**	**282**	**282**
Vegetation Community Transitions Along Transect	7	5	1	1	2
Vegetation Communities Along Transect	5	5	1	1	2
Hydrophytic Vegetation Communities Along Transect	4	2	0	1	1
Total Vegetative Species	26	18	5	4	9
Total Hydrophytic Species	5	4	0	1	3
Total Upland Species	21	14	5	4	6
Estimated % Total Vegetative Cover	90	46	5	10	3
Estimated % Unvegetated	10	54	95	65	97
% Transect Length Comprising Hydrophytic Vegetation Communities	37	34	0	30	3
% Transect Length Comprising Upland Vegetation Communities	63	66	5	5	5
% Transect Length Comprising Unvegetated Open Water	0	0	95	65	92
% Transect Length Comprising of Mudflat	0	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, wetland Community Type 18, and Community Type 17, open water. Ninety-one percent of the transect crossed open water habitat in 2020. Total vegetative cover continued to decrease from 2019 to 2020 as a result of increased water levels across the site following the dike repair in 2017, and total vegetative cover across the transect is now 3 percent.

Two trace infestations of Priority 2B noxious weeds, Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*), were mapped in southeast corner of the site in 2020.

FNW-West Site Hydrology – The main source of hydrology at the FNW-West site is runoff from precipitation events in the Big Porcupine Creek 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. The mitigation site received heavy runoff from Porcupine Creek and

East Spring Coulee in 2018 and 2019 which filled the depressional area in the middle of the site to capacity. It is likely that some of this water was retained on site over the 2019-2020 winter as the snowpack, and therefore spring runoff, was less significant in 2020 than in the previous two years. In 2020, drift debris and recently deposited sediment were observed on the dike at the downstream end of the site; evidence of water having recently passed over the dike. The dike and overflow structure that were repaired in 2016 appeared to be in good condition and functioning as designed.

Table 4. Data Summary for T-2 From 2016 Through 2020 at the FNW-West Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**261**	**261**	**261**	**261**	**261**
Vegetation Community Transitions Along Transect	2	3	2	2	3
Vegetation Communities Along Transect	3	4	3	3	3
Hydrophytic Vegetation Communities Along Transect	1	2	1	1	1
Total Vegetative Species	28	19	13	15	19
Total Hydrophytic Species	8	9	4	5	6
Total Upland Species	20	10	9	10	13
Estimated % Total Vegetative Cover	82	92	20	20	3
Estimated % Unvegetated	13	8	80	80	97
% Transect Length Comprising Hydrophytic Vegetation Communities	87	87	90	90	2
% Transect Length Comprising Upland Vegetation Communities	13	13	10	10	7
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	91
% Transect Length Comprising of Mudflat	0	0	0	0	0

FNW-West Site Soils – Soil test pits were excavated at two locations (DP01w and DP01u; Figure A-2, Appendix A). Both test pits were located in areas originally mapped as the Marvan silty clay soil series by the NRCS (NRCS 2020). The soil profile at DP01w revealed a gray (10YR 5/1) silty clay from 0 to 12 inches with 20 percent black (7.5Y 2.5/1) depleted matrix, and 10 percent prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations in the matrix. This soil qualifies for the Depleted Matrix hydric soil Indicator (F3). DP01u is located in upland Community Type 5 – *Symphoricarpos albus*/*Pascopyrum smithii* between Highway 12 and the wetland area. The DP01u soil profile revealed 7 inches of a reddish brown (2.5YR 4/3) sandy clay loam that contained 2% relict redoximorphic features on top of a greyish brown (2.5Y 5/2) clay horizon that contained 5 percent redoximorphic features. Despite the redoximorphic features observed, the soil did not meet the criteria for any hydric soil indicators.

Summary Data: Specific to FNW-Middle Site

FNW-Middle Site Vegetation – A total of 62 plant species were identified on the site from 2013 through 2020. Five new species were identified at the site in 2020 (see the plant list in Appendix B). Vegetation communities were identified by plant composition and dominance. The following vegetation community types were identified in 2020:

- Upland Type 3 – *Pascopyrum smithii/Elymus canadensis*
- Wetland Type 5 – *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). Observed shifts in the composition of Community Type 3 are likely the result of herbicide application along Highway 12, given that broadleaf plants were nearly absent and almost all of the plant

cover was provided by grasses in a large swath that runs parallel to the road. indicating that these community shifts in the are likely the result of broadleaf herbicide applications.

Vegetation cover was measured along one transect in 2020 (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 Type 5; 24 percent of the transect crossed wetland habitat in 2020. This reduction in hydrophytic vegetation is a result of the site being more mesic than in years past and the vegetation along the slopes of the swale was not dominated by hydrophytic species. Total vegetative cover has remained constant at 85 percent from 2016 to 2020.

Infestations of two Priority 2B noxious weeds were identified at the site in 2020: Canada thistle (*Cirsium arvense*) and field bindweed (*Convolvulus arvensis*; Figure A-6, Appendix A).

Table 5. Data Summary for T-1 From 2016 Through 2020 at the FNW-Middle Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**50**	**50**	**50**	**50**	**50**
Vegetation Community Transitions Along Transect	2	2	2	2	2
Vegetation Communities Along Transect	2	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1	1
Total Vegetative Species	11	17	17	16	24
Total Hydrophytic Species	3	4	5	4	11
Total Upland Species	8	13	12	12	13
Estimated % Total Vegetative Cover	85	83	85	85	85
Estimated % Unvegetated	15	17	15	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	30	38	38	38	24
% Transect Length Comprising Upland Vegetation Communities	70	62	62	62	76
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0	0

FNW-Middle Site Hydrology – This site is situated near abandoned meander bends associated with Big Porcupine Creek. 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 was likely inundated earlier in the year, but was not inundated or saturated at the time of the 2020 field survey. Positive hydrologic indicators that were observed at this site included surface soil cracks, water stained leaves, positive FAC-neutral test results, and geomorphic position.

FNW-Middle Site Soils – Soil test pits were examined at two locations (DP01w and DP01u; Figure A-5, Appendix A), and both locations were within what was originally mapped as the Harlem silty clay soil series by the NRCS. DP01w is located in an excavated depression near the center of the site. The soil profile revealed a dark greyish-brown (2.5Y 4/2) silty clay that had 15% distinct redoximorphic depletions and concentrations. This soil meets the qualifications for the Depleted Matrix Hydric Soil Indicator (F3). DP01u is located in upland Community Type 3 – *Pascopyrum smithii/Elymus canadensis*, approximately 10 feet northeast of DP01w. The soil profile revealed one inch of dark grey (2.5Y 4/1) silty clay loam, on top of 12 inches of a dark greyish brown silty clay with 1% red redoximorphic concentrations. This soil did not meet the criteria for any hydric soil indicators.

Summary Data: Specific to FNW-East Site

FNW-East Site Vegetation – A total of 59 plant species were identified on the site from 2013 through 2020. One new species was identified at the site in 2020 (see the plant list in Appendix B). Vegetation communities were identified by plant composition and dominance. The following vegetation community types were identified in 2020:

- 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). Observed shifts in the community composition of Community Type 3 are likely the result of herbicide application along Highway 12.

Vegetation cover was measured along two transects in 2020 (Figure A-2, Appendix A). 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 2017 to 2020. 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 2020. Total vegetative cover has remained constant at 98 percent from 2017 to 2020. 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.

Infestations of two Priority 2B noxious weeds, saltcedar (*Tamarix chinensis*) and field bindweed (*Convolvulus arvensis*) 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 adjacent to the site appear to be acting as a source population as cottonwood and willow seedlings have begun to colonize the site.

Table 6. Data Summary for T-1 From 2016 Through 2020 at the FNW-East Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**125**	**125**	**125**	**125**	**125**
Vegetation Community Transitions Along Transect	2	2	2	2	2
Vegetation Communities Along Transect	2	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1	1
Total Vegetative Species	22	17	17	16	16
Total Hydrophytic Species	9	7	7	7	4
Total Upland Species	11	10	10	9	12
Estimated % Total Vegetative Cover	90	95	95	95	95
Estimated % Unvegetated	10	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	50	50	52	52	52
% Transect Length Comprising Upland Vegetation Communities	50	50	48	48	48
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0	0

Table 7. Data Summary for T-2 From 2016 Through 2020 at the FNW-East Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**181**	**181**	**181**	**181**	**181**
Vegetation Community Transitions Along Transect	2	2	2	2	2
Vegetation Communities Along Transect	2	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	1	1	1	1	1
Total Vegetative Species	26	11	14	15	10
Total Hydrophytic Species	6	4	6	6	2
Total Upland Species	20	7	8	9	8
Estimated % Total Vegetative Cover	94	98	98	98	98
Estimated % Unvegetated	6	2	2	2	2
% Transect Length Comprising Hydrophytic Vegetation Communities	44	55	55	55	55
% Transect Length Comprising Upland Vegetation Communities	56	45	45	45	45
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising of Mudflat	0	0	0	0	0

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 relict and contemporary wetland characteristics are located directly adjacent to the site. Positive hydrologic indicators that were observed at this site included surface soil cracks, geomorphic position, dried algal mats, oxidized rhizospheres along living roots, and vegetation communities that pass the FAC-neutral test.

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 by the NRCS (DP01w, DP01u, DP02w, and DP02u). DP01w is located in the northern edge of a wetland depression on the northwest portion of the site. The soil profile revealed three inches of very dark grayish-brown (2.5Y 3/2) silty clay, over seven inches of very dark grey sandy clay with 40% very grey (2.5 Y 3/1) redoximorphic depletions, and two inches of very hard silty clay, that was 50/50 with dark grey (2.5 Y 4/1) and dark greyish brown (2.5Y 4/2). The soil met the criteria for depleted matrix (F3) and was classified as a hydric soil. DP01u is located adjacent to DP01w between the wetland swale and Highway 12. The soil profile revealed six inches of olive-brown (2.5Y 4/3) sandy clay, over eight inches of greyish brown (2.5Y 5/2) silty clay. This soil did not meet the criteria for any hydric soil indicators. DP02w is in the southern portion of a wetland swale. The soil profile revealed a dark greyish brown (2.5YR 4/2) silty clay, on top of a dark greyish brown clay with 30% gleyed depletions and 3% strong brown redoximorphic concentrations in the matrix. This soil met the criteria for depleted matrix (F3) and was classification as a hydric soil. DP02u was located adjacent to DP01w between the wetland swale and Highway 12.

Mitigation Credit Summary: All Sites – Table 8 summarizes the estimated wetland credits at all three sites based on the USACE-approved credit ratios and the wetland delineations completed in July 2020. 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. With all sites combined, the credits generated are still 6.26 short of the mitigation credits required to offset losses from these two construction projects. This is a substantial decrease from the 1.82 net credits reported in 2019, and is mainly attributed to the recent shift in how the USACE is awarding credit for the palustrine aquatic bed wetland type.

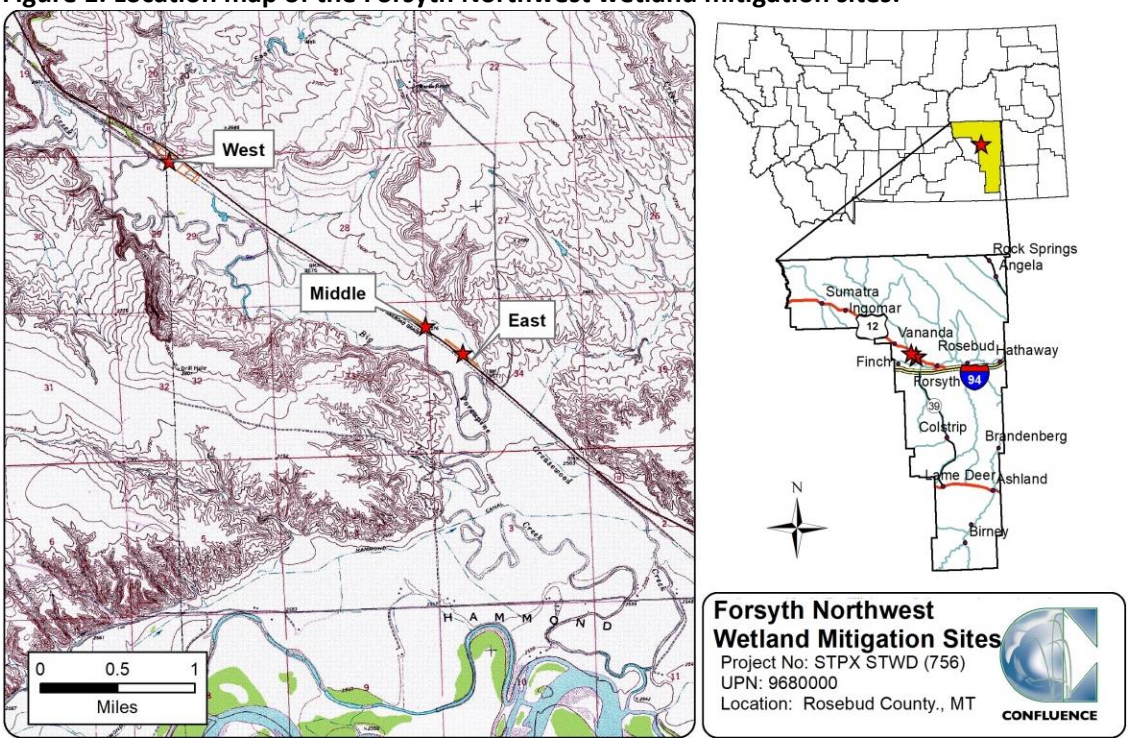
Table 8. Credit/Debit Summary for the Forsyth – Northwest Project

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	1.47	Creation Credit	1:1	1.47
	0.13	Preservation Credit	4:1	0.03
	3.16	Upland Buffer Credit	5:1	0.63
	8.95	Open Water Credit	TBD	TBD
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**		**6.52**
Net Credits				**-6.26**

[(a)] Wetland Mitigation Monitoring Plan, Forsyth-Northwest (2012) indicates credits created at the FNW-Treasure County Line site will be applied to FNW impacts at 1:1 ratio as mitigation site was constructed prior to impacts.

Maps, Plans, Photos

Figure 1. Location map of the Forsyth Northwest wetland mitigation sites.



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 2013 Monitoring Report.
https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2013_REPORTS/FORSYTH_NORTHWEST_2013_FINAL.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 and have less than 5 percent total noxious weed cover. The West site has developed a large area of open water. In 2020, this area was removed from the wetland acreage and was not used to calculate mitigation credits. Options for inclusion of open water into the crediting scheme are pending. The East site is functioning as designed in the areas that have developed wetland characteristics, but the middle portion of the site, which was originally intended to be wetland, remains as upland. The Middle site appeared to be drier than in previous years, as was evident by shifts in the vegetation community composition and less obvious hydric soil indicators. In 2020, the FNW mitigation sites have experienced a reduction in mitigation credits required to satisfy the 12.78 acres of wetland debits (Table 8) created by the Volborg – North and South and Forsyth Northwest construction projects.

References

Berglund, J. and R. McEldowney. 2008. *MDT Montana Wetland Assessment Method,* PBS&J Project B43072.00, prepared by Post, Buckley, Schuh, & Jernigan, Helena, MT, for the Montana Department of Transportation, Helena, MT.

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APPENDIX A
PROJECT AREA MAPS

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

Figure A-2. 2020 Monitoring Activity Locations

PP4
T2-End
T2-Start
PP3
DP01w
DP01u
PP5
T1-End
T1-Start
PP1
PP6
PP2
Repaired Dike Structure

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.

CONFLUENCE
consulting incorporated

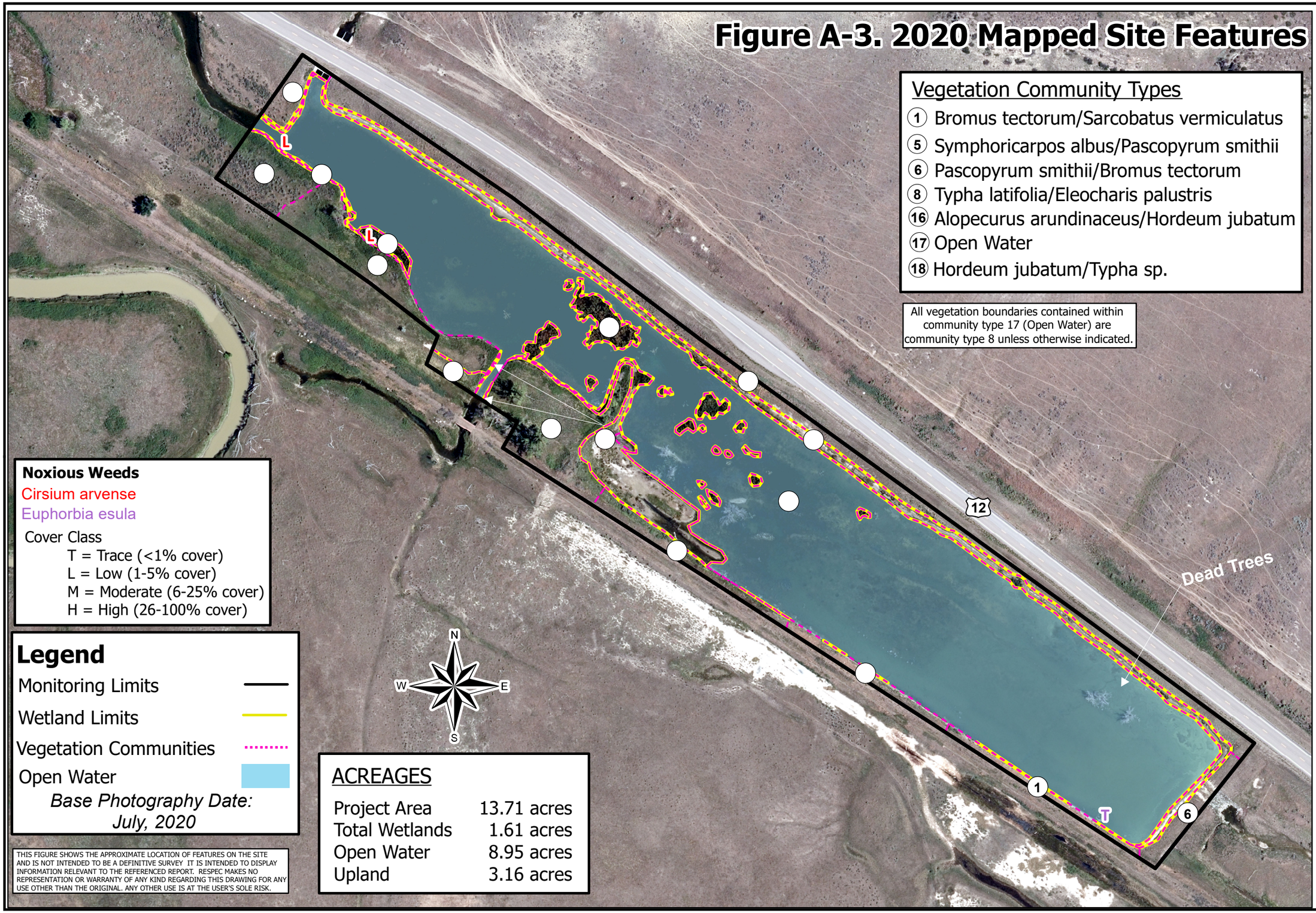
Forsyth NW - West Site
2020 Monitoring Activity Locations

0 65 130 260 390 520 650 Feet

Project: STPX STWD (756)
Location: Rosebud Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\West Site\Monitor2020_MDT.mxd

Figure A-3. 2020 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
16. Alopecurus arundinaceus/Hordeum jubatum
17. Open Water
18. Hordeum jubatum/Typha sp.

All vegetation boundaries contained within community type 17 (Open Water) are community type 8 unless otherwise indicated.

Noxious Weeds
Cirsium arvense
Euphorbia esula

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

Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Communities
- Open Water

Base Photography Date: July, 2020

ACREAGES

Project Area	13.71 acres
Total Wetlands	1.61 acres
Open Water	8.95 acres
Upland	3.16 acres

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.

CONFLUENCE
consulting incorporated

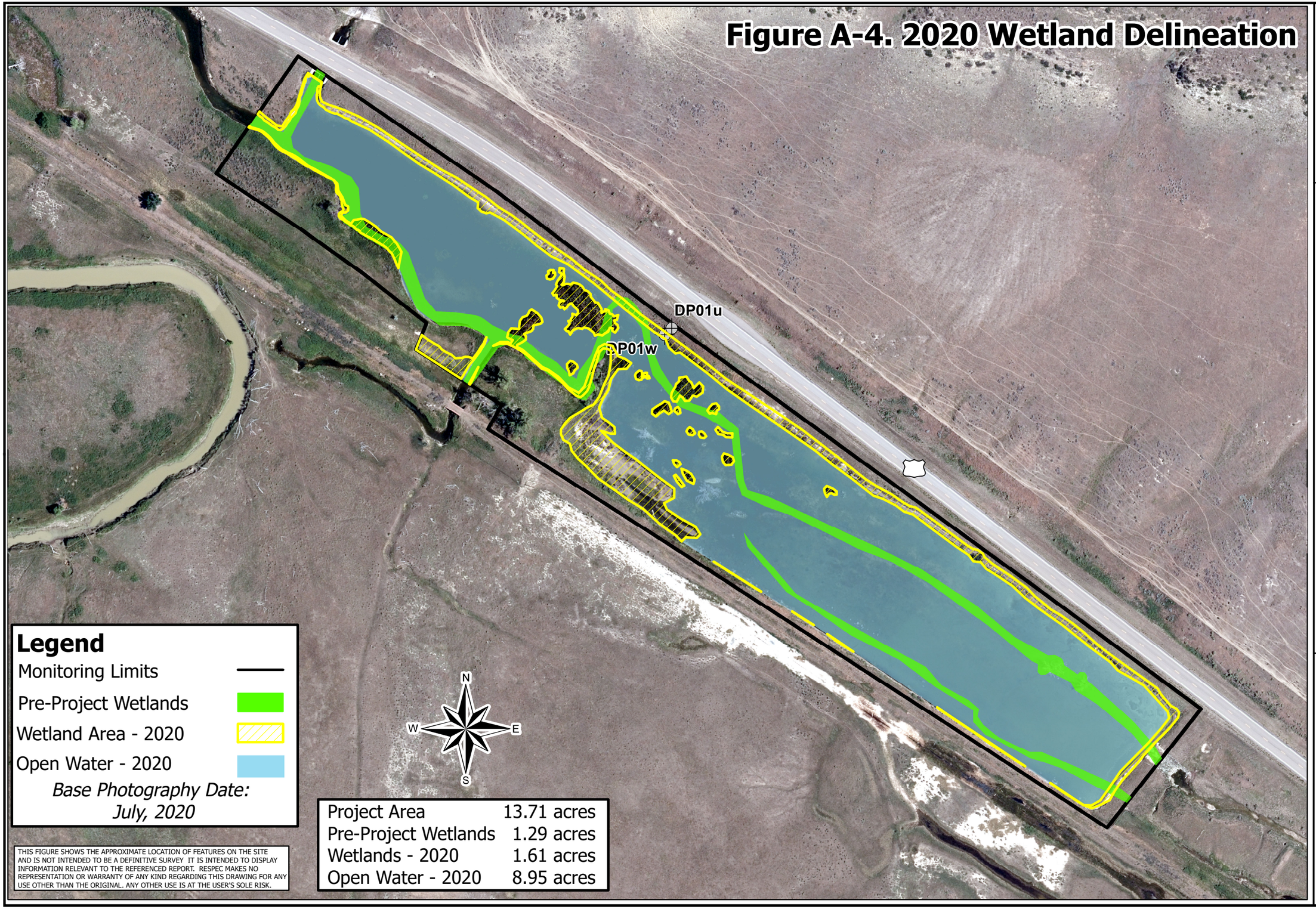
Forsyth NW - West Site
2020 Mapped Site Features

0 65 130 260 390 520 650 Feet

Project: STPX STWD (756)
Location: Rosebud Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\West Site\Veg2020_MDT2.mxd

Figure A-4. 2020 Wetland Delineation



Legend

- Monitoring Limits
- Pre-Project Wetlands
- Wetland Area - 2020
- Open Water - 2020

Base Photography Date: July, 2020

Project Area	13.71 acres
Pre-Project Wetlands	1.29 acres
Wetlands - 2020	1.61 acres
Open Water - 2020	8.95 acres

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.

CONFLUENCE
consulting incorporated

Forsyth NW - West Site
2020 Wetland Delineation

0 65 130 260 390 520 650 Feet

Project:	STPX STWD (756)
Location:	Rosebud Co., Montana
Date:	October 2020
Project Manager:	R. McEldowney
Drawn By:	RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\West Site\Deln2020_MDT.mxd

Figure A-5. 2020 Monitoring Activity Locations

PP1

T1-Start

T1-End

DP01u

DP01w

PP2

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.

CONFLUENCE
consulting incorporated

Forsyth NW - Middle Site
2020 Monitoring Activity Locations

0 30 60 120 180 240 300 Feet

Project: STPX STWD (756)

Location: Rosebud Co., Montana

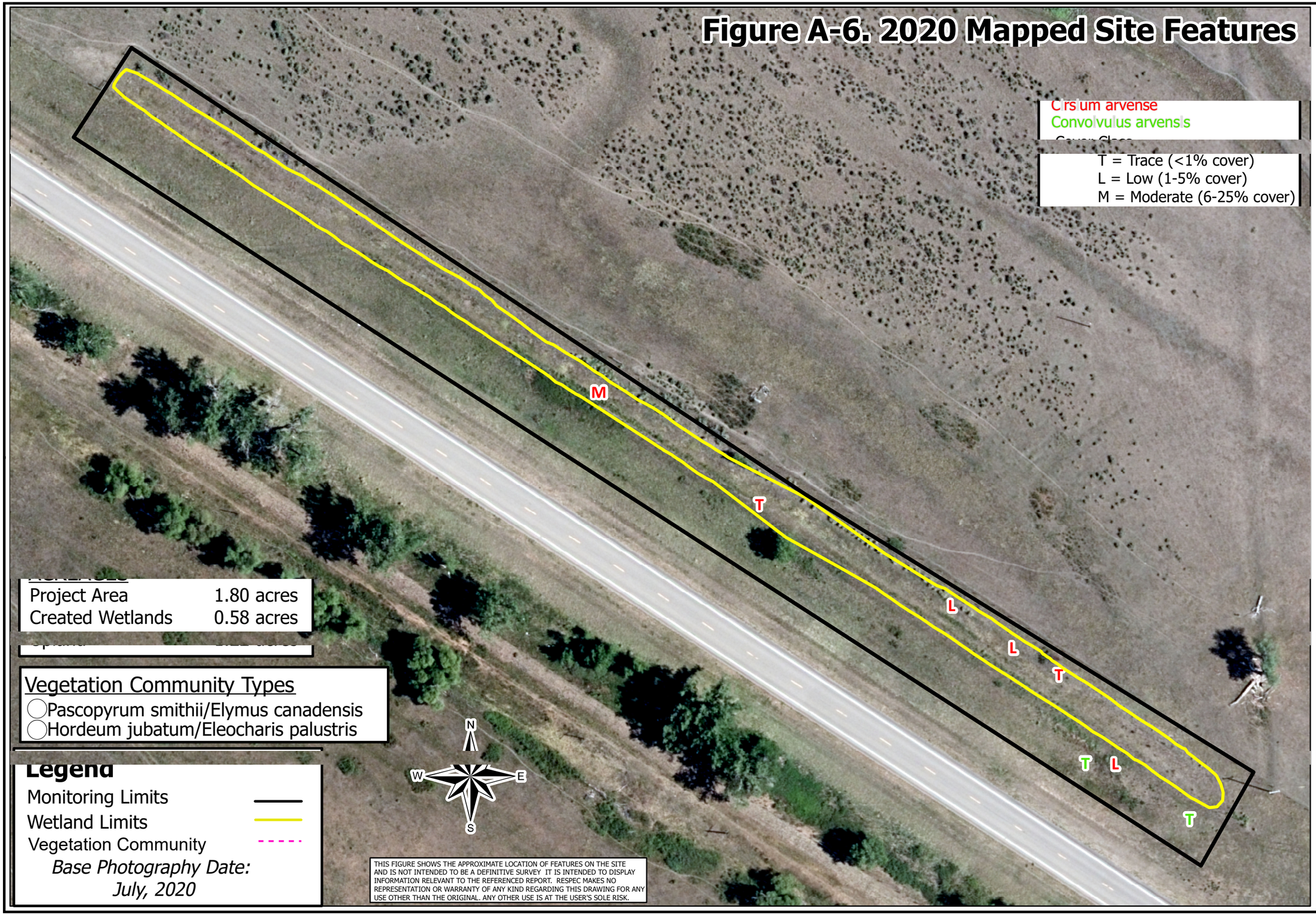
Date: October 2020

Project Manager: R. McEldowney

Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\Middle Site\Monitor2020_MDT.mxd

Figure A-6. 2020 Mapped Site Features



CONFLUENCE
consulting incorporated

Forsyth NW - Middle Site
2020 Mapped Site Features

0 30 60 120 180 240 300 Feet

Project: STPX STWD (756)
Location: Rosebud Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\Middle Site\Veg2020_MDTa.mxd

Figure A-7. 2020 Wetland Delineation

DP01u

DP01w

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CONFLUENCE
consulting incorporated

Forsyth NW - Middle Site
2020 Wetland Delineation

0 30 60 120 180 240 300 Feet

Project:	STPX STWD (756)
Location:	Rosebud Co., Montana
Date:	October 2020
Project Manager:	R. McEldowney
Drawn By:	RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\Middle Site\Delin2020_MDT.mxd

Figure A-8. 2020 Monitoring Activity Locations

PP1
T1-Start
DP01w
DP01u
T1-End
PP2
T2-End
DP02w
T2-Start
DP02u
PP3

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CONFLUENCE
consulting incorporated

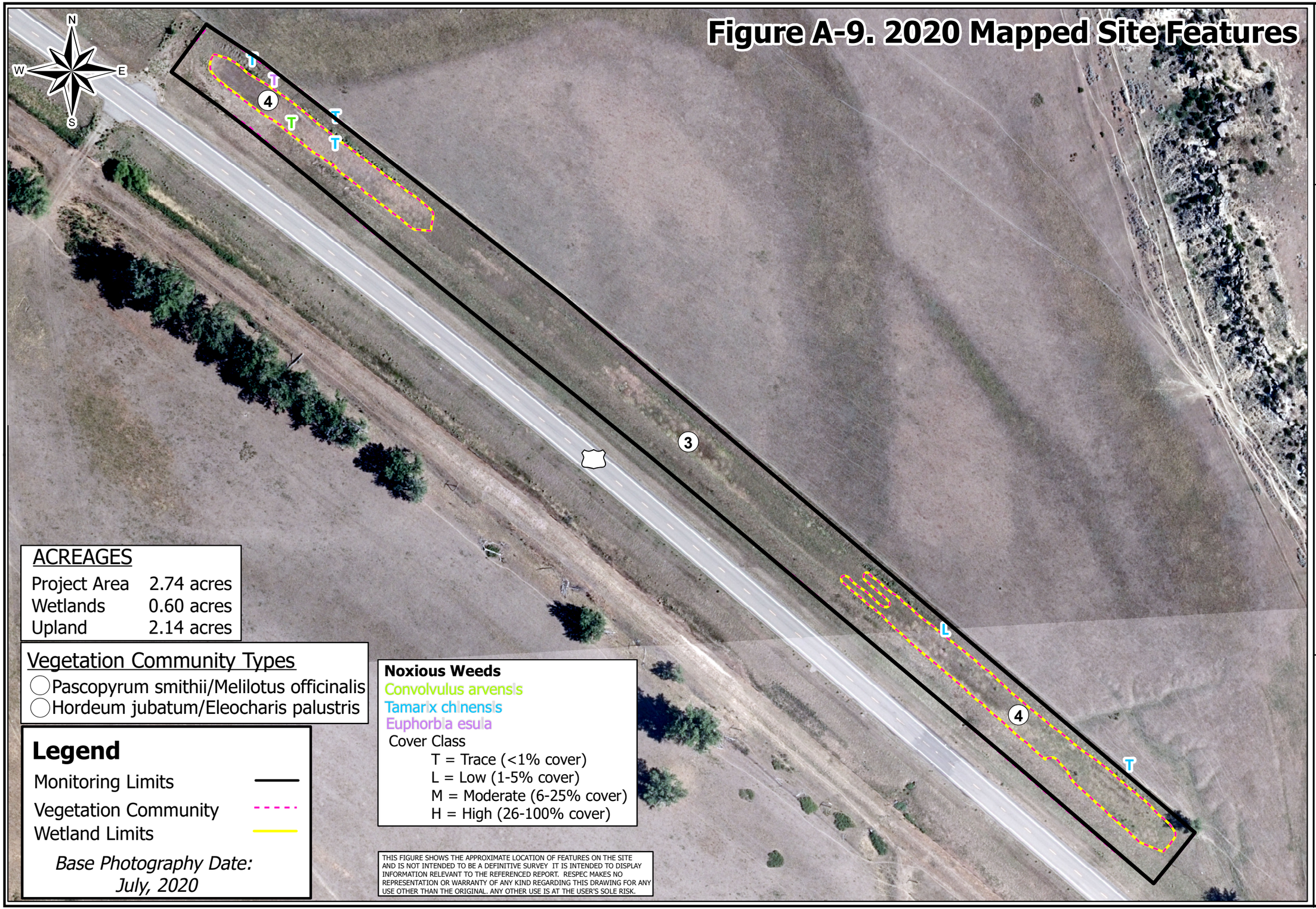
Forsyth NW - East Site
2020 Monitoring Activity Locations

0 50 100 200 300 400 500 Feet

Project: STPX STWD (756)
Location: Rosebud Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\East Site\Monitor2020_MDT.mxd

Figure A-9. 2020 Mapped Site Features



ACREAGES	
Project Area	2.74 acres
Wetlands	0.60 acres
Upland	2.14 acres

Vegetation Community Types

- Pascopyrum smithii/Melilotus officinalis
- Hordeum jubatum/Eleocharis palustris

Legend

- Monitoring Limits
- Vegetation Community
- Wetland Limits

Base Photography Date: July, 2020

Noxious Weeds

Convolvulus arvensis
Tamarix chinensis
Euphorbia esula

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.

CONFLUENCE
consulting incorporated

Forsyth NW - East Site
2020 Mapped Site Features

0 50 100 200 300 400 500 Feet

Project: STPX STWD (756)
Location: Rosebud Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Maines\Forsyth NW\2020\East Site\Veg2020_MDT.mxd

Figure A-10. 2020 Wetland Delineation

DP01w

DP01u

DP02w

DP02u

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CONFLUENCE
consulting incorporated

Forsyth NW - East Site
2020 Wetland Delineation

0 50 100 200 300 400 500 Feet

Project: STPX STWD (756)

Location: Rosebud Co., Montana

Date: October 2020

Project Manager: R. McEldowney

Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Forsyth NW\2020\East Site\Delin2020_MDT.mxd

APPENDIX B
MONITORING FORMS

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

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Forsyth NW - West Assessment Date/Time 7/7/2020

Person(s) conducting the assessment: R. Jones

Weather: Partly sunny, 90 degrees F Location: ~15 miles NW of Forsyth

MDT District: Glendive Milepost: RP 280 on US 12

Legal Description: T 7N R 39E Section(s) 20 & 29

Initial Evaluation Date: 8/15/2013 Monitoring Year: 8 #Visits in Year: 1

Size of Evaluation Area: 13.71 (acres)

Land use surrounding wetland:

Agriculture, grazing, US 12

HYDROLOGY

Surface Water Source: Big Porcupine Cr., E.Spring Coulee, runoff, seasonally high ground water

Inundation: ☑ Average Depth: 1 **(ft)** Range of Depths: 0.5-5 **(ft)**

Percent of assessment area under inundation: 80 %

Depth at emergent vegetation-open water boundary: 2 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: No

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

Majority of the wetland area inundated in 2020. Wetland fringe around open water displayed saturated soils with salt crusts, and contained occasional drift deposits around the high water mark.

Groundwater Monitoring Wells

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

Additional Activities Checklist:

☐ Map emergent vegetation-open water boundary on aerial photograph.

☐ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

Hydrologic sources incude Big Porcupine Creek, East Spring Coulee, and a high water table.

Mitigation area receives surface water from East Spring Creek Coulee and from periodic flooding of Big Porcupine Creek. The majority of the site was inudated during the 2020 site visit. The site has been obviously inudated for extended periods of time as evidenced by drowned woody vegetation and an absence of herbaceous vegetation around the edges of the open water.

VEGETATION COMMUNITIES

Site Forsyth NW - West

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

Community # 1 **Community Type:** Bromus tectorum / Sarcobatus vermiculatus **Acres:** 0.77

Species	Cover class	Species	Cover class
Bare Ground	2	Bassia scoparia	1
Bromus inermis	1	Bromus tectorum	2
Chenopodium album	1	Elymus repens	1
Euphorbia esula	1	Hordeum jubatum	2
Pascopyrum smithii	3	Poa pratensis	1
Sarcobatus vermiculatus	1	Schedonorus pratensis	2
Thlaspi arvense	1		

Comments:

Bromus tectorum cover has been reduced from previous years.

Community # 5 **Community Type:** Symphoricarpos albus / Pascopyrum smithii **Acres:** 1.37

Species	Cover class	Species	Cover class
Bare Ground	1	Bassia scoparia	1
Bromus inermis	1	Bromus japonicus	1
Chenopodium album	1	Cirsium arvense	1
Eleocharis lanceolata	1	Elymus repens	1
Glycyrrhiza lepidota	1	Hordeum jubatum	1
Pascopyrum smithii	5	Poa compressa	2
Poa pratensis	2	Sarcobatus vermiculatus	1
Symphoricarpos albus	2	Thlaspi arvense	1

Comments:

Community # 6 Community Type: Pascopyrum smithii / Bromus tectorum **Acres:** 1.02

Species	Cover class	Species	Cover class
Bare Ground	1	Bassia scoparia	0
Bromus arvensis	1	Bromus japonicus	0
Bromus tectorum	1	Chenopodium album	1
Elymus canadensis	1	Elymus lanceolatus	1
Elymus trachycaulus	1	Helianthus annuus	0
Hordeum jubatum	2	Hordeum marinum	0
Lepidium perfoliatum	1	Linum lewisii	0
Melilotus officinalis	0	Pascopyrum smithii	5
Thlaspi arvense	0		

Comments:

Bromus tectorum cover has been significantly reduced from previous years.

Community # 8 Community Type: Typha latifolia / Eleocharis palustris **Acres:** 0.36

Species	Cover class	Species	Cover class
Eleocharis palustris	3	Open Water	2
Populus deltoides	1	Salix amygdaloides	1
Schoenoplectus acutus	0	Schoenoplectus maritimus	0
Sonchus arvensis	1	Spartina pectinata	1
Typha angustifolia	3	Typha latifolia	4

Comments:

Community # 16 Community Type: Alopecurus arundinaceus / Hordeum jubatum **Acres:** 0

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	4	Bare Ground	1
Hordeum jubatum	4	Rumex crispus	3
Sagittaria cuneata	2		

Comments:

Community # 17 Community Type: Open Water / Aquatic macrophytes **Acres:** 8.9

Species	Cover class	Species	Cover class
Aquatic macrophytes	0	Eleocharis palustris	0
Open Water	5	Schoenoplectus maritimus	1
Typha angustifolia	1	Typha latifolia	1

Comments:

Community type was signicantly revised from previous years to account for differential mapping of open water.

Community # 18 **Community Type:** Hordeum jubatum / Typha sp. **Acres:** 0

Species	Cover class	Species	Cover class
Bare Ground	5	Chenopodium album	1
Eleocharis palustris	1	Elymus trachycaulus	0
Grindelia squarrosa	1	Hordeum jubatum	2
Open Water	1	Polygonum aviculare	0
Populus deltoides	0	Puccinellia nuttalliana	1
Rumex crispus	0	Salicornia rubra	1
Schoenoplectus maritimus	2	Typha angustifolia	2
Typha latifolia	1		

Comments:

This community type was created to replace Community Type 9, Eleocharis palustris/Open Water as a result of the need to classify open water as it's own community type, and the need for a new wetland community that fringes open water.

Total Vegetation Community Acreage **12.42**

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

VEGETATION TRANSECTS

Site: Forsyth NW - West Date: 7/7/2020

Transect Number: 1 **Compass Direction from Start:** 25

Interval Data:

Ending Station 14 **Community Type:** Bromus tectorum / Sarcobatus vermiculatus

Species	Cover class	Species	Cover class
Bare Ground	3	Bromus tectorum	4
Pascopyrum smithii	3	Poa pratensis	1

Ending Station 274 **Community Type:** Open Water / Aquatic macrophytes

Species	Cover class	Species	Cover class

Ending Station 282 **Community Type:** Hordeum jubatum / Typha sp.

Species	Cover class	Species	Cover class
Chenopodium album	1	Eleocharis palustris	1
Elymus trachycaulus	3	Hordeum jubatum	4
Rumex crispus	2	Schoenoplectus maritimus	1

Transect Notes:

Majority of transect is now inundated.

Transect Number: 2 **Compass Direction from Start:** 25

Interval Data:

Ending Station 10 **Community Type:** Symphoricarpos albus / Pascopyrum smithii

Species	Cover class	Species	Cover class
Bare Ground	1	Cirsium arvense	0
Eleocharis lanceolata	0	Elymus repens	4
Glycyrrhiza lepidota	1	Hordeum jubatum	1
Pascopyrum smithii	1	Poa compressa	4
Symphoricarpos albus	0		

Ending Station 248 **Community Type:** Open Water / Aquatic macrophytes

Species	Cover class	Species	Cover class
Eleocharis palustris	0	Open Water	5
Typha angustifolia	1		

Ending Station 252 **Community Type:** Hordeum jubatum / Typha sp.

Species	Cover class	Species	Cover class
Bare Ground	5	Chenopodium album	1
Hordeum jubatum	2	Puccinellia nuttalliana	2
Salicornia rubra	1	Schoenoplectus maritimus	1

Ending Station 261 **Community Type:** Pascopyrum smithii / Bromus tectorum

Species	Cover class	Species	Cover class
Bare Ground	2	Bromus arvensis	1
Bromus japonicus	3	Chenopodium album	2
Elymus lanceolatus	1	Hordeum jubatum	2
Lepidium perfoliatum	1	Melilotus officinalis	5
Pascopyrum smithii	3		

Transect Notes:

Majority of transect is now inundated.

PLANTED WOODY VEGETATION SURVIVAL

Forsyth NW - West

Comments

No woody vegetation planted at site. Natural recruitment of cottonwoods and willows is occurring.

Forsyth NW - West

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
Cliff Swallow	10	FO, L	
Common Nighthawk	2	FO	
Coot	2		
Killdeer	2	FO	
Mourning Dove	4	FO	
Red-winged Blackbird	3	F, L	
Teal	2		
Western Meadowlark	1	FO, L	
Wilson's Phalarope	2	FO	
Yellow-headed Blackbird	2	F, L	

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Coyote		Yes	No	No	
Fox		Yes	No	No	
Muskrat	1	Yes	No	No	
Northern Leopard Frog	1	No	No	No	
Toad	1	No	No	No	
White-tailed Deer	50	Yes	No	No	

Wildlife Comments:

Forsyth NW - West

PHOTOGRAPHS

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

Photograph Checklist:

☐ One photograph for each of the four cardinal directions surrounding the wetland.

☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☐ At least one photograph showing the buffer surrounding the wetland.

☐ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
DP-1U	46.338947	-106.87472		
DP-1W	46.338915	-106.874771		
PP-1	46.336914	-106.871132	270	Photo Point 1 (Pano):
PP-2	46.336468	-106.871811	350	Photo Point 2 (Pano):
PP-3	46.339088	-106.874611	230	Photo Point 3 (Pano):
PP-4	46.340237	-106.877312	210	Photo Point 4 (Pano):
PP-5	46.337817	-106.874587	45	Photo Point 5 (Pano):
PP-6	46.3368	-106.8714	300	Completed Dike:
PP-6a	46.3368	-106.8714	120	Completed Dike:
T-1 end	46.337456	-106.872063	205	Transect 1 end:
T-1 start	46.33691	-106.872772	25	Transect 1 start:
T-2 end	46.339561	-106.875854	205	Transect 2 end:
T-2 start	46.339001	-106.87645	25	Transect 2 start:

Comments:

Forsyth NW - West

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Excessive inundation in 2020 has dramatically affected wetland boundaries.

Functional Assessments

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

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? No

If yes, do they need to be repaired?

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 in need of repair? No

If yes, describe the problems below.

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's 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.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW West City/County: Rosebud Sampling Date: 7/8/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01u

Investigator(s): R. Jones Section, Township, Range: 20 7N 39E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): rolling Slope (%): _____

Subregion (LRR): LRR G Lat: 46.338947 Long: -106.87472 Datum: NAD 83

Soil Map Unit Name: 138: 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 ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks: Upland sample point adjacent to DP01w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Bromus japonicus	15	☑	UPL
Bromus tectorum	2	☐	UPL
Chenopodium album	1	☐	FACU
Elymus trachycaulus	4	☐	FACU
Iva axillaris	2	☐	FAC
Linum lewisii	1	☐	UPL
Pascopyrum smithii	15	☑	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 60

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	0 X 3	0
FACU species	16 X 4	64
UPL species	24 X 5	120
Column Totals	40 (A)	184 (B)

Prevalence Index = B/A = 4.60

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:

BG/litter=60%

SOIL

Sampling Point: DP01u

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
0-07	2.5Y 4/3	98	5YR 4/6	1	C	M	Sandy Clay Loam	
07-12	2.5Y 5/2	95	10YR 3/1	1	C	M	Clay	
07-12			10YR 8/8	1	C	M	Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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: Although some redox concentrations are present in the soil matrix, no requirements are met to qualify as hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ 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, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW West City/County: Rosebud Sampling Date: 7/8/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01w

Investigator(s): R. Jones Section, Township, Range: 20 7N 39E

Landform (hillslope, terrace, etc.): Shoreline Local relief (concave, convex, none): flat Slope (%): 3.5

Subregion (LRR): LRR G Lat: 46.338915 Long: -106.874771 Datum: NAD 83

Soil Map Unit Name: 138: 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 ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks: PEM, DEPRESSIONAL wetland. Sample point located adjacent to open water.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Chenopodium album	1	☐	FACU
Chenopodium rubrum	1	☐	OBL
Eleocharis palustris	10	☑	OBL
Hordeum jubatum	2	☐	FACW
Puccinellia nuttalliana	5	☐	OBL
Salicornia rubra	5	☐	OBL
Schoenoplectus pungens	3	☐	OBL
Spartina pectinata	3	☐	FACW
Typha angustifolia	20	☑	OBL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 45

Dominance Test worksheet

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

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

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

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	44	X 1	44
FACW species	5	X 2	10
FAC species	0	X 3	0
FACU species	1	X 4	4
UPL species	0	X 5	0
Column Totals	50 (A)		58 (B)

Prevalence Index = B/A = 1.16

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

BG/litter=45%

SOIL

Sampling Point: DP01w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/1	70	10Y 2.5/1	20	D	M	Silty Clay	
0-12			10YR 4/6	10	C	M	Silty Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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 redoximorphic depletions and concentrations common within the 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): 3

Water Table Present? Yes ☑ No ☐ Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks: 3 in surface water observed at pit.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Forsyth NW - West **2. MDT project#** STPP STWD (756) **Control#** 9680000

3. Evaluation Date 7/7/2020 **4. Evaluators** R Jones **5. Wetland/Site# (s)** Forsyth NW - West

6. Wetland Location(s): T 7 N **R** 39 E **Sec1** 20 **T** 7 N **R** 39 E **Sec2** 29

Approx Stationing or Mileposts RP 280 on US 12

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

7. Evaluating Agency CCI for MDT

8. Wetland size acres 10.55

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 10.55

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Emergent Wetland		Permanent/Perennial	7
Riverine	Emergent Wetland	Excavated	Seasonal/Intermittent	9
Riverine	Unconsolidated Bottom	Diked	Seasonal/Intermittent	84

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Construction activities in 2017 to repair the dike structure temporarily increased disturbance rating at the site to high in 2017, was reduced to moderate in 2018 and 2019, and reduced to low in 2020.

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

Euphorbia esula, Cirsium arvense

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

AA includes existing and constructed wetlands within floodplain of Big Spring Coulee and Big Porcupine Creek. 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 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: Emergent wetland surrounding and within an open water area.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use USFWS T&E list for Rosebud County

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

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

Primary or critical habitat (list species) ◉ D ○ S 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 (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use Ammannia observed within AA in 2019.

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments Several bird species observed. Three northern leopard frogs, a toad, and a muskrat were observed. Deer, fox, coyote, and muskrat tracks and scat were also observed.

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

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

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

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

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .3L

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

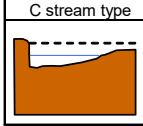
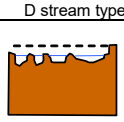
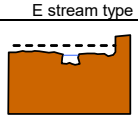
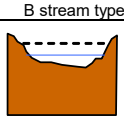
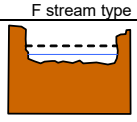
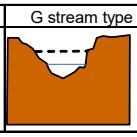
Modifed Rating .3L

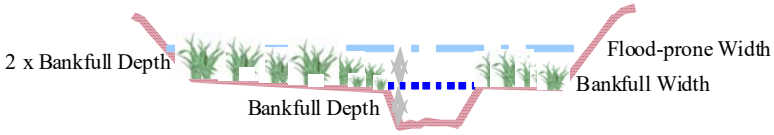
iii. Final Score and Rating: .3 L **Comments:** Numerous unidentified 3-inch fish observed during field survey in 2020.

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

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

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

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



Floodprone width 70 / **Bankfull width** 35 = **Entrenchment ratio** 2

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

Comments: Surface water enters AA via a culvert and overbank flow from Big Porcupine Creek. Water will spill over the dike on the SE end of the site before extensive flooding will occur.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Seasonal flooding from E. Spring Coulee contibute water to wetlands and the open water area.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Open/standing water was present across entire site in 2020; wetland vegetation cover is less than 70 percent in delineated wetalnds.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: AA is subject to surface water flows during runoff form Big Porcupine Creek and Spring Creek Coulee.

14I. Production Export/Food Chain Support:

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

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

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

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

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

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

Comments: Upland buffer between northern boundary of AA and highway greater than 50ft.

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments: 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 arrive at [check] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments: AA is becoming less diverse as vegetation intollerant of inundation dies off.

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

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

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

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

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

Comments:

Property is owned by MDT, and is easily accessible potential exists for bird and wildife viewing opportunites.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR 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	L	0	1	0.00	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	9.50	☑
C. General Wildlife Habitat	M	.5	1	5.28	☐
D. General Fish Habitat	L	.3	1	3.17	☐
E. Flood Attenuation	M	.5	1	5.28	☑
F. Short and Long Term Surface Water Storage	H	.9	1	9.50	☑
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	7.39	☐
H. Sediment/Shoreline Stabilization	M	.6	1	6.33	☐
I. Production Export/Food Chain Support	M	.7	1	7.39	☐
J. Groundwater Discharge/Recharge	M	.7	1	7.39	☑
K. Uniqueness	L	.3	1	3.17	☐
L. Recreation/Education Potential (bonus points)	H	.15	NA	1.58	☐
Totals:		6.25	11	65.94	
Percent of Possible Score			**56.82** %		

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

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

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

☑

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

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

I	II	III	IV

Forsyth NW - West Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

Scientific Names	Common Names	GP Indicator Status[(a)]
Agropyron cristatum	Crested Wheatgrass	UPL
Alisma triviale	Northern Water-Plantain	OBL
Alopecurus arundinaceus	**Creeping Meadow-Foxtail**	**FACW**
Amaranthus retroflexus	Red-Root	FACU
Ambrosia psilostachya	Perennial Ragweed	FACU
Ammannia robusta	Grand Redstem	OBL
Aquatic macrophytes	Aquatic macrophytes	NA
Artemesia biennis	Biennial Wormwood	FACU
Asclepias speciosa	Showy Milkweed	FAC
Atriplex argentea	Silverscale	FAC
Bassia scoparia	Mexican-Fireweed	FACU
Bromus arvensis	Japanese Brome	UPL
Bromus carinatus	California Brome	UPL
Bromus inermis	Smooth Brome	UPL
Bromus tectorum	Cheatgrass	UPL
Carex sp.	Sedge	NA
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	UPL
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	UPL
Distichlis spicata	Coastal Salt Grass	FACW
Echinochloa crus-galli	Large Barnyard Grass	FAC
Elaeagnus angustifolia	Russian-Olive	FACU
Eleocharis lanceolata	**Dagger-Leaf Spike-Rush**	**FACW**
Eleocharis palustris	Common Spike-Rush	OBL
Elymus canadensis	Nodding Wild Rye	FACU
Elymus hispidus	Intermediate Wheatgrass	UPL
Elymus lanceolatus	Streamside Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Euphorbia esula	Leafy Spurge	UPL
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	UPL

Forsyth NW - West Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

Scientific Names	Common Names	GP Indicator Status[(a)]
Melilotus officinalis	Yellow Sweet-Clover	FACU
Muhlenbergia asperifolia	Alkali Muhly	FDCW
Nassella viridula	Green Needle Grass	UPL
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	UPL
Ribes aureum	Golden Currant	FACU
Ribes cereum	Wax Currant	UPL
Rosa arkansana	Prairie Rose	FACU
Rumex crispus	Curly Dock	FAC
Sagittaria cuneata	Arum-Leaf Arrowhead	OBL
Salicornia rubra	Red Saltwort	OBL
Salix amygdaloides	**Peach-Leaf Willow**	**FACW**
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	UPL
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	UPL
Typha angustifolia	Narrow-Leaf Cat-Tail	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Xanthium strumarium	Rough Cockleburr	FAC
Yucca glauca	Small Soapweed Yucca	UPL

[(a)] 2018 National Wetland Plant List (USACE 2018)

New species identified in 2020 are **bolded**.

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Forsyth NW - Middle Assessment Date/Time 7/8/2020

Person(s) conducting the assessment: R. Jones

Weather: sunny, 80 degrees F Location: ~8 miles NW of Forsyth

MDT District: Glendive Milepost: ~262 on US 12

Legal Description: T 7N R 39E Section(s) 33

Initial Evaluation Date: 8/15/2013 Monitoring Year: 9 #Visits in Year: 1

Size of Evaluation Area: 1.8 (acres)

Land use surrounding wetland:

Rangeland with evidence of grazing and Highway 12.

HYDROLOGY

Surface Water Source: Precipitation, runoff, and overflow from ditch

Inundation: ☐ Average Depth: 0 **(ft)** Range of Depths: 0 **(ft)**

Percent of assessment area under inundation: 0 %

Depth at emergent vegetation-open water boundary: 0 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: No

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

Geomorphic position, surface soil cracks, water stained leaves.

Groundwater Monitoring Wells

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

Additional Activities Checklist:

☐ Map emergent vegetation-open water boundary on aerial photograph.

☐ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

Soils not saturated during time of site visit.

VEGETATION COMMUNITIES

Site Forsyth NW - Middle

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

Community # 3 **Community Type:** Pascopyrum smithii / Elymus canadensis **Acres:** 1.22

Species	Cover class	Species	Cover class
Bare Ground	0	Bromus arvensis	0
Bromus inermis	1	Bromus tectorum	1
Chenopodium album	1	Cirsium arvense	1
Convolvulus arvensis	1	Elymus canadensis	1
Elymus elymoides	1	Elymus trachycaulus	1
Hordeum jubatum	1	Lactuca serriola	1
Linum lewisii	1	Melilotus officinalis	1
Pascopyrum smithii	4	Poa palustris	1
Poa pratensis	1	Populus deltoides	1
Ratibida columnifera	1	Rumex crispus	1
Sarcobatus vermiculatus	1	Schedonorus pratensis	1
Symphoricarpos albus	2	Thlaspi arvense	1
Tragopogon dubius	1		

Comments:

Community # 5 **Community Type:** Hordeum jubatum / Eleocharis palustris **Acres:** 0.58

Species	Cover class	Species	Cover class
Bare Ground	2	Bromus arvensis	1
Deschampsia elongata	1	Eleocharis palustris	3
Elymus lanceolatus	1	Elymus repens	1
Elymus trachycaulus	1	Hordeum jubatum	3
Lactuca serriola	2	Nassella viridula	1
Pascopyrum smithii	2	Poa palustris	1
Populus deltoides	0	Puccinellia nuttalliana	1
Rumex crispus	1	Salix lutea	1
Schedonorus pratensis	2	Schoenoplectus maritimus	2
Tragopogon dubius	1		

Comments:

This community has been described as CT4 in previous years, but was changed due to Puccinellia nuttalliana being nearly absent, a reduction Eleocharis palustris, and and increase in FAC and FACU species.

Total Vegetation Community Acreage **1.8**

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

VEGETATION TRANSECTS

Site: Forsyth NW - Middle Date: 7/8/2020

Transect Number: 1 **Compass Direction from Start:** 205

Interval Data:

Ending Station 14 **Community Type:** Pascopyrum smithii / Elymus canadensis

Species	Cover class	Species	Cover class
Bare Ground	1	Bromus tectorum	1
Chenopodium album	2	Elymus canadensis	2
Elymus elymoides	1	Pascopyrum smithii	3
Schedonorus pratensis	1	Tragopogon dubius	0

Ending Station 26 **Community Type:** Hordeum jubatum / Eleocharis palustris

Species	Cover class	Species	Cover class
Bare Ground	2	Deschampsia elongata	1
Eleocharis palustris	0	Elymus lanceolatus	0
Elymus repens	2	Elymus trachycaulus	0
Hordeum jubatum	4	Lactuca serriola	1
Nassella viridula	0	Poa palustris	0
Puccinellia nuttalliana	0	Rumex crispus	1
Schedonorus pratensis	4	Tragopogon dubius	1

Ending Station 50 **Community Type:** Pascopyrum smithii / Elymus sp.

Species	Cover class	Species	Cover class
Bare Ground	0	Bromus inermis	1
Bromus tectorum	0	Chenopodium album	0
Elymus canadensis	0	Elymus trachycaulus	2
Hordeum jubatum	0	Pascopyrum smithii	2
Poa pratensis	0	Populus deltoides	4
Ratibida columnifera	0	Rumex crispus	0
Schedonorus pratensis	2	Symphoricarpos albus	0

Transect Notes:

Interval 2 (ending station 26) has transitioned from community type 5 (Puccinellia nuttalliana/Hordeum jubatum) to community type 4 (Hordeum jubatum/Eleocharis palustris).

PLANTED WOODY VEGETATION SURVIVAL

Forsyth NW - Middle

Comments

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

Forsyth NW - Middle

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
Meadowlark	1		
Tree Swallow	4		

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Wildlife Comments:
Very little wildlife or sign of wildlife noted during the 2020 field survey.

Forsyth NW - Middle

PHOTOGRAPHS

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

Photograph Checklist:

☐ One photograph for each of the four cardinal directions surrounding the wetland.

☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☑ At least one photograph showing the buffer surrounding the wetland.

☑ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
DP-1U	46.322733	-106.84196		
DP-1W	46.322687	-106.842006		
PP-1	46.322174	-106.840996	300	Photo Point 1:
PP-2	46.323803	-106.844337	120	Photo Point 2:
T-1 end	46.322754	-106.842438	25	Transect 1 end:
T-1 start	46.322948	-106.842323	205	Transect 1 start:

Comments:

Forsyth NW - Middle

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

0.58 acres of wetlands delineated.

Functional Assessments

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

Functional Assessment Comments:

Category 3 wetland.

Maintenance

Were man-made nesting structure installed at this site? No

If yes, do they need to be repaired?

If yes, describe the problems below and indicate if any actions were taken to remedy the problems

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

N/A.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW Middle City/County: Rosebud Sampling Date: 7/8/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01u

Investigator(s): R. Jones Section, Township, Range: 33 7N 39E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): flat Slope (%): 9

Subregion (LRR): LRR G Lat: 46.322733 Long: -106.84196 Datum: NAD 83

Soil Map Unit Name: 98: Harlem silty clay, 0-2 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 ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks: Upland sample point located on hillslope adjacent to DP01w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Bromus arvensis	1	☐	FACU
Iva axillaris	7	☐	FAC
Lactuca serriola	2	☐	FAC
Pascopyrum smithii	40	☑	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 50

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	0 X 2	0
FAC species	0 X 3	0
FACU species	41 X 4	164
UPL species	9 X 5	45
Column Totals	50 (A)	209 (B)

Prevalence Index = B/A = 4.18

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:

BG/litter=50%

SOIL

Sampling Point: DP01u

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
0-01	2.5Y 4/1	100					Silty Clay Loam	
01-13	2.5Y 4/2	99	7.5YR 5/8	1	C	M	Silty Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW Middle City/County: Rosebud Sampling Date: 7/8/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01w

Investigator(s): R. Jones Section, Township, Range: 33 7N 39E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): flat Slope (%): 1.75

Subregion (LRR): LRR G Lat: 46.322687 Long: -106.842006 Datum: NAD 83

Soil Map Unit Name: 98: Harlem silty clay, 0-2 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 ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks: PEM, RIVERINE wetland in roadside swale.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Carex nebrascensis	2	☐	OBL
Carex pellita	25	☑	OBL
Chenopodium album	1	☐	FACU
Eleocharis palustris	10	☑	OBL
Hordeum jubatum	5	☐	FACW
Lactuca serriola	10	☑	FAC
Salix lutea	2	☐	FACW
Schoenoplectus pungens	5	☐	OBL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 40

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	42	X 1	42
FACW species	7	X 2	14
FAC species	10	X 3	30
FACU species	1	X 4	4
UPL species	0	X 5	0
Column Totals	60 (A)		90 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

BG/liter=40%

SOIL

Sampling Point: DP01w

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
0-13	2.5Y 4/2	85	N 3/0	5	D	M	Silty Clay	
0-13			10YR 3/4	10	C	M	Silty Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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: Depleted matrix as indicated by a chroma of 1 and value of 5 accompanied by distinct redoximorphic depletions and concentrations common within the 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, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil very moist and water stained leaves observed at soil pit.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Forsyth NW - Middle **2. MDT project#** STPP STWD (756) **Control#** 9680000

3. Evaluation Date 7/8/2020 **4. Evaluators** R Jones **5. Wetland/Site# (s)** Forsyth NW - Middle

6. Wetland Location(s): **T** 7 N **R** 39 E **Sec1** 33 **T** 7 N **R** 39 E **Sec2** 34

Approx Stationing or Mileposts ~262 on US 12

Watershed 4 - Middle Yellowstone **Watershed/County** Rosebud

7. Evaluating Agency CCI for MDT

8. Wetland size acres 0.58

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 0.58

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

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

11. Estimated Relative Abundance Abundant

12. General Condition of AA

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

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

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

AA has become well vegetated

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

No Tamarix was observed on site. Canada thistle and field bindweed have increased and Euphorbia esula observed in 2020.

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 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments:

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use USFWS T&E list for Rosebud County

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

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

Primary or critical habitat (list species) ◉ D ○ S 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 (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use MTNHP SOC report for T7N R39E reported an Ammannia observation 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):

Low

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

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

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

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

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

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

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

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

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

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

Comments 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.

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

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

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

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

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

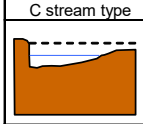
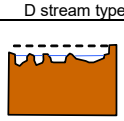
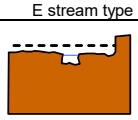
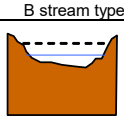
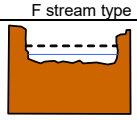
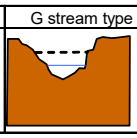
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

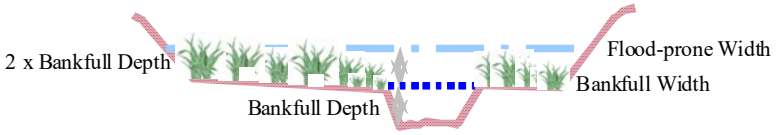
iii. Final Score and Rating: 0 NA **Comments:** Not applicable.

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

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

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

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



Floodprone width / **Bankfull width** = **Entrenchment ratio**

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

Comments: AA not subject to flooding

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: AA subject to ponding from snowmelt, precipitation and overland flow from adjacent roads and uplands.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: AA less than 70% vegetated in 2020

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☑ **NA** here and proceed to 14I.)

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	
35-64%			
< 35%	.3L	.2L	.1L

Comments: Not applicable.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ◉ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .3L

Comments: Site has limited food chain value.

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments: AA 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 arrive at [check] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments: Habitat within AA typical of roadside ditch.

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

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

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

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

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

Comments:

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

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR 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	L	0	1	0.00	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	0.52	☑
C. General Wildlife Habitat	M	.4	1	0.23	☑
D. General Fish Habitat	NA	0	0	0.00	☐
E. Flood Attenuation	NA	0	0	0.00	☐
F. Short and Long Term Surface Water Storage	L	.3	1	0.17	☑
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	0.41	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0.00	☐
I. Production Export/Food Chain Support	L	.3	1	0.17	☐
J. Groundwater Discharge/Recharge	NA	0	0	0.00	☐
K. Uniqueness	L	.2	1	0.12	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.03	☐
Totals:		2.85	7	1.65	
Percent of Possible Score			**40.71** %		

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

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

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

☑

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

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

I | II | **III** | IV

Forsyth NW - Middle Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

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	UPL
Bassia scoparia	Mexican-Fireweed	FACU
Bromus arvensis	Japanese Brome	UPL
Bromus carinatus	California Brome	UPL
Bromus inermis	**Smooth Brome**	**UPL**
Bromus tectorum	Cheatgrass	UPL
Chenopodium album	Lamb's-Quarters	FACU
Cirsium arvense	Canadian Thistle	FACU
Convolvulus arvensis	Field Bindweed	UPL
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 elymoides	**Western-Bottlebrush grass**	**FACU**
Elymus lanceolatus	Streamside Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Euphorbia esula	Leafy Spurge	UPL
Filago arvensis	Field Fluffweed	UPL
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	UPL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Muhlenbergia asperifolia	Alkali Muhly	FAC
Nassella viridula	**Green Needlegrass**	**UPL**
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
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	UPL
Rosa arkansana	Prairie Rose	FACU
Rumex acetosella	Common Sheep Sorrel	FAC
Rumex crispus	Curly Dock	FAC

Forsyth NW - Middle Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

Scientific Names	Common Names	GP Indicator Status[(a)]
Salix amygdaloides	Peach-Leaf Willow	FACW
Salix exigua	Narrow-Leaf Willow	FACW
Salix fragilis	Fragile Willow	FAC
Salix lutea	**Yellow Willow**	**FACW**
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	UPL
Symphoricarpos albus	Common Snowberry	UPL
Tamarix chinensis	Salt-cedar	UPL
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	UPL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Xanthium strumarium	Rough Cockleburr	FAC

[(a)] 2018 National Wetland Plant List (USACE 2018)

New species identified in 2020 are **bolded**.

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Forsyth NW - East Assessment Date/Time 7/8/2020

Person(s) conducting the assessment: R. Jones

Weather: sunny, 85 degrees F Location: ~8 miles NW of Forsyth

MDT District: Glendive Milepost: ~262.3 on US 12

Legal Description: T 7N R 39E Section(s) 34

Initial Evaluation Date: 8/15/2013 Monitoring Year: 8 #Visits in Year: 1

Size of Evaluation Area: 2.74 (acres)

Land use surrounding wetland:

Agriculture and US Highway 12.

HYDROLOGY

Surface Water Source: Precipitation, runoff

Inundation: ☐ Average Depth: 0 **(ft)** Range of Depths: 0 **(ft)**

Percent of assessment area under inundation: 0 %

Depth at emergent vegetation-open water boundary: 0 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: No

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

Geomorphic position, surface soil cracks, dried algal mats, oxidized rhizospheres on living roots

Groundwater Monitoring Wells

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

Additional Activities Checklist:

☐ Map emergent vegetation-open water boundary on aerial photograph.

☐ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

Site dry on day of investigation.

VEGETATION COMMUNITIES

Site Forsyth NW - East

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

Community # 3 **Community Type:** Pascopyrum smithii / Elymus sp. **Acres:** 0.6

Species	Cover class	Species	Cover class
Agropyron cristatum	1	Alopecurus arundinaceus	1
Ambrosia psilostachya	1	Bare Ground	1
Bromus arvensis	1	Bromus tectorum	1
Chenopodium album	1	Convolvulus arvensis	0
Elymus canadensis	1	Elymus repens	1
Elymus trachycaulus	3	Euphorbia esula	1
Grindelia squarrosa	1	Hordeum jubatum	1
Lactuca serriola	1	Linum lewisii	1
Melilotus officinalis	1	Pascopyrum smithii	5
Poa compressa	1	Rumex crispus	1
Tragopogon dubius	1		

Comments:

Community # 4 **Community Type:** Hordeum jubatum / Eleocharis palustris **Acres:** 2.14

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Alopecurus pratensis	2
Bare Ground	1	Convolvulus arvensis	1
Eleocharis palustris	4	Elymus repens	1
Hordeum jubatum	2	Pascopyrum smithii	2
Poa compressa	1	Poa pratensis	1
Populus deltoides	1	Rumex crispus	0
Salix fragilis	1	Schedonorus pratensis	1
Schoenoplectus maritimus	2	Spartina pectinata	2

Comments:

Increased woody vegetation over previous years.

Total Vegetation Community Acreage **2.74**

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

VEGETATION TRANSECTS

Site: Forsyth NW - East Date: 7/8/2020

Transect Number: 1 **Compass Direction from Start:** 145

Interval Data:

Ending Station 32 **Community Type:** Pascopyrum smithii / Elymus sp.

Species	Cover class	Species	Cover class
Bromus tectorum	0	Euphorbia esula	0
Lactuca serriola	0	Melilotus officinalis	0
Pascopyrum smithii	5	Tragopogon dubius	0

Ending Station 97 **Community Type:** Hordeum jubatum / Eleocharis palustris

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	4	Bare Ground	2
Eleocharis palustris	3	Elymus repens	2
Hordeum jubatum	1	Rumex crispus	0
Schoenoplectus maritimus	0		

Ending Station 125 **Community Type:** Pascopyrum smithii / Elymus sp.

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Bromus tectorum	2
Chenopodium album	1	Convolvulus arvensis	1
Elymus trachycaulus	1	Lactuca serriola	1
Melilotus officinalis	0	Pascopyrum smithii	3
Poa compressa	2		

Transect Notes:

Weed cover provided by Melilotus officinale declined from >50% to <1%.

Transect Number: 2 **Compass Direction from Start:** 280

Interval Data:

Ending Station 17 **Community Type:** Pascopyrum smithii / Elymus sp.

Species	Cover class	Species	Cover class
Bare Ground	4	Grindelia squarrosa	1
Hordeum jubatum	1	Pascopyrum smithii	5
Poa compressa	1		

Ending Station 130 **Community Type:** Hordeum jubatum / Eleocharis palustris

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Bare Ground	2
Convolvulus arvensis	1	Eleocharis palustris	4
Hordeum jubatum	5	Pascopyrum smithii	1
Poa compressa	1	Rumex crispus	2
Salix fragilis	2	Schedonorus pratensis	2

Ending Station 181 **Community Type:** Pascopyrum smithii / Elymus sp.

Species	Cover class	Species	Cover class
Bare Ground	3	Pascopyrum smithii	5
Rumex crispus	1		

Transect Notes:

Wetland community has increased 13 feet in length.

PLANTED WOODY VEGETATION SURVIVAL

Forsyth NW - East

Comments

No planted woody vegetation.

Forsyth NW - East

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
Meadowlark	1	FO	
Tree Swallow	2	FO	

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Wildlife Comments:

Forsyth NW - East

PHOTOGRAPHS

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

Photograph Checklist:

☐ One photograph for each of the four cardinal directions surrounding the wetland.

☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☐ At least one photograph showing the buffer surrounding the wetland.

☐ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
DP-1U	46.320867	-106.838654		
DP-1W	46.320938	-106.838569		
DP-2U	46.318365	-106.834547		
DP-2W	46.318419	-106.834443		
PP-1	46.321003	-106.838814	125	Photo Point 1
PP-2	46.320068	-106.837128	210	Photo Point 2
PP-3	46.318233	-106.834335	305	Photo Point 3
T-1 end	46.320297	-106.838493	325	Transect 1 end
T-1 start	46.321045	-106.838486	145	Transect 1 start
T-2 end	46.318417	-106.834923	100	Transect 2 end
T-2 start	46.318336	-106.834175	280	Transect 2 start

Comments:

Forsyth NW - East

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Wetland boundary evaluated and determiend in field, not from photos.

Functional Assessments

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

Functional Assessment Comments:

Category 3 wetland.

Maintenance

Were man-made nesting structure installed at this site? No

If yes, do they need to be repaired?

If yes, describe the problems below and indicate if any actions were taken to remedy the problems

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW East City/County: Rosebud Sampling Date: 7/8/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01u

Investigator(s): R. Jones Section, Township, Range: 34 7N 39E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): flat Slope (%): 2.5

Subregion (LRR): LRR G Lat: 46.320867 Long: -106.838654 Datum: NAD 83

Soil Map Unit Name: 98: Harlem silty clay, 0-2 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 ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks: Upland sample point located on hillslope, adjacent to DP01w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Elymus trachycaulus	7	☑	FACU
Lactuca serriola	1	☐	FAC
Pascopyrum smithii	20	☑	FACU
Tragopogon dubius	2	☐	UPL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 70

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	X 1	
FACW species	X 2	
FAC species	X 3	
FACU species	X 4	
UPL species 30	X 5	150
Column Totals	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:

BG/litter=70%

SOIL

Sampling Point: DP01u

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
0-06	2.5Y 4/3	100					Sandy Clay	
06-14	2.5Y 5/2	100					Silty Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW East City/County: Rosebud Sampling Date: 7/8/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01w

Investigator(s): R. Jones Section, Township, Range: 34 7N 39E

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

Subregion (LRR): LRR G Lat: 46.320938 Long: -106.838569 Datum: NAD 83

Soil Map Unit Name: 98: Harlem silty clay, 0-2 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 ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑ No ☐	
Wetland Hydrology Present?	Yes ☑ No ☐	

Remarks: PEM, DEPRESSIONAL wetland.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Alopecurus arundinaceus	5	☐	FACW
Eleocharis palustris	20	☑	OBL
Hordeum jubatum	1	☐	FACW
Lactuca serriola	2	☐	FAC
Rumex crispus	1	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 71

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	20	X 1	20
FACW species	6	X 2	12
FAC species	1	X 3	3
FACU species	0	X 4	0
UPL species	2	X 5	10
Column Totals	29 (A)		45 (B)

Prevalence Index = B/A = 1.55

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

BG/litter=71%

SOIL

Sampling Point: DP01w

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
0-03	2.5Y 4/2	100					Silty Clay	
03-10	2.5Y 4/2	60	2.5Y 3/1	40	D	M	Sandy Clay	
10-12	2.5Y 4/2	50	2.5Y 4/1	50	D	M	Silty Clay	**Very hard horizon.**

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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: Depleted matrix indicated by value of 4 and chroma of 2 or less, and distinct redoximorphic features beginning 3 inches below the soil surface.

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, monitoring well, aerial photos, previous inspections), if available:

Remarks: Algal mat/crust observed on soil surface.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW East City/County: Rosebud Sampling Date: 7/9/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP02u

Investigator(s): R. Jones Section, Township, Range: 34 7N 39E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): undulating Slope (%): 17.6

Subregion (LRR): LRR G Lat: 46.318365 Long: -106.834547 Datum: NAD 83

Soil Map Unit Name: 98: Harlem silty clay, 0-2 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 ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks: Upland sample point adjacent tp DP02w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Elymus repens	15	☑	FACU
Elymus trachycaulus	2	☐	FACU
Pascopyrum smithii	20	☑	FACU
Poa compressa	3	☐	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 60

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	0 X 3	0
FACU species	38 X 4	152
UPL species	2 X 5	10
Column Totals	40 (A)	162 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:

BG/litter=60%. Road right of way subject to disturbance.

SOIL

Sampling Point: DP02u

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
0-06	2.5Y 4/2	100					Silty Clay	
06-14	2.5YR 4/2	70	7.5YR 4/1	30	R	M	Silty Clay	**Mixed matrix.**

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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: Mixed matrix. No hydric soil indicators observed during site visit.

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, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Forsyth NW East City/County: Rosebud Sampling Date: 7/9/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP02w

Investigator(s): R. Jones Section, Township, Range: 34 7N 39E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): flat Slope (%): 1

Subregion (LRR): LRR G Lat: 46.318419 Long: -106.834443 Datum: NAD 83

Soil Map Unit Name: 98: Harlem silty clay, 0-2 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 ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks: PEM, DEPRESSIONAL wetland.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Convolvulus arvensis	1	☐	UPL
Eleocharis palustris	30	☑	OBL
Elymus repens	1	☐	FACU
Hordeum jubatum	35	☑	FACW
Puccinellia nuttalliana	5	☐	OBL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 28

Dominance Test worksheet

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

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

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

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	30	X 1	30
FACW species	35	X 2	70
FAC species	0	X 3	0
FACU species	1	X 4	4
UPL species	6	X 5	30
Column Totals	72 (A)		134 (B)

Prevalence Index = B/A = 1.86

Hydrophytic Vegetation Indicators

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

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

BG/litter=28%

SOIL

Sampling Point: DP02w

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
0-01	2.5YR 4/2	93	2.5YR 5/8	7	C	M	Silty Clay Loam	
01-14	2.5YR 4/2	67	N 4/0	30	D	M	Clay	**Gleyed depletions.**

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky 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 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 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: Distinct and prominent redoximorphic depletions and many redoximorphic concentrations within the 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, monitoring well, aerial photos, previous inspections), if available:

Remarks: Cracks in the soil surface were observed indicating that the soil has become dry following a period of saturation.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Forsyth NW - East **2. MDT project#** STPP STWD (756) **Control#** 9680000

3. Evaluation Date 7/8/2020 **4. Evaluators** R Jones **5. Wetland/Site# (s)** Forsyth NW - East

6. Wetland Location(s): **T** 7 N **R** 39 E **Sec1** 34 **T** **R** **Sec2**

Approx Stationing or Mileposts ~262.3 on US 12

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

7. Evaluating Agency CCI for MDT

8. Wetland size acres 0.56

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 0.56

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

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

11. Estimated Relative Abundance Abundant

12. General Condition of AA

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

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

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

AA experinced a decrease in vegetatative cover in 2020, possilby due to decreased mositure availiblity as compared to recent years. Center of basin continues to qualify as upland as it has not developed wetland characteristics.

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

Tamarix chinensis, Convolvulus arvensis

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

AA is a roadside depression excavated parallel to US 12. Surrounding land includes agriculture (grazing) and a secondary 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 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: Emergent vegetation is dominant presentbut cottonwood saplings are becoming well established. Some portinos of the site may evnetually transition to PSS.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use USFWS T&E list for Rosebud County

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

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

Primary or critical habitat (list species) ◉ D ○ S 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 (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use MTNHP SOC report for T7N R39E reported an Ammannia observation 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):

Low

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

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

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

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

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

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

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

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

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

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

Comments 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.

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

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

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

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

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

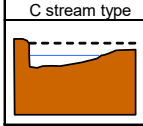
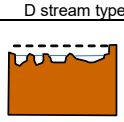
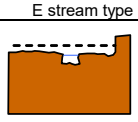
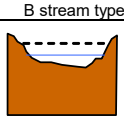
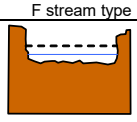
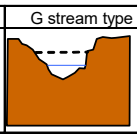
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

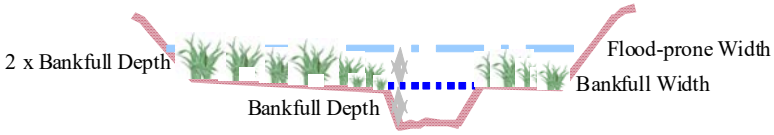
iii. Final Score and Rating: 0 NA **Comments:** No fish habitat exists on site.

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

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

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

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



Floodprone width / **Bankfull width** = **Entrenchment ratio**

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

Comments: AA not subject to flooding.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

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

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Vegetation cover decreased in the AA in 2020.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☑ **NA** here and proceed to 14I.)

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	
35-64%			
< 35%	.3L	.2L	.1L

Comments: NA - no open water exists on site.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .4M

Comments: Rating modified over previous years due to decrease in noxious weed cover.

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

i. Discharge Indicators

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

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

Comments: Ponding was observed on site in 2014, but not observed since.

14K. Uniqueness:

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

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments: AA resembles a roadside ditch.

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

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

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

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

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

Comments:

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

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR 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	L	0	1	0.00	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	0.50	☑
C. General Wildlife Habitat	M	.4	1	0.22	☐
D. General Fish Habitat	NA	0	0	0.00	☐
E. Flood Attenuation	NA	0	0	0.00	☐
F. Short and Long Term Surface Water Storage	L	.3	1	0.17	☐
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	0.39	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0.00	☐
I. Production Export/Food Chain Support	M	.4	1	0.22	☐
J. Groundwater Discharge/Recharge	M	.7	1	0.39	☑
K. Uniqueness	L	.2	1	0.11	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.03	☐
Totals:		3.65	8	2.04	
Percent of Possible Score			**45.63** %		

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

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

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

☑

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

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

I | II | **III** | IV

Forsyth NW - East Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

Scientific Names	Common Names	GP Indicator Status[(a)]
Agropyron cristatum	Crested Wheatgrass	UPL
Algae, green	Algae, green	UPL
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	UPL
Bassia scoparia	Mexican-Fireweed	FACU
Bromus arvensis	Japanese Brome	UPL
Bromus carinatus	California Brome	UPL
Bromus inermis	Smooth Brome	UPL
Bromus tectorum	Cheatgrass	UPL
Chenopodium album	Lamb's-Quarters	FACU
Convolvulus arvensis	Field Bindweed	UPL
Descurainia sophia	Herb Sophia	UPL
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 sp.	Wild Rye	NA
Elymus trachycaulus	Slender Wild Rye	FACU
Euphorbia esula	**Leafy Spurge**	**UPL**
Filago arvensis	Field Fluffweed	UPL
Glyceria elata	Tall Manna Grass	OBL
Grindelia squarrosa	Curly-Cup Gumweed	UPL
Helianthus annuus	Common Sunflower	FACU
Hesperostipa comata	Needle-and-Thread	UPL
Hordeum jubatum	Fox-Tail Barley	FACW
Lactuca serriola	Prickly Lettuce	FAC
Lepidium perfoliatum	Clasping Pepperwort	FAC
Linum lewisii	Prairie Flax	UPL
Medicago sativa	Alfalfa	UPL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Muhlenbergia asperifolia	Alkali Muhly	FACW
Pascopyrum smithii	Western-Wheat Grass	FACU
Poa compressa	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	UPL
Rumex acetosella	Common Sheep Sorrel	FAC
Rumex crispus	Curly Dock	FAC
Sagittaria cuneata	Arum-Leaf Arrowhead	OBL
Salix exigua	Narrow-Leaf Willow	FACW

Forsyth NW - East Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

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

[(a)] 2018 National Wetland Plant List (USACE 2018)

New species identified in 2020 are **bolded**.

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 2020



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 2020

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 2020



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 2020

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 2020



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:** 2020



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:** 2020

Forsyth Northwest – West Site: Transect Photographs



Transect 1: Start **Location: SE end**
Bearing: 25 degrees **Year:** 2013



Transect 1: Start **Location: SE end**
Bearing: 25 degrees **Year:** 2020



Transect 1: End **Location:** SE end
Bearing: 205 degrees **Year:** 2013



Transect 1: End **Location:** SE end
Bearing: 205 degrees **Year:** 2020



Transect 2: Start **Location:** NW End
Bearing: 25 degrees **Year:** 2013



Transect 2: Start **Location:** NW End
Bearing: 25 degrees **Year:** 2020

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:** 2020



Data Point: DP01w **Location:** NW part of site
Year: 2020



Data Point: DP01u **Location:** NW part of site
Year: 2020

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:** 2020



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



Photo Point: 2 **Location:** Southeast end
Bearing: 300 degrees **Year:** 2020



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



Transect 1: Start **Location:** Middle of Site
Bearing: 205 degrees **Year:** 2020

Forsyth Northwest – Middle: Transect and Data Point Photographs



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



Transect 1: End **Location:** Middle of Site
Bearing: 25 degrees **Year:** 2020



Data Point: DP01w **Location:** Middle of site
Year: 2020



Data Point: DP01u **Location:** Middle of site
Year: 2020

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**: 2020



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:** 2020

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 2020

Forsyth Northwest – East Site: Transect Photographs



Transect 1: Start **Location:** Northwest End
Bearing: 145 degrees **Year:** 2013



Transect 1: Start **Location:** Northwest End
Bearing: 145 degrees **Year:** 2020



Transect 1: End **Location:** Northwest End
Bearing: 325 degrees **Year**: 2013



Transect 1: End **Location**: Northwest End
Bearing: 325 degrees **Year:** 2020



Transect 2: Start **Location:** Southeast End
Bearing: 280 degrees **Year:** 2013



Transect 2: Start **Location:** Southeast End
Bearing: 280 degrees **Year:** 2020

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:** 2020



Data Point: DP01w **Location:** Northwest end of site
Year: 2020



Data Point: DP01u **Location:** Northwest end of site
Year: 2020



Data Point: DP02w **Location:** Central part of site
Year: 2020



Data Point: DP02u **Location:** Central part of site
Year: 2020