SCHRIEBER MEADOWS MITIGATION SITE

Project Overview

Watershed: Watershed #1 – Kootenai River Basin

Monitoring Year: 2019

Years Monitored: 9th year of monitoring

Corps Permit Number: NWO-2004-90280-MTH

SPA Authorization Number: MDT-R1-88-2010

Monitoring Conducted By: RESPEC/HDR

Dates Monitoring Was Conducted: July 29–30, 2019

Purpose of the Approved Project:

The site was constructed to provide 17.25 acres of compensatory wetland mitigation credits and 35,551 stream mitigation credits for wetland and stream impacts associated with the US Highway 2 Swamp Creek – East project and highway impacts associated with future transportation project-related wetland and stream impacts in Watershed #1 – Kootenai River Basin. The project was designed to create new wetlands, restore degraded wetlands, and enhance existing wetlands by restoring natural hydrology in the meadow and constructing a series of shallow excavations. The project restored the Coyote Creek channel and added 3,327 linear feet of stream length.

Site Location: The site is approximately 60 acres in size. Lat/Long below is near the middle of the site.

Latitude: 48.11042332 **Longitude:** –115.4156209

County: Lincoln **Nearest Town:** Libby, MT

Map Included: Yes

Mitigation Site Construction Started: Fall/2007 **Construction Ended:** Fall/2011

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

Activity: Weed Spraying **Date:** June 28, 2019 **Specific recommendations for any additional corrective actions:** Weed treatment will continue in 2020.

Anticipated Wetland Credit Acres: 17.25

Wetland Credit Acres Generated to Date: 31.01

Stream Credits Generated to Date: 35,551

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 US Army Corps of Engineers (USACE).

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

Table 1. Summary of Performance Standards

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	The three parameter criteria for hydrology, vegetation, and soils are met as outlined in the 1987 Wetland Manual and the 2010 Regional Supplement.	Y	Areas that were identified as wetland habitat within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	Areas that were identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of growing season.
Hydric Soil	Hydric soil conditions are present or appear to be forming.	Y	Hydric soil characteristics have developed throughout a majority of the constructed wetlands.
	Soil is sufficiently stable to prevent erosion.	Y	Disturbed soil is stable and does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover is well established across disturbed soils.
Hydrophytic Vegetation	Combined absolute cover of facultative or wetter species is 70 percent or greater.	Y	Areas that were identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC).
	State-listed noxious weeds do not exceed 5 percent absolute cover.	Y	State-listed noxious weeds are estimated well below 5 percent absolute cover within wetland areas.
Riparian Buffer Success	Woody and riparian vegetation is established.	N	No woody-dominated communities have formed along the established riparian buffer; riparian vegetation (primarily reed canary grass) has been established.
	Noxious weeds do not exceed 10 percent cover within the riparian buffer areas.	Y	State-listed noxious weeds are estimated at 1–3 percent absolute cover within riparian buffer.
	Creditable buffer areas must have at least 50 percent aerial cover of non-noxious weed species by the end of the monitoring period.	Y	Non-noxious vegetation consists of nearly 100 percent of total vegetation cover within riparian buffer.
	Combined aerial cover of riparian and stream bank vegetation communities is 70 percent or greater.	Y	Riparian and stream bank vegetation communities support nearly 100 percent cover.
	Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years.	N	After plantings, the majority of the site supported standing water and likely drowned out 90 percent of the plantings by the end of the second growing season. Approximately 3 percent survival was noted in 2019. The Montana Department of Transportation (MDT) is currently working with the US Forest Service (USFS) Kootenai National Forest to coordinate a replanting plan in appropriate riparian buffer areas within the site that are not inundated by high-water levels.
Channel-Restoration Success	Revegetation along the new Coyote and Schrieber Creek channel corridors will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland herbaceous and woody plant species.	Y	The majority of streambank vegetation along the constructed Coyote and Schrieber Creek channel corridors is dominated by reed canary grass, which has a stability rating of 9.
	The intent of stream restoration is to allow the stream to naturally migrate within the floodplain and to give it enough room to move and stabilize itself within the site.	Y	The stream has plenty of space within the floodplain for natural migration. The stream currently appears to be stable with no lateral adjustment observed following construction.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Stream Bank Vegetation	Banks are vegetated with a majority of deep-rooting riparian plant species that have root-stability indices of 6 or greater.	Y	Reed canary grass and foxtail (*Alopecurus* sp.) dominate the stream banks. Reed canary grass has a root-stability index of 9. Alopecurus species found at the site have root-stability index values of 3 for short-awn meadow foxtail and 4 for Garrison creeping foxtail.
Open Water	The project will provide open water during the spring and early summer within excavated depressions. As the growing season progresses and the groundwater levels recede, vegetation is anticipated to germinate within the majority of the depressions. Open water with submerged and/or floating vegetation will, therefore, be considered successful and creditable.	Y	Excavated depressions within the upper reach of the site experience seasonal drawdown, and rooted hydrophytic vegetation development has been observed. The lower depressions appear to support perennial inundation with established aquatic macrophyte community.
Upland Buffer	Noxious weeds do not exceed 5 percent cover within upland buffer area.	Y	Noxious weed cover is less than 5 percent within the upland buffer.
	Any area disturbed within the creditable buffer zone must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.	Y	Disturbed areas have established greater than 50 percent cover by non-weed species.
Weed Control	Weed control will be based on annual site monitoring to determine weed species and the degree of infestation within the site. Control measures based on the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of state-listed noxious weed species within the site.	Y	State-listed noxious weed species across the site have been monitored and mapped during each post-construction monitoring event. MDT administers an ongoing weed-control program. Weeds were sprayed at this site on June 28, 2019.

Summary Data

Wetland Delineation – The wetland delineations that were conducted in 2004 and 2005 before project initiation identified four wetland areas that totaled approximately 15.56 acres within the mitigation project area. The pilot project that was constructed in 2007 resulted in an additional 2.38 acres of wetland habitat being developed within the project boundary. After the second construction phase was complete, the delineation that was conducted in 2012 mapped a total of 47.58 acres of wetlands across the 56.95-acre site. A total of 47.42 acres of jurisdictional wetland were delineated at the Schrieber Meadows site in 2019 (see maps in Appendix A).

Functional Assessment – Using the 2008 MDT Montana Wetland Assessment Method (MWAM), all wetlands within the Schrieber Meadows site rate as Category I wetlands. Three separate Assessment Areas (AAs) have been used to evaluate the site: Creation AA, Enhancement AA, and Restoration AA. Completed functional assessment forms for all three AAs are presented in Appendix B. Functional scores and ratings have remained constant over the last 3-year period. All wetlands receive high or exceptional ratings for a majority of the parameters that are assessed including Threatened-and-Endangered Species Habitat because grizzly bears have been documented at the site in recent years. Other functions receiving high ratings include General Wildlife Habitat, Short- and Long-Term, Surface-Water Storage,

Sediment/Nutrient/Toxicant Removal, Sediment/Shoreline Stabilization, Production Export/Food Chain Support, and Groundwater Discharge/Recharge.

Vegetation – A total of 136 plant species have been identified at the site from 2010 through 2019 (Appendix B). Five areas containing state-listed Priority 2B noxious weeds were mapped at the Schrieber Meadows site in 2019 (Figure A-3, Appendix A). Three upland community types and five wetland community types were identified and mapped at the site in 2019 (Figure A-3, Appendix A). Dominant plant species that were observed within each community are listed on the Wetland Mitigation Site Monitoring form (Appendix B). The vegetation community types identified on the site in 2019 include the following:

- Wetland Type 3 – *Phalaris arundinacea*
- Wetland Type 5 – Aquatic Macrophytes/Open Water encompassed
- Wetland Type 6 – *Alopecurus pratensis/Agrostis capillaris*
- Wetland Type 7 – *Juncus bufonius*/Bare Ground
- Upland Type 8 – *Elymus repens/Pascopyrum smithii*
- Upland Type 9 – *Alopecurus* spp./*Bromus inermis*
- Wetland Type 13 – *Eleocharis palustris*/Bare Ground
- Upland Type 14 – *Agrostis capillaris/Phleum pratense*.

Vegetation cover was measured along three belt transects (T-1, T-2, and T-3) in 2019 (Figure A-2, Appendix A). Photographs of the transect end points are provided in Appendix C. Table 2 summarizes the data for T-1 from 2010 and 2017 through 2019. The results from 2012–2016 can be found in previous years monitoring reports. T-1 is 318 feet long and intersects vegetation community Types 3 – *Phalaris arundinacea* and 5 – Aquatic Macrophytes/Open Water. Hydrophytic vegetation accounted for 19.8 percent of the transect in 2019. Open water accounted for 80.2 percent of the transect. This transect has not intersected any upland vegetation communities from 2012 through 2019 and has not changed over the last several years of monitoring.

Table 2. Data Summary for T-1 From 2010 and 2017 Through 2019 at the Schrieber Meadows Site

Monitoring Year	2010	2017	2018	2019
Transect Length (feet)	**318**	**318**	**318**	**318**
Vegetation Community Transitions Along Transect	7	6	6	6
Vegetation Communities Along Transect	3	2	2	2
Hydrophytic Vegetation Communities Along Transect	2	2	2	2
Total Vegetative Species	32	8	8	9
Total Hydrophytic Species	22	8	8	9
Total Upland Species	10	0	0	0
Estimated % Total Vegetative Cover	75	75	75	75
Estimated % Unvegetated	25	25	25	25
% Transect Length Comprising Hydrophytic Vegetation Communities	62	19.8	19.8	19.8
% Transect Length Comprising Upland Vegetation Communities	13	0	0	0
% Transect Length Comprising Open Water With Aquatic Macrophytes	25	80.2	80.2	80.2

Data collected on T-2 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 3. T-2 is 594 feet long and alternates between wetland community Types 5 – Aquatic macrophytes/Open Water, 6 – *Alopecurus pratensis/Agrostis capillaris*, 13 – *Eleocharis palustris/*Bare Ground, and

14 – *Agrostis capillaris/Phleum pratense*. Hydrophytic vegetation composed approximately 60 percent of the transect during the 2019 survey. A total of 35 species were identified, including 30 hydrophytes and 5 upland species. Open water and mudflat represent 23 and 17 percent of the transect intervals, respectively, which is a slight shift from 2018 because water levels were slightly higher in 2019 than in 2018 and resulted in mudflat that was under standing water in 2019.

Table 3. Data Summary for T-2 From 2012 and 2017 Through 2019 at the Schrieber Meadows Site

Monitoring Year	2012	2017	2018	2019
Transect Length (feet)	**594**	**594**	**594**	**594**
Vegetation Community Transitions Along Transect	16	15	15	15
Vegetation Communities Along Transect	3	4	4	4
Hydrophytic Vegetation Communities Along Transect	3	3	3	3
Total Vegetative Species	23	35	35	35
Total Hydrophytic Species	17	30	30	30
Total Upland Species	9	5	5	5
Estimated % Total Vegetative Cover	60	70	70	70
Estimated % Unvegetated	40	30	30	30
% Transect Length Comprising Hydrophytic Vegetation Communities	59.1	58.1	58.1	60
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0
% Transect Length Comprising Open Water With Aquatic Macrophytes	40.9	7.7	18.7	23
% Transect Length Comprising Mudflat	0	34.2	23.2	17

T-3 begins near constructed wetland Cell 8 along the Middle Coyote Creek reach and extends east 440 feet to the edge of the former Coyote Creek channel along the eastern site boundary. The data recorded on T-3 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 4. The transect intervals alternated between wetland community Types 3 – *Phalaris arundinacea* and 5 – Aquatic macrophytes/Open Water. Hydrophytic vegetation composed approximately 48 percent of the transect during the 2018 survey. Only 12 plant species were identified on the transect as a result of the dominance by reed canary grass within this area. Shallow open water with aquatic macrophytes represented 52 percent of T-3, which is similar to the percent in 2018.

Table 4. Data Summary for T-3 From 2012 and 2017 Through 2019 at the Schrieber Meadows Site

Monitoring Year	2012	2017	2018	2019
Transect Length (feet)	**440**	**440**	**440**	**440**
Vegetation Community Transitions Along Transect	4	4	4	4
Vegetation Communities Along Transect	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	2	2	2	2
Total Vegetative Species	9	11	12	13
Total Hydrophytic Species	7	7	8	9
Total Upland Species	2	4	4	4
Estimated % Total Vegetative Cover	50	75	75	75
Estimated % Unvegetated	50	25	25	25
% Transect Length Comprising Hydrophytic Vegetation Communities	53	46	48	48
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0
% Transect Length Comprising Open Water With Aquatic Macrophytes	47	54	52	52

Canada thistle (*Cirsium arvense*) is the primary state-listed Priority 2B noxious weed found in disturbed upland habitat across the site. Ox-eye daisy (*Leucanthemum vulgare*), hound's-tongue (*Cynoglossum officinale*), orange hawkweed (*Hieracium aurantiacum*), and spotted knapweed (*Centaurea stoebe*) are additional noxious species that have been identified across the site over the last 8 years. Weed infestations occur primarily within upland communities around the perimeter of the site with only a few occurring with the interior of the site. A weed contractor with MDT treated these areas during June 2019. Little or no ox-eye daisy, hound's-tongue, or orange hawkweed was observed across the site in 2019 and several of the Canada thistle infestations showed signs of having been treated before the site visit. Weed-control efforts appear to be decreasing the total infestation levels at the site. MDT has an ongoing weed-control program for their mitigation sites that includes an annual assessment of weeds identified at each location and treatment to contain and control identified populations.

A total of 1,000 speckled alders (*Alnus incana*) were planted along the newly constructed stream channel and wetland cells in the northern third of the site. Fewer than 50 live plants were observed throughout the mitigation site in 2019, which indicates 5 percent survival. Fewer than ten willows (*Salix* spp.) were observed near the spring north of the access road. Several of the alder trees were resprouting from the roots while the aboveground portions of the plants were dead. The remaining alders and willows appeared to be doing well in 2019 and are expected to persist. The prevalence of reed canary grass and a high-water table is likely inhibiting shrub development within much of this site. The excavated depressions on the USFS parcel provide a suitable environment for woody plant establishment and some individual willows have been recorded along T-2 and around the edges of excavated wetland cells. These plants have not matured to date and are subject to browse from ungulate species using the site.

Hydrology – During the 2019 investigation, the average depth of surface water across the site was estimated at 1.5 feet with a range of depth from 0 to 3 feet. The deepest standing water is associated with the various excavated cells across the site and in the creek channels. Approximately 65 percent of the project area was inundated. The surface-water depth at the emergent vegetation and open-water boundary was estimated at 1.5 feet. The southern two-thirds of the site was inundated and/or saturated as a result of the reconstructed channel of Coyote Creek and abundant surface- and groundwater flowing through the valley. The high groundwater elevations found on the site are caused by a combination of restoration efforts to plug existing drain ditches and channels as well as the subsidence of the histosol soil elevations over time. The northern portion of the site was drier. Many of the excavated wetland cells contained surface water, with the lowest or absent water levels near the northern boundary. The intermittent Coyote Creek was dry in July 2019 north of the spring just upstream of the site's access road. This spring appears to provide a perennial source of hydrology to the site. Direct precipitation also contributes to wetland hydrology, but the high seasonal groundwater table provides the majority of water that drives wetland hydrology within this site. Precipitation in 2019 was slightly above average in this region of Montana for the period from January through September.

Photographs – Ten photo points were initially established within the three constructed cells that were monitored in 2010. A total of 20 photo points were established in 2012 in response to the increased project area size, including the reestablishment of photo point 7 from its original 2010 location. In addition to established photo points, photographs were taken at each surveyed stream cross section, sampled data points, and vegetation transect endpoints. The locations of these photographs are illustrated on Figure A-2 (Appendix A) and the photographs in Appendix C. Please refer to previous years' monitoring reports for all previous annual photographs (https:// www.mdt.mt.gov/publications/ brochures/wetland_mitigation.shtml).

Soils – Soil test pits were excavated at six locations to evaluate the extent of hydric soil development. DP-1W is located in wetland community Type 3 in the center of the site, and DP-1U is located upslope of DP-1W in upland community Type 9. At DP-1U, the upper layers of the soil profile revealed a 6-inch layer

of organics and duff above a layer of black (10YR 2/1) silt. This soil is likely a hydric relic, which indicates that wetland habitat once occurred in this location. DP-1W revealed 6 inches of black (10YR 2/1) loam above 14 inches of 10YR 6/2 silty clay with 5 percent dark yellowish-brown (7.5YR 4/6), redoximorphic concentrations in the matrix. The soil meets the criteria for Depleted Matrix (F3) and classification as a hydric soil.

DP-2W is located in wetland community Type 3 in the northwest portion of the site, and DP-2U is located upslope of DP-2W in upland community Type 9. At DP-2U, the upper 20 inches of the soil profile revealed a very dry 2.5Y 5/3 silt loam. DP-2W revealed 6 inches of 2.5Y 5/3, light olive-brown silt loam above a 10YR 6/1 layer of clay loam with 5 percent 10YR 5/6 redoximorphic concentrations in the matrix The soil met the criteria for Depleted Matrix (F3) and classification as a hydric soil.

DP-3W is located in wetland community Type 5 in the northeast corner of the site, and DP-3U is located upslope of DP-3W in upland community Type 9. At DP-3U, the soil profile revealed 10 percent 10YR 4/6 redox features in the upper 14 inches of the profile and technically qualified as hydric soil but the vegetation is dominated by upland grasses. This area may have previously qualified as wetland but has dried up over time. DP-3W revealed 20 inches of grayish (10YR 5/1) clay with 5 percent 10YR 5/6 redoximorphic concentrations in the matrix. The soil met the criteria for Depleted Matrix (F3) and classification as a hydric soil.

Wildlife – Twenty-three bird species were identified in 2019. Six of the seven bird boxes installed at the site are functional and all appeared to be used in 2019 by a variety of species including tree swallows (*Tachycineta bicolor*) and house wrens (*Troglodytes aedon*). In addition to the 23 bird species, Columbia spotted frogs (Rana luteiventris) were also observed within many of the excavated wetland cells (Appendix B). Few deer tracks and one white-tailed deer (*Odocoileus virginianus*) were noted across the site.

Stream Monitoring – The survey results for 11 permanent cross sections that were established along the constructed Coyote and Schrieber Creeks (Figure A-2, Appendix A) are shown in Appendix D. The 2019 data was compared to the previous surveys and discussions to assess stream channel stability. In general, the banks of the constructed channels were well-vegetated and exhibited stable conditions. Consequently, no major channel morphological changes have been observed throughout all of the monitoring years.

Credit Summary – Completely restoring sinuosity and stream length to both Coyote Creek and Schrieber Creek was intended to create a new channel length of approximately 7,756 linear feet, which is an overall increase of 3,327 linear feet from the previously channelized length of 4,429 linear feet. As part of the Montana Stream Mitigation Procedure [USACE, 2010], calculating stream mitigation credits includes summing both riparian and stream credits (Table 5).

The pilot project was constructed in 2007 and generated approximately 3.72 mitigation credit acres, including 2.38 credit acres of wetland creation, 0.75 credit acre for restoring (rehabilitating) of existing wetlands (1.12 acres restored), and 0.59 credit acre of upland (2.96 acres maintained) buffer around the wetlands. The pilot project was engulfed by the larger project constructed by MDT in 2011. Table 6 provides the credits generated at the Schrieber Meadows site for the approximately 57-acre, full-scale project and does not differentiate between the pilot project and full build-out of the Schrieber Meadows project. To date, the site has created 13.76 more credit acres (31.01 acres) than was originally planned (17.25 acres) for the site.

Table 5. Determination of Stream Mitigation Credits for the Schrieber Meadows Site

Factors	Upper Coyote Creek (USFS)	Coyote Creek Spring Area	Middle Coyote Creek (MDT)	Perennial Spring Channel	Lower Coyote Creek
Net Improvement	2.50	0.00	2.50	2.50	2.50
Stream Status	0.05	0.05	0.05	0.05	0.05
Type of Protection	0.20	0.20	0.20	0.20	0.20
Mitigation Timing	0.10	0.10	0.10	0.10	0.10
Comparative Stream Order	0.20	0.20	0.20	0.20	0.20
Location	0.10	0.10	0.10	0.10	0.10
Sum of Factors (M)	3.15	0.65	3.15	3.15	3.15
Linear Feet (L)	1,752	190	3,179	400	2,425
Total Stream Credits (M × L)	**5,519**	**123**	**10,014**	**1,260**	**7,639**
Total Stream Credits[(a)] = 24,555					
Total Mitigation Credits (Riparian + Stream) = 10,996 + 24,555 = 35,551					

(a) Credits were calculated using the Montana Stream Mitigation Procedure [USACE, 2010].

Table 6. Summary of Wetland Mitigation Credits at the Schrieber Meadows Site From 2013 and 2017 Through 2019

Mitigation Type	Total Proposed Acreage	Ratio	Proposed Credit Acres	2013 Delineated Acreage	2013 Credit Acres	2017 Delineated Acreage	2017 Credit Acres	2018 Delineated Acreage	2018 Credit Acres	2019 Delineated Acreage	2019 Credit Acres
Creation – USFS/MDT Property	8.91	1:1	8.91	22.43	22.43	22.43	22.43	21.90	21.90	21.90	21.90
Restoration on USFS/MDT Property	3.46	1.5:1	2.31	3.46	2.31	3.46	2.31	3.46	2.31	3.46	2.31
Enhancement of Wetlands Inside Geotechnical Limits Adjacent to US Highway 2 (MDT/USFS)	13.22	3:1	4.41	13.22	4.41	13.22	4.41	13.22	4.41	13.22	4.41
Riparian Buffer[a]		–		8.30	(b)	8.30	(b)	8.30	(b)	8.30	(b)
Upland Buffer	8.50	5:1	1.70	12.39[c]	2.48	12.39[c]	2.48	12.39[c]	2.48	12.39[c]	2.48
Project Impacts	–0.08	None	–0.08	–0.08	–0.08	–0.08	–0.08	–0.08	–0.08	–0.08	–0.08
Total Mitigation Acreage	**34.01**		**17.25**	**59.72**	**31.54**	**59.72**	**31.54**	**59.19**	**31.01**	**59.19**	**31.01**

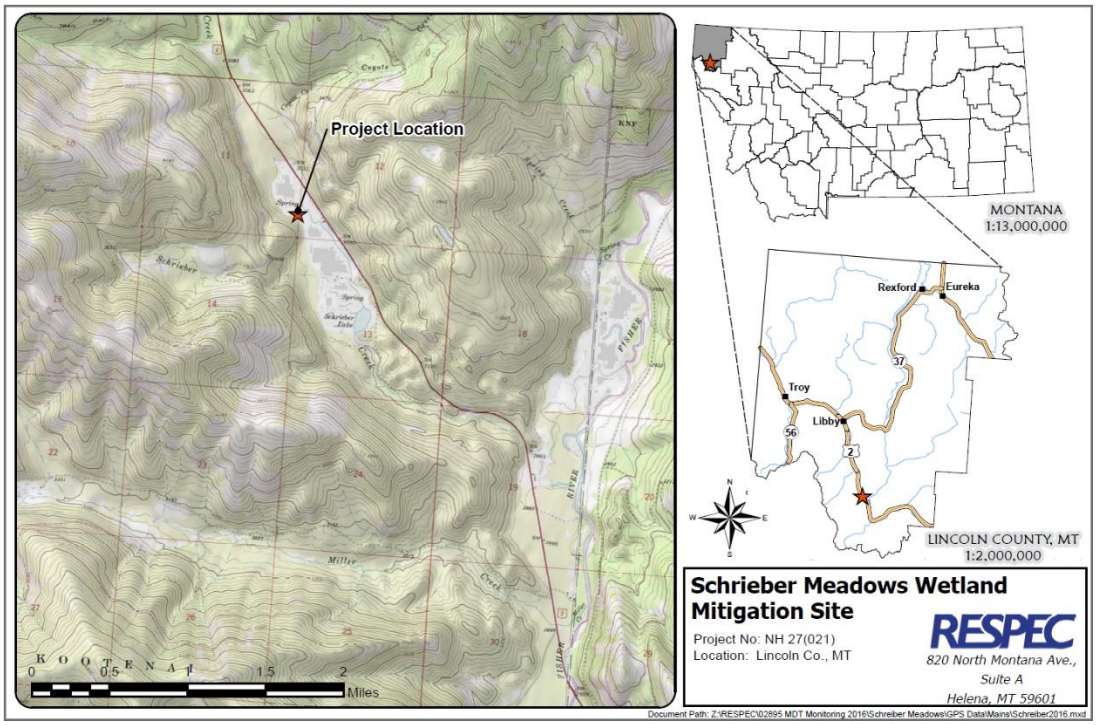
(a) Riparian buffer areas were used to calculate stream and riparian credits.

(b) Wetland acreages within riparian buffer were subtracted from wetland credit total; riparian buffer does not include upland buffer acreage.

(c) Acreage includes 50-foot buffer around wetlands within MDT and USFS property and outside of the riparian buffer.

Maps, Plans, Photos

Site Location Map



Project Area Maps/Figures: See Appendix A

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

Photos: See Appendix C

Plans: See Appendix D of 2012 Monitoring Report
https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2012/schrieber_meadows_final_2012.pdf

Conclusions

Based on the results of the ninth year of monitoring, the mitigation site is continuing to develop into a diverse wetland ecosystem. The site is meeting all performance standards except for the following:

1. Riparian Buffer Success: Woody and riparian vegetation is established.
   a. Woody vegetation along the reconstructed stream channels has been slow to develop because conditions are generally too wet and competition is too great from reed canary grass.
2. Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years.

Woody plantings survival is not trending toward meeting this performance standard. MDT is currently working with the USFS Kootenai National Forest to coordinate a replanting plan in appropriate riparian buffer areas within the site that are not inundated by high-water levels.

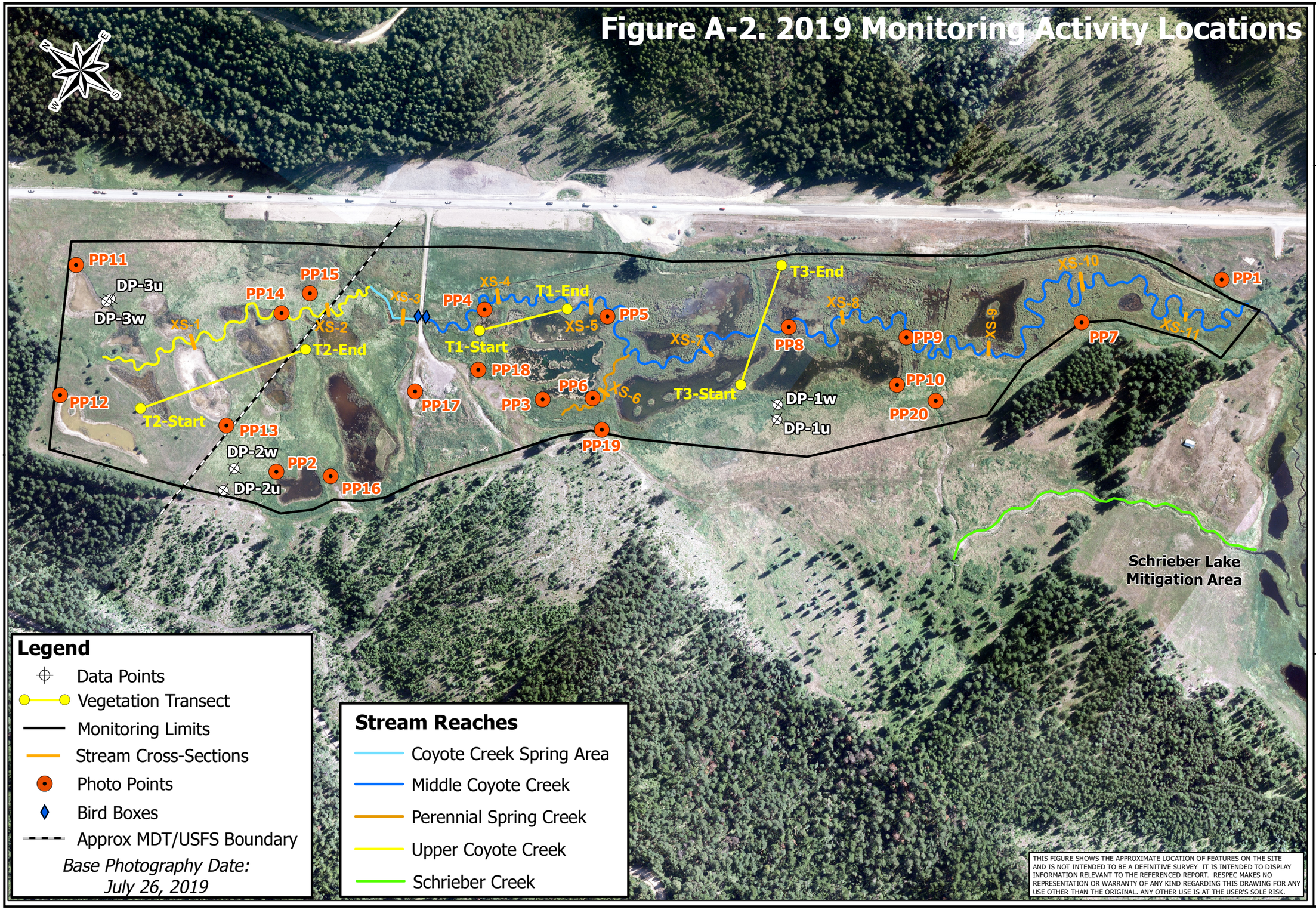
References

US Army Corps of Engineers, 2010. *Helena Regulatory Program 2010, Montana Stream Mitigation Procedure*, prepared by the US Army Corps of Engineers, Helena, MT.

APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

Figure A-2. 2019 Monitoring Activity Locations



Legend

- Data Points
- Vegetation Transect
- Monitoring Limits
- Stream Cross-Sections
- Photo Points
- Bird Boxes
- Approx MDT/USFS Boundary

Base Photography Date:
July 26, 2019

Stream Reaches

- Coyote Creek Spring Area
- Middle Coyote Creek
- Perennial Spring Creek
- Upper Coyote Creek
- Schrieber Creek

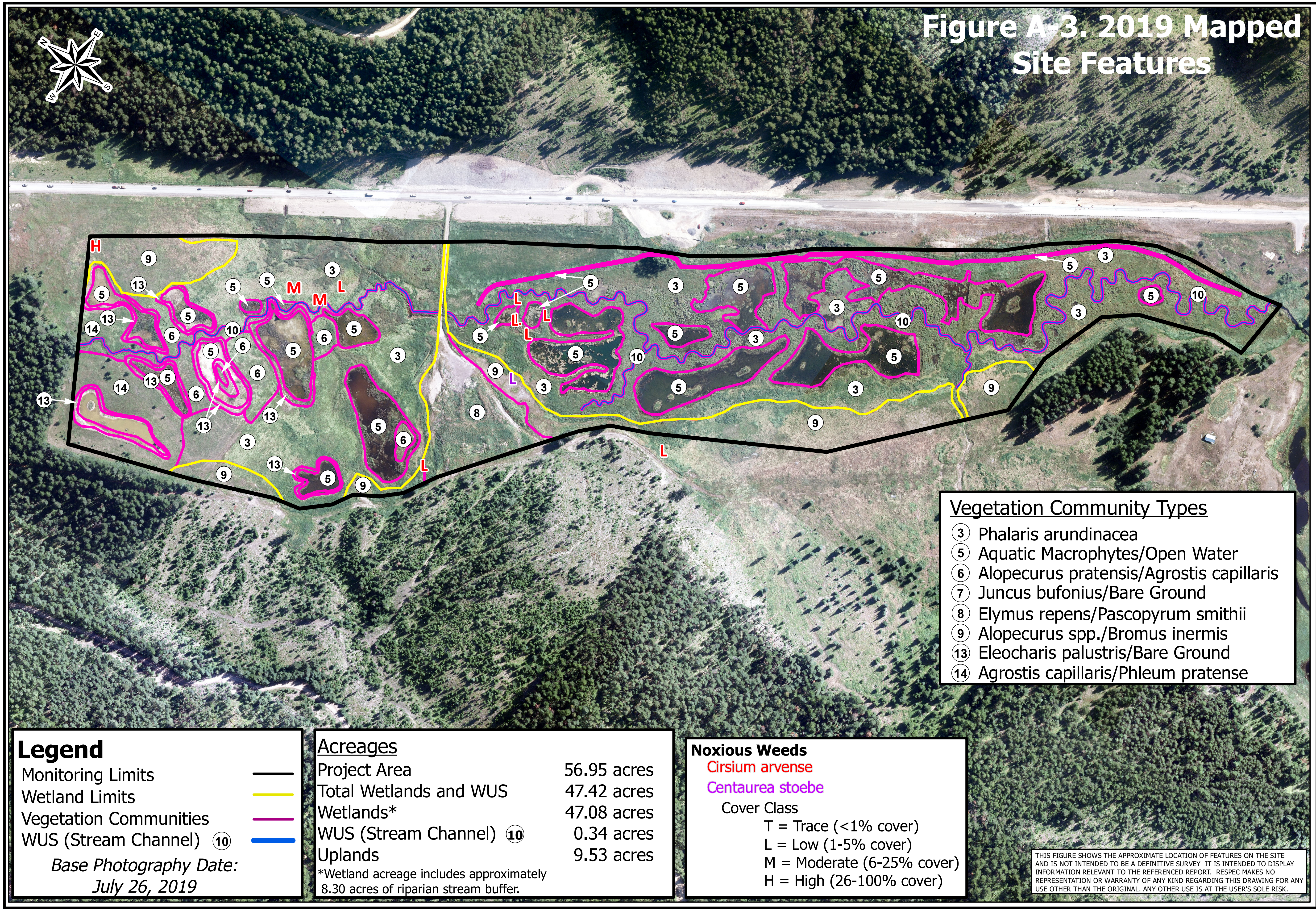
RESPEC
815 E. Front Street
Suite 3
Missoula, MT 59802

Schrieber Meadows Mitigation Site
2019 Monitoring Activity Locations

0 125 250 500 750 1,000 1,250 Feet

Project: NH 27(021)
Location: Lincoln Co., Montana
Date: December 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: R:\Projects\02895 MDT Monitoring 2016-2019\Schrieber Meadows\GPS Data\Mains\Monitor2019.mxd



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

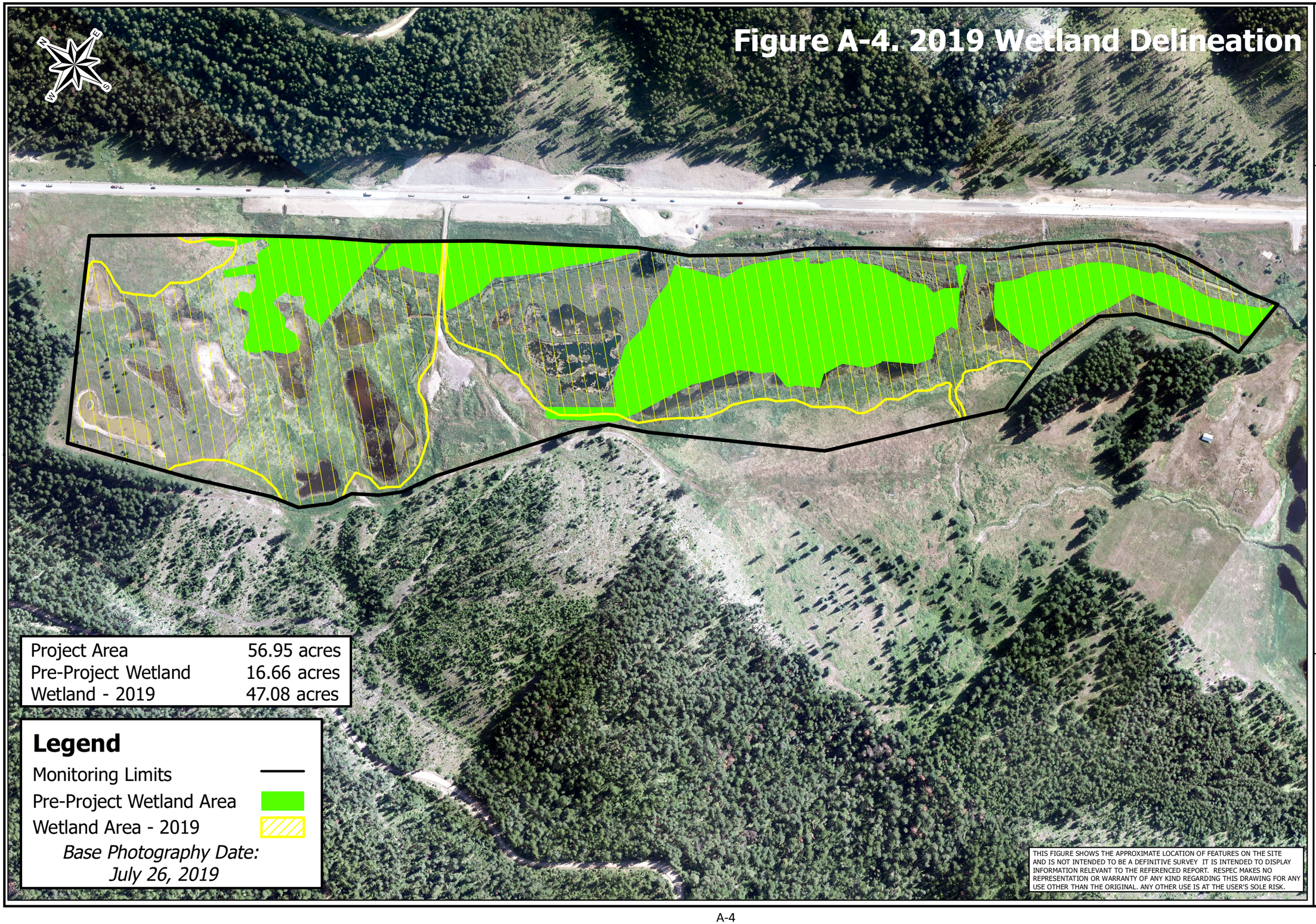
Schrieber Meadows Mitigation Site
2019 Mapped Site Features

0 125 250 500 750 1,000 1,250 Feet

Project: NH 27(021)
Location: Lincoln Co., Montana
Date: December 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: R:\Projects\02895 MDT Monitoring 2016-2019\Schrieber Meadows\GPS Data\Mains\Veg2019.mxd

Figure A-4. 2019 Wetland Delineation



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

Schrieber Meadows Mitigation Site
2019 Wetland Delineation

0 125 250 500 750 1,000 1,250 Feet

Project: NH 27(021)
Location: Lincoln Co., Montana
Date: October 2019
Project Manager: M. Traxler
Drawn By: JR/MP

File: R:\Projects\02895 MDT Monitoring 2016-2019\Schrieber Meadows\GPS Data\Mains\Delin2019.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Schrieber Meadows** Project Number: **NH 27(021)**
Assessment Date: **July 29-30, 2019** Person(s) conducting the assessment: **M. Traxler, T. Traxler**
Location: **Highway 2, Swamp Creek East** MDT District: **Missoula**
Milepost: **53.5**
Legal Description: T **27N** R **30W** Section **11, 12, 13**
Weather Conditions: **Sunny, calm, 85 degrees** Time of Day: **Afternoon**
Initial Evaluation Date: **August 29, 2010** Monitoring Year: **10** # Visits in Year: **1**
Size of evaluation area: **56.9 acres** Land use surrounding wetland: **US Highway 2, US Forest Service, forested watershed**

HYDROLOGY

Surface Water Source: **Coyote Creek spring, Precipitation, Groundwater**
Inundation: **Present** Average Depth: **1.5 feet** Range of Depths: **0-3**
Percent of assessment area under inundation: **83%**
Depth at emergent vegetation-open water boundary: **1.5 feet**
If assessment area is not inundated then are the soils saturated within 12 inches of surface: _
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):

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

Well Number	Depth	Well Number	Depth	Well Number	Depth

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

COMMENTS / PROBLEMS:

VEGETATION COMMUNITIES

Community Number: **3** Community Title (main spp): **Phalaris arundinacea**

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	5 = > 50%		
Alnus incana	1 = 1-5%		
Carex stipata	1 = 1-5%		
Persicaria amphibia	1 = 1-5%		
Eleocharis palustris	+ = < 1%		
Glyceria grandis	+ = < 1%		

Comments / Problems: _____

Community Number: **5** Community Title (main spp): **Aquatic macrophytes / Open Water**

Dominant Species	% Cover	Dominant Species	% Cover
Algae - Green	2 = 6-10%	Eleocharis palustris	1 = 1-5%
Algae - Brown	2 = 6-10%	Phalaris arundinacea	1 = 1-5%
Aquatic macrophytes	2 = 6-10%	Typha latifolia	2 = 6-10%
Chara sp.	2 = 6-10%	Glyceria grandis	+ = < 1%
Persicaria amphibia	2 = 6-10%	Lemna minor	+ = < 1%
Carex nebrascensis	1 = 1-5%	Open water	4 = 21-50%

Comments / Problems: _____

Community Number: **6** Community Title (main spp): **Alopecurus pratensis / Agrostis capillaris**

Dominant Species	% Cover	Dominant Species	% Cover
Agrostis capillaris	4 = 21-50%	Poa pratensis	1 = 1-5%
Alopecurus pratensis	4 = 21-50%	Carex lasiocarpa	+ = < 1%
Bromus inermis	2 = 6-10%	Carex utriculata	+ = < 1%
Phalaris arundinacea	2 = 6-10%		
Carex athrostachya	1 = 1-5%		
Epilobium ciliatum	1 = 1-5%		

Comments / Problems: _____

Community Number: **7** Community Title (main spp): **Juncus bufonius / Bare Ground**

Dominant Species	% Cover	Dominant Species	% Cover
Bare Ground	4 = 21-50%	Agrostis stolonifera	+ = < 1%
Juncus bufonius	3 = 11-20%	Eleocharis quinqueflora	+ = < 1%
Beckmannia syzigachne	2 = 6-10%	Juncus tenuis	+ = < 1%
Eleocharis palustris	1 = 1-5%		
Mimulus guttatus	1 = 1-5%		
Suaeda calceoliformis	1 = 1-5%		

Comments / Problems: _____

VEGETATION COMMUNITIES (continued)

Community Number: **8** Community Title (main spp): **Elymus repens / Pascopyrum smithii**

Dominant Species	% Cover	Dominant Species	% Cover
Elymus repens	3 = 11-20%		
Medicago lupulina	3 = 11-20%		
Pascopyrum smithii	3 = 11-20%		
Alopecurus pratensis	1 = 1-5%		
Bromus inermis	1 = 1-5%		
Sisymbrium altissimum	1 = 1-5%		

Comments / Problems: **Upland Community**

Community Number: **9** Community Title (main spp): **Alopecurus spp. / Bromus inermis**

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	5 = > 50%	Poa pratensis	1 = 1-5%
Bromus inermis	3 = 11-20%	Senecio hydrophiloides	1 = 1-5%
Alopecurus arundinaceus	2 = 6-10%	Taraxacum officinale	1 = 1-5%
Achillea millefolium	1 = 1-5%		
Arnica chamissonis	1 = 1-5%		
Pascopyrum smithii	1 = 1-5%		

Comments / Problems: **Upland Community**

Community Number: **13** Community Title (main spp): **Eleocharis palustris / Bare Ground**

Dominant Species	% Cover	Dominant Species	% Cover
Bare Ground	4 = 21-50%	Epilobium cilatum	1 = 1-5%
Alopecurus arundinaceus	3 = 11-20%	Glyceria elata	1 = 1-5%
Beckmannia syzigachne	3 = 11-20%	Juncus bufonius	+ = < 1%
Eleocharis palustris	3 = 11-20%	Juncus tenuis	+ = < 1%
Scirpus microcarpus	2 = 6-10%	Salix bebbiana	+ = < 1%
Carex pellita	2 = 6-10%	Suaeda calceoliformis	+ = < 1%

Comments / Problems: _____

Community Number: **14** Community Title (main spp): **Agrostis capillaris / Phleum pratense**

Dominant Species	% Cover	Dominant Species	% Cover
Agrostis capillaris	4 = 21-50%	Hieracium aurantiacum	+ = < 1%
Phleum pratense	2 = 6-10%	Pinus contorta	+ = < 1%
Bromus inermis	1 = 1-5%	Pinus ponderosa	+ = < 1%
Leucanthemum vulgare	+ = < 1%	Pseudotsuga menziesii	+ = < 1%
Cirsium arvense	+ = < 1%	Rosa woodsii	+ = < 1%
Fragaria virginiana	+ = < 1%	Symphyotrichum spathulatum	+ = < 1%

Comments / Problems: _____

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes
Alnus incana	1000	< 50	too wet and out-competed by reed canary grass
Salix spp.	750	10	too wet and out-competed by reed canary grass

Comments / Problems: **Planted shrubs are difficult to see at the site due to tall reed canary grass. It is thought that most woody plantings have died because of very wet conditions and being out competed by reed canary grass.**

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadows** Date: **July 29, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **318 feet** Compass Direction from Start: **112˚** Note: _____

Transect Interval Length: **16 feet (Station 0-16)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Total Vegetative Cover:	98%

Transect Interval Length: **79 feet (Station 16-103)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open Water	5 = > 50%
Algae - Green	4 = 21-50%
Chara sp.	2 = 6-10%
Lemna minor	2 = 6-10%
Persicaria amphibia	2 = 6-10%
Phalaris arundinacea	1 = 1-5%
Alnus incana	+ = < 1%
Total Vegetative Cover:	60%

Transect Interval Length: **22 feet (Station 103-117)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Cirsium arvense	3 = 11-20%
Total Vegetative Cover:	98%

Transect Interval Length: **83 feet (Station 117-200)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Aquatic macrophytes	5 = > 50%
Open Water	5 = > 50%
Algae - Green	3 = 11-20%
Persicaria amphibia	1 = 1-5%
Lemna minor	1 = 1-5%
Total Vegetative Cover:	55%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 29, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **318 feet** Compass Direction from Start: **112˚** Note: _____

Transect Interval Length: **17 feet (Station 200-217)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Alnus incana	1 = 1-5%
Persicaria amphibia	1 = 1-5%
Open water	1 = 1-5%
Total Vegetative Cover:	98%

Transect Interval Length: **93 feet (Station 217-310)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open water	5 = > 50%
Aquatic macrophytes	3 = 11-20%
Algae (brown)	2 = 6-10%
Persicaria amphibia	2 = 6-10%
Algae (green)	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Total Vegetative Cover:	45%

Transect Interval Length: **8 feet (Station 310-318)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Glyceria elata	1 = 1-5%
Open water	1 = 1-5%
Total Vegetative Cover:	98%

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

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 30, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **594 feet** Compass Direction from Start: **100˚** Note: _____

Transect Interval Length: **30 feet (Station 0-30)**	
Vegetation Community Type: Alopecurus pratensis / Agrostis capillaris	
Plant Species	**Cover**
Agrostis capillaris	4 = 21-50%
Agrostis gigantea	3 = 11-20%
Bromus inermis	2 = 6-10%
Leucanthemum vulgare	2 = 6-10%
Phleum pratense	1 = 1-5%
Hieracium aurantiacum	1 = 1-5%
Achillea millefolium	+ = < 1%
Juncus tenuis	+ = < 1%
Total Vegetative Cover:	90%

Transect Interval Length: **13 feet (Station 30-43)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Beckmannia syzigachne	+ = < 1%
Juncus tenuis	2 = 6-10%
Juncus bufonius	5 = > 50%
Phalaris arundinacea	1 = 1-5%
Carex stipata	2 = 6-10%
Bare Ground	1 = 1-5%
Agrostis gigantea	1 = 1-5%
Total Vegetative Cover:	90%

Transect Interval Length: **45 feet (Station 43-88)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open Water	4 = 21-50%
Typha latifolia	4 = 21-50%
Eleocharis palustris	2 = 6-10%
Algae (brown)	+ = < 1%
Total Vegetative Cover:	60%

Transect Interval Length: **17 feet (Station 88-105)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Carex pellita	4 = 21-50%
Scirpus microcarpus	1 = 1-5%
Carex stipata	4 = 21-50%
Eleocharis palustris	2 = 6-10%
Glyceria elata	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Juncus tenius	+ = < 1%
Total Vegetative Cover:	90%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 30, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **594 feet** Compass Direction from Start: **100˚** Note: _____

Transect Interval Length: **63 feet (Station 105-168)**	
Vegetation Community Type: Alopecurus pratensis / Agrostis capillaris	
Plant Species	**Cover**
Agrostis capillaris	3 = 11-20%
Alopecurus pratensis	2 = 6-10%
Eleocharis palustris	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Bromus inermis	+ = < 1%
Carex lasiocarpa	5 = > 50%
Juncus tenius	+ = < 1%
Salix bebbiana	+ = < 1%
Epilobium ciliatum	+ = < 1%
Total Vegetative Cover:	98%

Transect Interval Length: **17 feet (Station 168-185)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Bare Ground	5 = > 50%
Phalaris arundinacea	+ = < 1%
Epilobium ciliatum	1 = 1-5%
Juncus tenius	2 = 6-10%
Juncus bufonius	2 = 6-10%
Typha latifolia	1 = 1-5%
Suaeda calceoliformis	1 = 1-5%
Populus balsamifera	+ = < 1%
Total Vegetative Cover:	50%

Transect Interval Length: **31 feet (Station 185-216)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Bare ground	5 = > 50%
Typha latifolia	5 = > 50%
Eleocharis palustris	3 = 11-20%
Total Vegetative Cover:	60%

Transect Interval Length: **10 feet (Station 216-226)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Bare Ground	3 = 11-20%
Juncus tenius	3 = 11-20%
Trifolium pratense	1 = 1-5%
Agrostis capillaris	1 = 1-5%
Beckmannia syzigachne	1 = 1-5%
Epilobium ciliatum	+ = < 1%
Phalaris arundinacea	+ = < 1%
Eleocharis palustris	4 = 21-50%
Total Vegetative Cover:	60%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 30, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **594 feet** Compass Direction from Start: **100˚** Note: _____

Transect Interval Length: **19 feet (Station 226-245)**	
Vegetation Community Type: Alopecurus pratensis / Agrostis capillaris	
Plant Species	**Cover**
Bromus inermis	5 = > 50%
Alopecurus pratensis	1 = 1-5%
Achillea millefolium	2 = 6-10%
Symphyotrichum spathulatum	+ = < 1%
Total Vegetative Cover:	98%

Transect Interval Length: **20 feet (Station 245-265)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Bare Ground	4 = 21-50%
Trifolium pratense	1 = 1-5%
Juncus tenuis	2 = 6-10%
Epilobium ciliatum	3 = 11-20%
Leucanthemum vulgare	1 = 1-5%
Beckmannia syzigachne	1 = 1-5%
Eleocharis palustris	2 = 6-10%
Total Vegetative Cover:	35%

Transect Interval Length: **28 feet (Station 265-293)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Bare Ground	5 = > 50%
Typha latifolia	3 = 11-20%
Beckmannia syzigachne	+ = < 1%
Glyceria sp.	+ = < 1%
Phalaris arundinacea	1 = 1-5%
Eleocharis palustris	3 = 11-20%
Total Vegetative Cover:	50%

Transect Interval Length: **4 feet (Station 293-297)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Bare Ground	2 = 6-10%
Juncus tenuis	1 = 1-5%
Leucanthemum vulgare	1 = 1-5%
Epilobium ciliatum	1 = 1-5%
Beckmannia syzigachne	+ = < 1%
Agrostis capillaris	+ = < 1%
Eleocharis palustris	3 = 11-20%
Phalaris arundinacea	+ = < 1%
Salix bebbiana	+ = < 1%
Total Vegetative Cover:	50%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 30, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **594 feet** Compass Direction from Start: **100˚** Note: _____

Transect Interval Length: **113 feet (Station 297-410)**	
Vegetation Community Type: Alopecurus pratensis / Agrostis capillaris	
Plant Species	**Cover**
Alopecurus pratensis	5 = > 50%
Bromus inermis	5 = > 50%
Leucanthemum vulgare	1 = 1-5%
Rosa woodsii	1 = 1-5%
Pedicularis groenlandica	+ = < 1%
Total Vegetative Cover:	98%

Transect Interval Length: **11 feet (Station 410-421)**	
Vegetation Community Type: Eleocharis palustris / Bare Ground	
Plant Species	**Cover**
Beckmannia syzigachne	+ = < 1%
Eleocharis palustris	2 = 6-10%
Geum macrophyllum	2 = 6-10%
Bare Ground	1 = 1-5%
Carex athrostachya	1 = 1-5%
Alopecurus pratensis	1 = 1-5%
Phalaris arundinacea	2 = 6-10%
Mentha arvensis	1 = 1-5%
Total Vegetative Cover:	80%

Transect Interval Length: **134 feet (Station 421-555)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open water	5 = > 50%
Eleocharis palustris	5 = > 50%
Chara sp.	2 = 6-10%
Typha latifolia	2 = 6-10%
Phalaris arundinacea	1 = 1-5%
Persicaria amphibia	1 = 1-5%
Juncus tenuis	1 = 1-5%
Carex sp.	+ = < 1%
Scirpus microcarpus	1 = 1-5%
Total Vegetative Cover:	70%

Transect Interval Length: **39 feet (Station 555-594)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Alopecurus pratensis	3 = 11-20%
Scirpus microcarpus	1 = 1-5%
Carex athrostachya	+ = < 1%
Carex utriculata	2 = 6-10%
Poa pratensis	+ = < 1%
Total Vegetative Cover:	98%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 29, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **3** Approximate Transect Length: **440 feet** Compass Direction from Start: **45˚** Note: _____

Transect Interval Length: **60 feet (Station 0-60)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Lemna minor	2 = 6-10%
Persicaria amphibia	1 = 1-5%
Total Vegetative Cover:	98%

Transect Interval Length: **77 feet (Station 60-137)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open Water	5 = > 50%
Chara sp.	4 = 21-50%
Aquatic macrophytes	3 = 11-20%
Algae (green)	1 = 1-5%
Sparganium natans	1 = 1-5%
Lemna minor	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Total Vegetative Cover:	50%

Transect Interval Length: **128 feet (Station 137-265)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Open Water	3 = 11-20%
Persicaria amphibia	3 = 11-20%
Lemna minor	2 = 6-10%
Eleocharis palustris	+ = < 1%
Epilobium ciliatum	1 = 1-5%
Carex sp.	1 = 1-5%
Glyceria elata	+ = < 1%
Total Vegetative Cover:	90%

Transect Interval Length: **151 feet (Station 265-416)**	
Vegetation Community Type: Aquatic macrophytes / Open Water	
Plant Species	**Cover**
Open Water	4 = 21-50%
Algae (brown)	3 = 11-20%
Carex nebrascensis	2 = 6-10%
Persicaria amphibia	2 = 6-10%
Chara sp.	2 = 6-10%
Lemna minor	2 = 6-10%
Carex utriculata	1 = 1-5%
Typha latifolia	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Total Vegetative Cover:	60%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Meadow** Date: **July 29, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **3** Approximate Transect Length: **440 feet** Compass Direction from Start: **45˚** Note: _____

Transect Interval Length: **24 feet (Station 416-440)**	
Vegetation Community Type: Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Open Water	3 = 11-20%
Lemna minor	2 = 6-10%
Total Vegetative Cover:	90%

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

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

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

MDT WETLAND MONITORING – VEGETATION TRANSECT

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

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): ___**%**

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

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

Comments: _____

PHOTOGRAPHS

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

Photograph Checklist:

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

Location	Photograph Frame #	Photograph Description & Lat/Long	Compass Reading (°)
PP-1		Photo Point 1 (Pano): 48.10804 / -115.410172	270
PP-2		Photo Point 2: 48.113735 / -115.420509	150
PP-3		Photo Point 3 (Pano): 48.112183 / -115.417503	90
PP-4		Photo Point 4 (Pano): 48.113213 / -115.416832	180
PP-5		Photo Point 5 (Pano): 48.112614 / -115.415977	300
PP-6		Photo Point 6 (Pano): 48.11904 / -115.417023	0
PP-7		Photo Point 7 (Pano): 48.108813 / 115.411923	0
PP-8		Photo Point 8 (Pano): 48.11121 / -115.414238	190
PP-9		Photo Point 9 (Pano): 48.109997 / -115.413765	280
PP-10		Photo Point 10 (Pano): 48.109737 / -115.414024	0
PP-11		Photo Point 11 (Pano): 48.116409 / -115.420021	190
PP-12		Photo Point 12 (Pano): 48.115673 / -115.421562	180
PP-13		Photo Point 13 (Pano): 48.11422 / -115.420403	280
PP-14		Photo Point 14 (Pano): 48.114655 / -115.41893	230
PP-15		Photo Point 15 (Pano): 48.114323 / -115.418449	180
PP-16		Photo Point 16 (Pano): 48.113403 / -115.420128	70
PP-17		Photo Point 17 (Pano): 48.112938 / -115.418388	270
PP-18		Photo Point 18: 48.1129 / -115.417618	90
PP-19		Photo Point 19, Photo 1: 48.111553 / -115.417084	10
PP-19		Photo Point 19, Photo 2: 48.111553 / -115.417084	100
PP-20		Photo Point 20: 48.109493 / -115.413918	100
T-1 start		Transect 1 start: 48.115204 / -115.417503	115
T-1 end		Transect 1 end: 48.112663 / -115.41642	295
T-2 start		Transect 2 start: 48.115204 / -115.421013	100
T-2 end		Transect 2 end: 48.114197 / -115.418991	280
T-3 start		Transect 3 start: 48.111134 / -115.415642	45
T-3 end		Transect 3 end: 48.111187 / -115.413849	225
DP-1W		Wetland soil pit #1: 48.110452 / -115.41545	
DP-1U		Upland soil pit #1: 48.110423 / -115.415619	
DP-2W		Wetland soil pit #2: 48.114022 / -115.420911	
DP-2U		Upland soil pit #2: 48.113974 / -115.421238	
DP-3W		Wetland soil pit #3: 48.115916 / -115.420246	
DP-3U		Upland soil pit#3: 48.115904 / -115.420181	

GPS SURVEYING

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

GPS Checklist:

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

Comments / Problems: _____

WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

- ☒ Delineate wetlands according to the 1987 Army COE manual and regional supplement.
- ☒ Delineate wetland – upland boundary onto aerial photograph.

Comments / Problems: _____

FUNCTIONAL ASSESSMENT

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

Comments / Problems: _____

MAINTENANCE

Were man-made nesting structure installed at this site? **Yes**
If yes, do they need to be repaired? **No**
If yes, describe the problems below and indicate if any actions were taken to remedy the problems.

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

Comments / Problems: _____

WILDLIFE

Birds

Were man-made nesting structures installed? **Yes**
If yes, type of structure: **box** How many? **2**
Are the nesting structures being used? **No**
Do the nesting structures need repairs? _____

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
White-tailed deer		☒	☐	☐	
Columbia Spotted Frog	3	☐	☐	☐	
Moose		☒	☐	☐	
Ground Squirrel		☐	☐	☒	
Chipmunk	1	☐	☐	☐	
Fish sp.		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: _____

BIRD SURVEY – FIELD DATA SHEET

Site: **Schrieber Meadows** Date: **7/29/19**
Survey Time: **2:00 pm** to **5:00 pm**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Great Blue Heron	1	FO F	WM UP				
Red-winged Blackbird	6	L FO	WM UP				
Gadwall	1	F L	OW				
Sora	4	FO L	WM				
Red-tailed Hawk	1	FO	WM UP				
Tree Swallow	12	FO L	UP WM				
Killdeer	2	F	MF				
Wilson's Snipe	4	F	MF WM				
Sparrow sp.	2	FO	WM UP				
European Starling	4	FO	WM UP				

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

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

Weather: _____

Notes: _____

Schrieber Meadows Plant List (2013-2019)

Scientific Names	Common Names	WMVC Indicator Status[a]
Achillea millefolium	Common Yarrow	FACU
Achnatherum nelsonii	Nelson's Rice Grass	UPL
Agastache urticifolia	Nettle-Leaf Giant-Hyssop	FACU
Agropyron cristatum	Crested Wheatgrass	NL
Agropyron sp.	Wheatgrass	NL
Agrostis capillaris	Colonial Bent	FAC
Agrostis gigantea	Black Bent	FAC
Agrostis scabra	Rough Bent	FAC
Agrostis stolonifera	Spreading Bent	FACW
Algae, brown	Algae, brown	NL
Algae, green	Algae, green	NL
Alisma triviale	Northern Water-Plantain	OBL
Alnus incana	Speckled Alder	FACW
Alopecurus aequalis	Short-Awn Meadow-Foxtail	OBL
Alopecurus arundinaceus	Creeping Meadow-Foxtail	FAC
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Aquatic macrophytes	Aquatic macrophytes	NL
Arctium minus	Lesser Burrdock	UPL
Arnica chamissonis	Leafy Leopardbane	FACW
Aster sp.	Aster	NL
Beckmannia syzigachne	American Slough Grass	OBL
Bromus carinatus	California Brome	NL
Bromus inermis	Smooth Brome	FAC
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex athrostachya	Slender-Beak Sedge	FACW
Carex bebbii	Bebb's Sedge	OBL
Carex lasiocarpa	Woolly-Fruit Sedge	OBL
Carex microptera	Small-Wing Sedge	FACU
Carex nebrascensis	Nebraska Sedge	OBL
Carex pachystachya	Thick-Head Sedge	FAC
Carex pellita	Woolly Sedge	OBL
Carex scoparia	Pointed Broom Sedge	FACW
Carex sp.	Sedge	NL
Carex stipata	Stalk-Grain Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Centaurea stoebe	Spotted Knapweed	NL
Cerastium arvense	Field Mouse-Ear Chickweed	FACU

Scientific Names	Common Names	WMVC Indicator Status[a]
Cerastium fontanum	Common Mouse-Ear Chickweed	FACU
Ceratophyllum demersum	Coon's-Tail	OBL
Chara sp.	Muskgrass	NL
Cirsium arvense	Canadian Thistle	FAC
Cirsium vulgare	Bull Thistle	FACU
Collomia linearis	Narrow-Leaf Mountain-Trumpet	FACU
Cynoglossum officinale	Gypsy-Flower	FACU
Deschampsia cespitosa	Tufted Hairgrass	FACW
Eleocharis flavescens	Yellow Spike-Rush	OBL
Eleocharis palustris	Common Spike-Rush	OBL
Eleocharis quinqueflora	Few-Flower Spike-Rush	OBL
Elymus repens	Creeping Wild Rye	FAC
Elymus trachycaulus	Slender Wild Rye	FAC
Epilobium ciliatum	Fringed Willowherb	FACW
Epilobium sp.	Willowherb	NL
Equisetum arvense	Field Horsetail	FAC
Equisetum hyemale	Tall Scouring-Rush	FACW
Erysimum cheiranthoides	Worm-Seed Wallflower	FACU
Festuca sp.	Fescue	NL
Fragaria virginiana	Virginia Strawberry	FACU
Galium mexicanum	Mexican Bedstraw	FAC
Galium trifidum	Three-Petal Bedstraw	FACW
Geum macrophyllum	Large-Leaf Avens	FAC
Glyceria elata	Tall Manna Grass	FACW
Glyceria grandis	American Manna Grass	OBL
Glyceria sp.	Manna Grass	NL
Glyceria striata	Fowl Manna Grass	OBL
Gnaphalium palustre	Western Marsh Cudweed	FACW
Hieracium aurantiacum	Orange Hawkweed	NL
Hippuris vulgaris	Common Mare's-Tail	OBL
Juncus articulatus	Joint-Leaf Rush	OBL
Juncus bufonius	Toad Rush	FACW
Juncus confusus	Colorado Rush	FAC
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus nodosus	Knotted Rush	OBL
Juncus tenuis	Lesser Poverty Rush	FAC
Lemna minor	Common Duckweed	OBL
Lepidium sp.	Pepperwort	NL

Scientific Names	Common Names	WMVC Indicator Status[a]
Leucanthemum vulgare	Ox-Eye Daisy	FACU
Marsilea vestita	Hairy Water-Clover	OBL
Matricaria discoidea	Pineapple-Weed	FACU
Medicago lupulina	Black Medick	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL
Pascopyrum smithii	Western-Wheat Grass	FACU
Pedicularis groenlandica	Bull Elephant-Head	OBL
Persicaria amphibia	Water Smartweed	OBL
Persicaria lapathifolia	Dock-Leaf Smartweed	FACW
Persicaria maculosa	Spotted Lady's-Thumb	FACW
Peritoma serrulata	Rocky Mountain Bee Plant	FACU
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FACU
Pinus contorta	Lodgepole Pine	FAC
Pinus ponderosa	Ponderosa Pine	FACU
Plantago major	Great Plantain	FAC
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Poa sp.	Blue Grass	NL
Polygonum douglasii	Douglas' Knotweed	FACU
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus balsamifera	Balsam Poplar	FAC
Potamogeton foliosus	Leafy Pondweed	OBL
Potamogeton natans	Broad-Leaf Pondweed	OBL
Potentilla gracilis	Graceful Cinquefoil	FAC
Potentilla norvegica	Norwegian Cinquefoil	FAC
Prunella vulgaris	Common Selfheal	FACU
Pseudotsuga menziesii	Douglas-Fir	FACU
Ranunculus aquatilis	Whitewater Crowfoot	OBL
Ranunculus sceleratus	Cursed Buttercup	OBL
Rosa woodsii	Woods' Rose	FACU
Rumex acetosella	Common Sheep Sorrel	FACU
Rumex crispus	Curly Dock	FAC
Salix bebbiana	Gray Willow	FACW
Salix candida	Sage Willow	OBL
Salix drummondiana	Drummond's Willow	FACW
Scirpus cyperinus	Cottongrass Bulrush	OBL

Scientific Names	Common Names	WMVC Indicator Status[(a)]
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Senecio hydrophiloides	Stout Meadow Ragwort	FACW
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Solidago canadensis	Canadian Goldenrod	FACU
Sparganium emersum	European Burr-Reed	OBL
Spiranthes romanzoffiana	Hooded Ladies'-Tresses	FACW
Stuckenia pectinata	Sago False Pondweed	OBL
Suaeda calceoliformis	Paiuteweed	FACW
Symphoricarpos albus	Common Snowberry	FACU
Symphyotrichum spathulatum	Mountain American-Aster	FAC
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	UPL
Trifolium arvense	Rabbit-foot Clover	NL
Trifolium hybridum	Alsike Clover	FAC
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FAC
Triglochin maritima	Seaside Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Verbascum thapsus	Great Mullein	FACU
Veronica americana	American-Brooklime	OBL
Veronica anagallis-aquatica	Blue Water Speedwell	OBL
Veronica peregrina	Neckweed	OBL
Veronica serpyllifolia	Thyme-Leaf Speedwell	FAC

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

New species identified in 2019 are **bolded**.

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

Project/Site: Schrieber Meadows **City/County:** Lincoln **Sampling Date:** 30-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** **S** 13 **T** 27N **R** 30W

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

Subregion (LRR): LRR E **Lat.:** 48.11042332 **Long.:** -115.4156209 **Datum:** NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained **NWI classification:** Upland

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

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

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

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

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

Remarks:

Sampling point within an upland area. Hydrophytic vegetation present, but hydric soils and wetland hydrology absent. The sampling point is located upslope from DP-1W and does not receive the same hydrologic input.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Alopecurus pratensis	55	☑ 55.0%	FAC
2. Phalaris arundinacea	40	☑ 40.0%	FACW
3. Bromus inermis	5	☐ 5.0%	UPL
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	**x 1 =**	0
FACW species	40	**x 2 =**	80
FAC species	55	**x 3 =**	165
FACU species	0	**x 4 =**	0
UPL species	5	**x 5 =**	25
Column Totals:	100 **(A)**		270 **(B)**

Prevalence Index = B/A = 2.700

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:

Meets hydrophytic vegetation criteria.

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

Soil

Sampling Point: DP-1U

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR	4/2	100						Organics/duff	
6-20	10YR	2/1	100						Silt Loam	roots

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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 present although with a very dark 2/1 color matrix, this soil may be a hydric relic. Soil sample was moistened prior to color profile.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators present. Soil pit dry and crumbly.

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

Project/Site: Schrieber Meadows **City/County:** Lincoln **Sampling Date:** 30-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** **S** 13 **T** 27N **R** 30W

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

Subregion (LRR): LRR E **Lat.:** 48.11042332 **Long.:** -115.4156209 **Datum:** NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained **NWI classification:** PEM

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

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

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Sampling point within a wetland area dominated by emergent vegetation consisting of reed canarygrass and Alopecurus with a seasonal high water table.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Phalaris arundinacea	80	☑ 80.0%	FACW
2. Alopecurus arundinaceus	20	☑ 20.0%	FAC
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		220 (B)

Prevalence Index = B/A = 2.200

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:

Hydrophytic vegetation present consisting of reed canarygrass and Alopecurus.

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

Soil

Sampling Point: DP-1W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR	2/1	100						Loam	roots
6-20	10YR	6/2	95	7.5YR	4/6	5	D	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)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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:

Meets depleted matrix hydric soil indicator.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Hydrology indicators present with oxidized rhizospheres. The site has a high water table in spring and early summer.

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

Project/Site: Schrieber Meadows **City/County:** Lincoln **Sampling Date:** 30-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** S 11 T 27N R 30W

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

Subregion (LRR): LRR E **Lat.:** 48.113974 **Long.:** -115.421238 **Datum:** NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained **NWI classification:** Upland

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

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

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

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

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

Remarks:
Hillside just above wetland.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Elymus trachycaulus	50	☑ 50.0%	FAC
2. Phalaris arundinacea	35	☑ 35.0%	FACW
3. Phleum pratense	15	☐ 15.0%	FAC
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	65	x 3 =	195
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		265 (B)

Prevalence Index = B/A = 2.650

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Plot meets criteria for hydrophytic vegetation. Sample point is in transitional area - Phalaris occurs along with upland grasses.

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

Soil

Sampling Point: DP-2U

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-20	2.5Y	5/3	100						Silt Loam	roots

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators observed.

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

Project/Site: Schrieber Meadows **City/County:** Lincoln **Sampling Date:** 30-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** **S** 11 **T** 27N **R** 30W

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

Subregion (LRR): LRR E **Lat.:** 48.114022 **Long.:** -115.420911 **Datum:** NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained **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:
Wetland data point.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Phalaris arundinacea	90	☑ 90.0%	FACW
2. Agrostis stolonifera	10	☐ 10.0%	FAC
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 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	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		210 (B)

Prevalence Index = B/A = 2.100

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Sample point dominated by Phalaris.

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

Soil

Sampling Point: DP-2W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y	5/3	100						Silt Loam	roots
6-20	10YR	6/1	95	10YR	5/8	5	D	M	Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil meets criteria for a Depleted Matrix.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Seasonally high groundwater table. No water in pit at time of survey.

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

Project/Site: Schrieber Meadows **City/County:** Lincoln **Sampling Date:** 30-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** **S** 11 **T** 27N **R** 30W

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

Subregion (LRR): LRR E **Lat.:** 48.115904 **Long.:** -115.420191 **Datum:** NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained **NWI classification:** Upland

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

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

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

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

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

Remarks:
Soil very dry but evidence of past hydric conditions. Smooth brome dominant, replacing Alopecurus.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Bromus inermis	70	☑ 87.5%	UPL
2. Agrostis stolonifera	10	☐ 12.5%	FAC
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 20

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	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	80 (A)		380 (B)

Prevalence Index = B/A = 4.750

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:
Smooth brome dominant.

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

Soil

Sampling Point: DP-3U

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y	5/3	100						Silt Loam	roots
6-20	2.5Y	5/3	90	10YR	4/6	10	D	M	Clay Loam	very dry

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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 below 6" from past inundation.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators observed. Very dry.

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

Project/Site: Schrieber Meadows **City/County:** Lincoln **Sampling Date:** 30-Jul-19

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

Investigator(s): Mark Traxler, Tanner Traxler **Section, Township, Range:** **S** 11 **T** 27N **R** 30W

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

Subregion (LRR): LRR E **Lat.:** 48.115916 **Long.:** -115.420246 **Datum:** NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained **NWI classification:** Upland

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

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

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

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

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

Remarks:
Excavated wetland cell.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 Foot Radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Eleocharis palustris	30	☑ 40.0%	OBL
2. Typha latifolia	30	☑ 40.0%	OBL
3. Beckmannia syzigachne	5	☐ 6.7%	OBL
4. Agrostis stolonifera	5	☐ 6.7%	FAC
5. Juncus bufonius	5	☐ 6.7%	FACW
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 25

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	65	x 1 =	65
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		90 (B)

Prevalence Index = B/A = 1.200

Hydrophytic Vegetation Indicators:

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

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Wetland as a whole dominated by Typha but pit is on edge where other species occur and is co-dominated by Typha and Eleocharis.

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

Soil

Sampling Point: DP-3W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR	5/1	95	10YR	5/6	5	D	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)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil meets criteria for a Depleted Matrix. Mottles are well-defined.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches):	12
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Soil is saturated to the surface. Water in pit at 12". Bottom of the wetland cell has 12" of standing water.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Schrieber Meadows **2. MDT Project #:** NH 27(021) **3. Control #:** 1027

3. Evaluation Date: 7/29/2019 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Creation

6. Wetland Location(s): Township 27 N, Range 30 W, Section 11, 12, 13; Township ___N, Range ___E, Section _____

Approximate Stationing or Roadposts: Approximately Milepost 53.5

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

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

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

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 22.43 (measured, e.g. GPS)

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

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	35
Depressional	Aquatic Bed	Excavated	Permanent / Perennial	10
Slope	Emergent Wetland		Seasonal / Intermittent	55

Comments: _____

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

12. GENERAL CONDITION OF AA

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

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

Comments (types of disturbance, intensity, season, etc.)**:** AA includes excavated depressions and adjacent undisturbed wetland habitat created as a result of higher water table. Highway 2 which was under construction in 2019, is adjacent to the AA.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense and occasional Cynoglossum officinale.

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: AA includes constructed wetland depressions and adjacent wetland habitat that has been created by the plugging of existing ditches and channels, creation of a new stream channel and subsidence of the histosol soil elevations over time. The surrounding land is currently managed in a natural state. USFS land surrounds the majority of the site.

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	mod	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: Emergent and aquatic bed classes are present

Wetland/Site #(s): Creation

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

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

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

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

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	.8M	---	---	---	---

Sources for documented use (e.g. observations, records): USFWS database, MNHP database shows site is within year-round range of grizzly bear, reports from FWP, USFWS, and FS on use.

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

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

Primary or critical habitat (**list species**) ☒ D ☐ S Western toad (S2)
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☐ S _____
No usable habitat ☐ S

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

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

Sources for documented use (e.g. observations, records): MNHP and documented breeding on site by MDT and USFS personnel.

14C. GENERAL WILDLIFE HABITAT RATING

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

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

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

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

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

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

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

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	---	.9H	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: Observed waterfowl and numerous wildlife tracks and scat (ungulates)

Wetland/Site #(s): Creation

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

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

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

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

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

Duration of Surface Water in AA	☒ **Permanent / Perennial**						☐ **Seasonal / Intermittent**						☐ **Temporary / Ephemeral**					
Aquatic Hiding / Resting / Escape Cover	☐ **Optimal**		☒ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**		☐ **Optimal**		☐ **Adequate**		☐ **Poor**	
Thermal Cover: optimal / suboptimal	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**	**O**	**S**
FWP Tier I fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	.5M	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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

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

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

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☒ **YES**, add to score in **i** or **iia** 0.1 = .6 or ☐ **N0**

iii. Final Score and Rating: .6M **Comments:** An upwelling area is located adjacent to Coyote Creek in the north 1/3 of the site. Pumpkinseed and brook trout observed by MDT and monitoring crews in open water in 2019 and previous years.

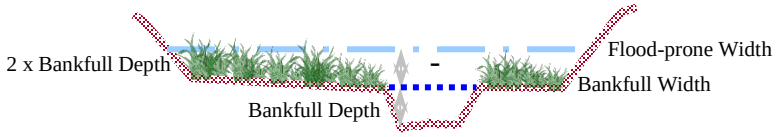
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

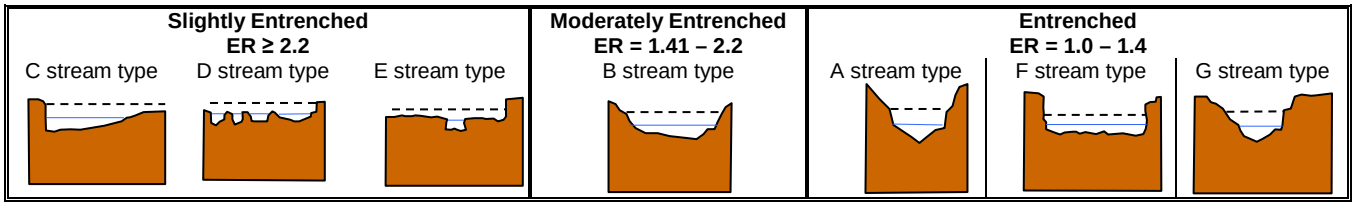
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

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

35 / 5 = 7

flood prone width / bankfull width = entrenchment ratio





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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☐ 25-75%	☒ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	---	.6M	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

ii. Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** Highway adjacent to the site.

Wetland/Site #(s): Creation

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

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

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

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

Comments: Extensive areas of inundation were observed in 2013-2019.

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

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

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

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

Comments: Wetlands adjacent to excavated cells are 100% vegetated with reed canarygrass and sedges. Depressions with no outlet.

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

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

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of ≥6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☒ Permanent / Perennial	**☐ Seasonal / Intermittent**	**☐ Temporary / Ephemeral**
☒ ≥ 65%	1H	---	---
☐ 35-64%	---	---	---
☐ < 35%	---	---	---

Comments: Perennial hydrologic regime in at least 10% of the AA. Species with high stability ratings are established on the perimiters of excavated areas.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ E/H	**☐ M**	**☐ L**
☐ E/H	---	---	---
☒ M	H	---	---
☐ L	---	---	---
☐ NA	---	---	---

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

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

Wetland/Site #(s): Creation

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

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

Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average ≥ 50-foot wide vegetated upland buffer around ≥ 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 1E ☐ **NO**

iv. Final Score and Rating: 1H **Comments:** High level of biological activity, veg component > 5 ac, perennial, has surface and subsurface outlets

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

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

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

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

Criteria	**Duration of Saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE* or *WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☒ **P/P**	☐ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	1H	---	---	---
☐ **Insufficient Data/Information**	---			

Comments: AA with perennial inundation/saturation to the surface.

14K. UNIQUENESS

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

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

Comments: Structural diversity may increase if shrubs expand.

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

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

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

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	**Known**	**Potential**
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Known recreation site

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Creation

Function & Value Variables	Rating – Actual Functional Points	Possible Functional Points	Functional Units: Actual Points x Estimated AA Acreage	Indicate the Four Most Prominent Functions with an Asterisk
A. Listed / Proposed T&E Species Habitat	mod 0.80	1.00	17.94	
B. MT Natural Heritage Program Species Habitat	high 0.90	1.00	20.18	
C. General Wildlife Habitat	high 0.90	1.00	20.18	*
D. General Fish Habitat	mod 0.60	1.00	13.45	
E. Flood Attenuation	mod 0.60	1.00	13.45	
F. Short and Long Term Surface Water Storage	high 1.00	1.00	22.43	*
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	22.43	*
H. Sediment / Shoreline Stabilization	high 1.00	1.00	22.43	
I. Production Export / Food Chain Support	high 1.00	1.00	22.43	
J. Groundwater Discharge / Recharge	high 1.00	1.00	22.43	*
K. Uniqueness	low 0.30	1.00	6.72	
L. Recreation / Education Potential (bonus point)	high 0.20		4.48	
Total Points	**9.3**	**11**	**208.55 Total Functional Units**	
Percent of Possible Score 85% (round to nearest whole number)				

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

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

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

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

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☒ **I** ☐ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Schrieber Meadows **2. MDT Project #:** NH 27(021) **3. Control #:** 1027

3. Evaluation Date: 7/29/2019 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Enhancement

6. Wetland Location(s): Township 27 N, Range 30 W, Section 11, 12, 13; Township ___N, Range ___E, Section _____

Approximate Stationing or Roadposts: Approximately Milepost 53.5

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

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

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

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 13.22 (measured, e.g. GPS)

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

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Slope	Emergent Wetland		Permanent / Perennial	10
Slope	Emergent Wetland		Seasonal / Intermittent	90

Comments: _____

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

12. GENERAL CONDITION OF AA

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

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

Comments (types of disturbance, intensity, season, etc.)**:** Disturbance due to recent road fill between the AA and Hwy 2

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: AA includes existing wetlands located between stream mitigation area and US Hwy 2. The wetland is dominated by reed canarygrass and meadow foxtail. Restoration efforts have resulted in increased inundation. Adjacent land use is forest and the highway. Highway 2 under construction during summer of 2019.

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: Emergent wetland dominated by reed canary grass and meadow foxtail with Carex spp. beginning to establish.

Wetland/Site #(s): Enhancement

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

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

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

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

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	.8M	---	---	---	---

Sources for documented use (e.g. observations, records): USFWS database, MNHP database shows site is within year-round range of grizzly bear, reports of use from FWP, FS, and USFWS.

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

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

Primary or critical habitat (**list species**) ☒ D ☐ S Western toad (S2)
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☐ S _____
No usable habitat ☐ S

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

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

Sources for documented use (e.g. observations, records): MNHP and documented breeding on site by MDT and USFS personnel. Great Blue Heron (S3) observed on site.

14C. GENERAL WILDLIFE HABITAT RATING

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

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

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

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

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

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

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

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	---	.9H	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: Substantial wildlife use within the AA; however there is moderate traffic use during the day adjacent to the site on the northeast side.

Wetland/Site #(s): Enhancement

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

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

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

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

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

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

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

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

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

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

iii. Final Score and Rating: _ **Comments:** No fish habitat within the enhancement AA.

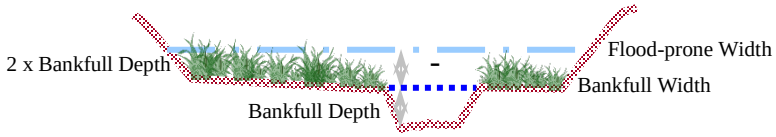
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

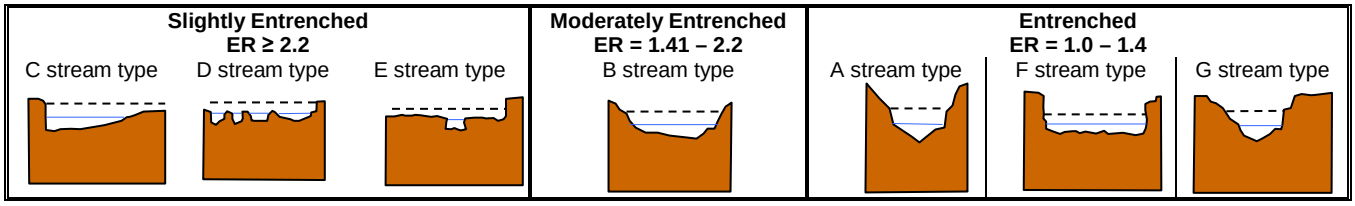
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

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

35 / 5 = 7

flood prone width / bankfull width = entrenchment ratio





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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☐ 25-75%	☒ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	---	.6M	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

ii. Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** AA inundated from restricted outlet, minimal trees or shrubs present.

Wetland/Site #(s): Enhancement

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

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

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

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

Comments: AA includes constructed wetland depressions and adjacent wetland habitat that has been created by the Inundation due to restoration efforts including: plugging of existing ditches and channels and creation of a new stream channel.

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

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

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

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

Comments: AA nearly 100% vegetated with reed canarygrass, presence of flooding/ponding, restricted outlet.

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

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

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of ≥6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☒ **Permanent / Perennial**	☐ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☒ **≥ 65%**	1H	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: Open water areas subject to wave action, well vegetated with reed canarygrass

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ **E/H**	☐ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	H	---	---

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

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

Wetland/Site #(s): Enhancement

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

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

Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average ≥ 50-foot wide vegetated upland buffer around ≥ 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 1E ☐ **NO**

iv. Final Score and Rating: 1H **Comments:** No fish habitat, vegetation component >5 ac, high biological activity, perennial hydrology with restricted outlet.

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

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

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

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

Criteria	Duration of Saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE* or *WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM* ☒ P/P	☐ S/I	☐ T	☐ None
☒ **Groundwater Discharge or Recharge**	1H	---	---	---
☐ **Insufficient Data/Information**	---			

Comments: AA with shallow water table and surface water

14K. UNIQUENESS

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

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

Comments: AA with common relative abundance and moderate disturbance due to adjacent road.

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

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

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

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Known recreation at site.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Enhancement

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	mod 0.80	1.00	10.57	
B. MT Natural Heritage Program Species Habitat	high 0.90	1.00	11.89	*
C. General Wildlife Habitat	high 0.90	1.00	11.89	
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	mod 0.60	1.00	7.93	
F. Short and Long Term Surface Water Storage	high 1.00	1.00	13.22	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	13.22	*
H. Sediment / Shoreline Stabilization	high 1.00	1.00	13.22	*
I. Production Export / Food Chain Support	high 1.00	1.00	13.22	*
J. Groundwater Discharge / Recharge	high 1.00	1.00	13.22	
K. Uniqueness	low 0.30	1.00	3.96	
L. Recreation / Education Potential (bonus point)	high 0.20		2.64	
Total Points	**8.7**	**10**	**115.01 Total Functional Units**	
Percent of Possible Score 87% (round to nearest whole number)				

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

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

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

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

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☒ **I** ☐ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Schrieber Meadows **2. MDT Project #:** NH 27(021) **3. Control #:** 1027

3. Evaluation Date: 7/29/2019 **4. Evaluator(s):** M. Traxler, T. Traxler **5. Wetland/Site #(s):** Restoration

6. Wetland Location(s): Township 27 N, Range 30 W, Section 11, 12, 13; Township ___N, Range ___E, Section _____

Approximate Stationing or Roadposts: Approximately Milepost 53.5

Watershed: 1 - Kootenai **County:** _ Lincoln _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

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

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

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 3.46 (measured, e.g. GPS)

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

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Depressional	Aquatic Bed	Excavated	Permanent / Perennial	35
Depressional	Emergent Wetland	Excavated	Seasonal / Intermittent	65

Comments: Mix of aquatic bed and emergent wetland

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

12. GENERAL CONDITION OF AA

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

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

Comments (types of disturbance, intensity, season, etc.)**:** The adjacent Creation AA encompasses the excavated depressions constructed in 2007 and 2011. Highway 2, under construction in 2019, is close to the AA.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Cirsium arvense, Leucanthemum vulgare, Hieracium aurantiacum

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: The AA includes pre-existing wetlands identified within the project area that were modified by excavation to increase the groundwater availability and provide a greater diversity of wetland habitat and hydrophytes.

13. STRUCTURAL DIVERSITY (Based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes]; see #10 above.)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	mod	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: Emergent and aquatic bed

Wetland/Site #(s): Restoration

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

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

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

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

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	.8M	---	---	---	---

Sources for documented use (e.g. observations, records): USFWS database, MNHP database shows site is within year-round range of grizzly bear, reports of use from FWP, FS, and USFWS.

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

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

Primary or critical habitat (**list species**) ☒ D ☐ S Western toad (S2)
Secondary habitat (**list species**) ☐ D ☐ S _____
Incidental habitat (**list species**) ☐ D ☐ S _____
No usable habitat ☐ S

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

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

Sources for documented use (e.g. observations, records): MNHP and documented breeding on site by MDT and USFS personnel

14C. GENERAL WILDLIFE HABITAT RATING

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

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

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

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

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

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

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

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
☒ **Substantial**	1E	---	---	---
☐ **Moderate**	---	---	---	---
☐ **Minimal**	---	---	---	---

Comments: Good habitat diversity with substantial wildlife evidence.

Wetland/Site #(s): Restoration

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

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

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

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

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

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

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

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

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

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

iii. Final Score and Rating: _ **Comments:** No fish habitat identified within restoration AA

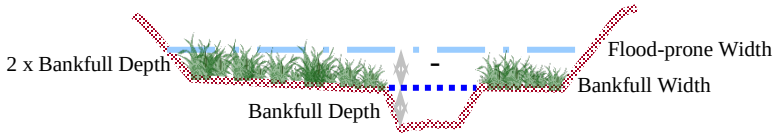
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

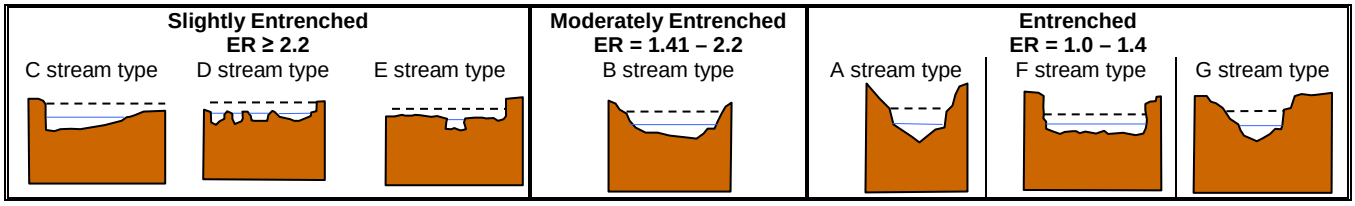
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

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

35 / 5 = 7

flood prone width / bankfull width = entrenchment ratio





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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	☒ Slightly Entrenched C, D, E stream types			☐ Moderately Entrenched B stream type			☐ Entrenched A, F, G stream types		
Percent of Flooded Wetland Classified as Forested and/or Scrub/Shrub	☐ 75%	☐ 25-75%	☒ <25%	☐ 75%	☐ 25-75%	☐ <25%	☐ 75%	☐ 25-75%	☐ <25%
AA contains **no outlet or restricted outlet**	---	---	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	.5M	---	---	---	---	---	---

ii. Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** All wetland cells subject to flooding from Coyote Creek

Wetland/Site #(s): Restoration

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

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

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

Estimated Maximum Acre Feet of Water Contained in Wetlands within the AA that are Subject to Periodic Flooding or Ponding	☐ **>5 acre feet**			☒ **1.1 to 5 acre feet**			☐ **≤1 acre foot**		
Duration of Surface Water at Wetlands within the AA	☐ **P/P**	☐ **S/I**	☐ **T/E**	☒ **P/P**	☐ **S/I**	☐ **T/E**	☐ **P/P**	☐ **S/I**	☐ **T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	---	---	---	.8H	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

Comments: AA with evidence of frequent flooding.

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

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

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

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**				**Waterbody is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% Cover of Wetland Vegetation in AA	☐ **≥ 70%**		☒ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of Flooding / Ponding in AA	☐ **Yes**	☐ **No**	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	---	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	.6M	---	---	---	---	---

Comments: AA receives periodic overflow from Coyote Creek

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

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

% Cover of Wetland Streambank or Shoreline by Species with Stability Ratings of ≥6 (see Appendix F).	**Duration of Surface Water Adjacent to Rooted Vegetation**		
	☒ **Permanent / Perennial**	☐ **Seasonal / Intermittent**	☐ **Temporary / Ephemeral**
☒ **≥ 65%**	1H	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: Vegetation has filled in around excavated areas

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ **E/H**	☐ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	H	---	---

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

A	☐ **Vegetated Component >5 acres**						☒ **Vegetated Component 1-5 acres**						☐ **Vegetated Component <1 acre**					
B	☐ **High**		☐ **Moderate**		☐ **Low**		☒ **High**		☐ **Moderate**		☐ **Low**		☐ **High**		☐ **Moderate**		☐ **Low**	
C	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
P/P	---	---	---	---	---	---	.9H	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Restoration

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

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

Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average ≥ 50-foot wide vegetated upland buffer around ≥ 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 1E ☐ **NO**

iv. Final Score and Rating: 1H **Comments:** No fish habitat, high biological activity, well-vegetated buffer, unrestricted outlet to creek.

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

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

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

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

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☒ **P/P**	☐ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	1H	---	---	---
☐ **Insufficient Data/Information**	---			

Comments: Perennial spring located near AA

14K. UNIQUENESS

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

Replacement Potential	**AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland** OR **plant association listed as "S1" by the MTNHP**			**AA does not contain previously cited rare types** AND **structural diversity (#13) is high** OR **contains plant association listed as "S2" by the MTNHP**			**AA does not contain previously cited rare types** OR **associations** AND **structural diversity (#13) is low-moderate**		
Estimated Relative Abundance (#11)	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☒ Common	☐ Abundant
☒ **Low Disturbance** at AA (#12i)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: Site was moderately disturbed before a after construction but has low disturbance at this time.

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

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

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

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	---

Comments: Known recreation site.

15. GENERAL SITE NOTES: _____

Wetland/Site #(s): Restoration

Function & Value Variables	Rating – Actual Functional Points	Possible Functional Points	Functional Units: Actual Points x Estimated AA Acreage	Indicate the Four Most Prominent Functions with an Asterisk
A. Listed / Proposed T&E Species Habitat	mod 0.80	1.00	2.76	
B. MT Natural Heritage Program Species Habitat	high 0.90	1.00	3.11	*
C. General Wildlife Habitat	exc 1.00	1.00	3.46	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	mod 0.50	1.00	1.73	
F. Short and Long Term Surface Water Storage	high 0.80	1.00	2.76	
G. Sediment / Nutrient / Toxicant Removal	mod 0.60	1.00	2.07	
H. Sediment / Shoreline Stabilization	high 1.00	1.00	3.46	*
I. Production Export / Food Chain Support	high 1.00	1.00	3.46	
J. Groundwater Discharge / Recharge	high 1.00	1.00	3.46	*
K. Uniqueness	mod 0.40	1.00	1.38	
L. Recreation / Education Potential (bonus point)	high 0.20		0.69	
Total Points	**8.2**	**10**	**28.37 Total Functional Units**	
Percent of Possible Score 82% (round to nearest whole number)				

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

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

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

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

OVERALL ANALYSIS AREA (AA) RATING: Check the appropriate category based on the criteria outlined above.

☒ **I** ☐ **II** ☐ **III** ☐ **IV**

APPENDIX C
PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

Schrieber Meadows: Photo Point Photographs

Photo Point 1 – Panorama; Location: SW Corner of site; Bearing 270 degrees; Year 2012

Photo Point 1 – Panorama; Location: SW Corner of site; Bearing 270 degrees; Year 2019

Photo Point 3; Location: Cell 2 (Constructed in 2007); Bearing 90 degrees; Year 2010

Photo Point 3; Location: Cell 2 (Constructed in 2007); Bearing 90 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 4; Location: Cell 2 (Constructed in 2007); Bearing 180 degrees; Year 2010

Photo Point 4; Location: Cell 2 (Constructed in 2007); Bearing 180 degrees; Year 2019

Photo Point 5; Location: Cell 2 (Constructed in 2007); Bearing 300 degrees; Year 2010

Photo Point 5; Location: Cell 2 (Constructed in 2007); Bearing 300 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 6; Location: Cell 2 (Constructed in 2007); Bearing 40 degrees; Year 2010

Photo Point 6; Location: Cell 2 (Constructed in 2007); Bearing 40 degrees; Year 2019

Photo Point 7; Location: Lower Reach of merged Coyote/Schrieber Creek; Bearing 0 degrees; Year 2012

Photo Point 7; Location: Lower Reach of merged Coyote/Schrieber Creek; Bearing 0 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 10; Location: Cell 3; Bearing 0 degrees; Year 2010

Photo Point 10; Location: Cell 3; Bearing 0 degrees; Year 2019

Photo Point 11; Location: Cell 2B; Bearing 190 degrees; Year 2012

Photo Point 11; Location: Cell 2B; Bearing 190 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 12; Location: Cell 1 (Constructed in 2011); Bearing 180 degrees; Year 2012

Photo Point 12; Location: Cell 1 (Constructed in 2011); Bearing 180 degrees; Year 2019

Photo Point 13; Cell 3A (Constructed in 2011); Bearing 280 degrees; Year 2012

Photo Point 13; Cell 3A (Constructed in 2011); Bearing 280 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 14; Location: Cell 4C (Constructed in 2011); Bearing 230 degrees; Year 2012

Photo Point 14; Location: Cell 4C (Constructed in 2011); Bearing 230 degrees; Year 2019

Photo Point 15; Location: Cell 5A (Constructed in2011); Bearing 180 degrees; Year 2012

Photo Point 15; Location: Cell 5A (Constructed in2011); Bearing 180 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 16; Cell 6 (Constructed in 2011); Bearing 70 degrees; Year 2012

Photo Point 16; Cell 6 (Constructed in 2011); Bearing 70 degrees; Year 2019

Photo Point 17; Location: Cell 6 (Constructed in 2011); Bearing 270 degrees; Year 2012

Photo Point 17; Location: Cell 6 (Constructed in 2011); Bearing 270 degrees; Year 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 2 Location: Cell 7 (Created in 2007)
Bearing: 150 degrees Year: 2010

Photo Point 2 Location: Cell 7 (Created in 2007)
Bearing: 150 degrees Year: 2019

Photo Point 8 Location: Cell 3 (Constructed in 2007)
Bearing: 190 degrees Year: 2010

Photo Point 8 Location: Cell 3 (Constructed in 2007)
Bearing: 190 degrees Year: 2019

Photo Point 9 Location: Cell 3
Bearing: 280 degrees Year: 2010

Photo Point 9 Location: Cell 3
Bearing: 280 degrees Year: 2019

Schrieber Meadows: Photo Point Photographs

Photo Point 16 Location: Cell 5A
Bearing: 290 degrees Year: 2010

Photo Point 16 Location: Cell 5A
Bearing: 290 degrees Year: 2019

Photo Point 18 Location: Cell 3 (Constructed 2007)
Bearing: 90 degrees Year: 2012

Photo Point 18 Location: Cell 3 (Constructed 2007)
Bearing: 90 degrees Year: 2019

Photo Point 19 Location: West Boundary
Bearing: 10 degrees Year: 2012

Photo Point 19 Location: West Boundary
Bearing: 10 degrees Year: 2019

Schrieber Meadows: Photo Point Photographs

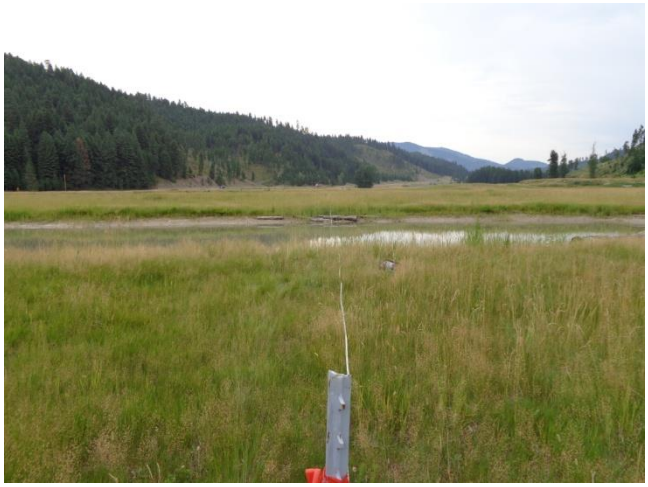
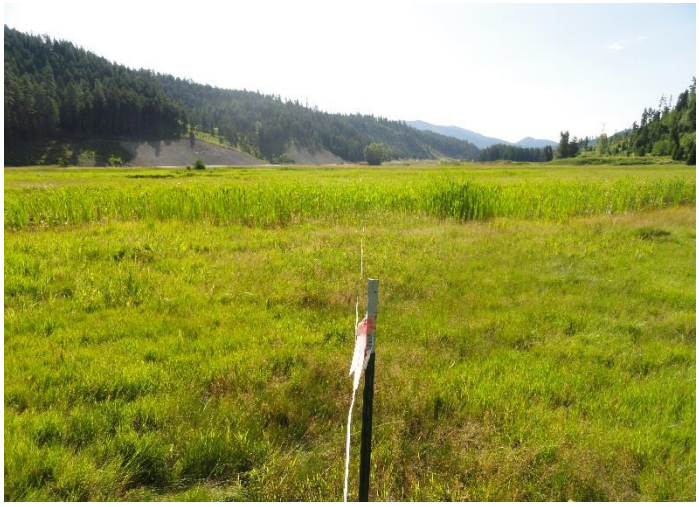
Photo Point 19 Location: West Boundary
Bearing: 100 degrees Year: 2012

Photo Point 19 Location: West Boundary
Bearing: 100 degrees Year: 2019

Photo Point 20 Location: Schrieber Creek
Bearing: 100 degrees Year: 2012

Photo Point 20 Location: Schrieber Creek
Bearing: 100 degrees Year: 2019

Schrieber Meadows: Vegetation Transect Photographs

	
Transect 1: Start Bearing: 115 degrees Location: T-1 Year: 2010	Transect 1: Start Bearing: 115 degrees Location: T-1 Year: 2019
	
Transect 1: End Bearing: 295 degrees Location: T-1 Year: 2010	Transect 1: End Bearing: 295 degrees Location: T-1 Year: 2019
	
Transect 2: Start Bearing: 100 degrees Location: T-2 Year: 2013	Transect 2: Start Bearing: 100 degrees Location: T-2 Year: 2019

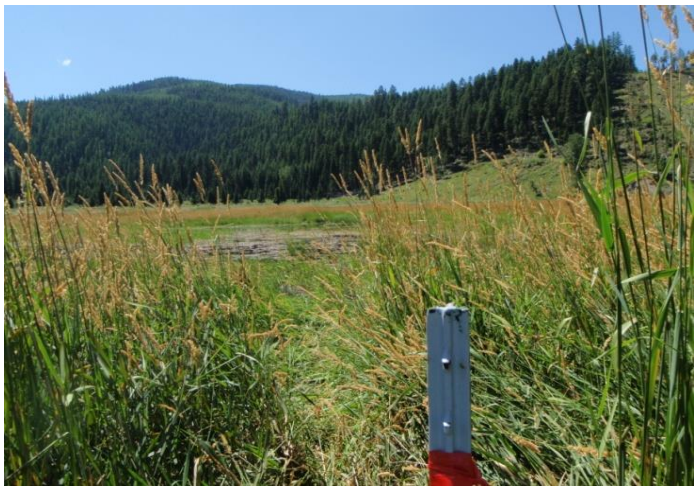
Schrieber Meadows: Vegetation Transect Photographs

Transect 2: End
Bearing 280: degrees
Location: T-2
Year: 2013

Transect 2: End
Bearing 280: degrees
Location: T-2
Year: 2019

Transect 3: Start
Bearing: 45 degrees
Location: T-3
Year: 2012

Transect 3: Start
Bearing: 45 degrees
Location: T-3
Year: 2019



Transect 3: End
Bearing: 225 degrees
Location: T-3
Year: 2012

Transect 3: End
Bearing: 225 degrees
Location: T-3
Year: 2019

Schrieber Meadows: Data Point Photographs

Data Point: DP-1W Location: Veg Com 3
Year: 2019

Data Point: DP-1U Location: Vg Com 9
Year: 2019

Data Point: DP-2W Location: Veg Com 3
Year: 2019

Data Point: DP-2U Location: Vg Com 9
Year: 2019

Data Point: DP-3W Location: Veg Com 5
Year: 2019

Data Point: DP-3U Location: Vg Com 9
Year: 2019

Schrieber Meadows: Cross-Section Photographs

Cross-Section: XS-1 Location: Upper Coyote Creek
Bearing: 280 degrees Year: 2012

Cross-Section: XS-1 Location: Upper Coyote Creek
Bearing: 280 degrees Year: 2019

Cross-Section: XS-2 Location: Upper Coyote Creek
Bearing: 320 degrees Year: 2012

Cross-Section: XS-2 Location: Upper Coyote Creek
Bearing: 320 degrees Year: 2019

Cross-Section: XS-3 Location: Coyote Creek Spring Area
Bearing: 320 degrees Year: 2012

Cross-Section: XS-3 Location: Coyote Creek Spring Area
Bearing: 320 degrees Year: 2019

Schrieber Meadows: Cross-Section Photographs

Cross-Section: XS-4 Location: Middle Coyote Creek
Bearing: 290 degrees Year: 2012

Cross-Section: XS-4 Location: Middle Coyote Creek
Bearing: 290 degrees Year: 2019

Cross-Section: XS-5 Location: Middle Coyote Creek
Bearing: 150 degrees Year: 2012

Cross-Section: XS-5 Location: Middle Coyote Creek
Bearing: 150 degrees Year: 2019

Cross-Section: XS-6 Location: Perennial Spring Creek
Bearing: 90 degrees Year: 2012

Cross-Section: XS-6 Location: Perennial Spring Creek
Bearing: 90 degrees Year: 2019

Schrieber Meadows: Cross-Section Photographs

Cross-Section: XS-7 Location: Middle Coyote Creek
Bearing: 90 degrees Year: 2012

Cross-Section: XS-7 Location: Middle Coyote Creek
Bearing: 220 degrees Year: 2019

Cross-Section: XS-8 Location: Middle Coyote Creek
Bearing: 170 degrees Year: 2012

Cross-Section: XS-8 Location: Middle Coyote Creek
Bearing: 170 degrees Year: 2019

Cross-Section: XS-9 Location: Coyote/Schrieber Creeks
Bearing: 130 degrees Year: 2012

Cross-Section: XS-9 Location: Coyote/Schrieber Creeks
Bearing: 130 degrees Year: 2019

Schrieber Meadows: Cross-Section Photographs

Cross-Section: XS-10 Location: Coyote/Schrieber Creeks
Bearing: 140 degrees Year: 2012

Cross-Section: XS-10 Location: Coyote/Schrieber Creeks
Bearing: 270 degrees Year: 2019

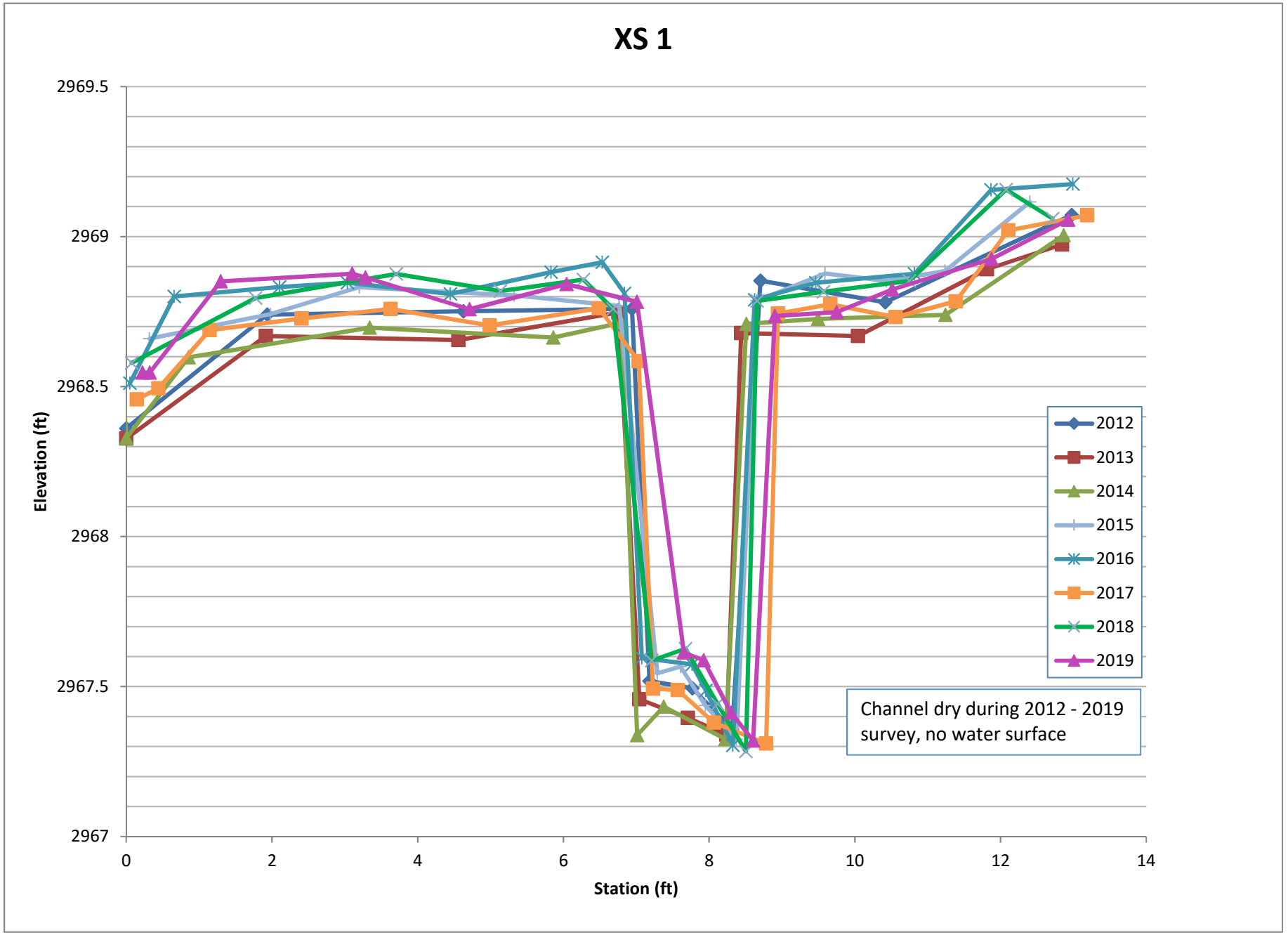
Cross-Section: XS-11 Location: Coyote/Schrieber Creeks
Bearing: 100 degrees Year: 2012

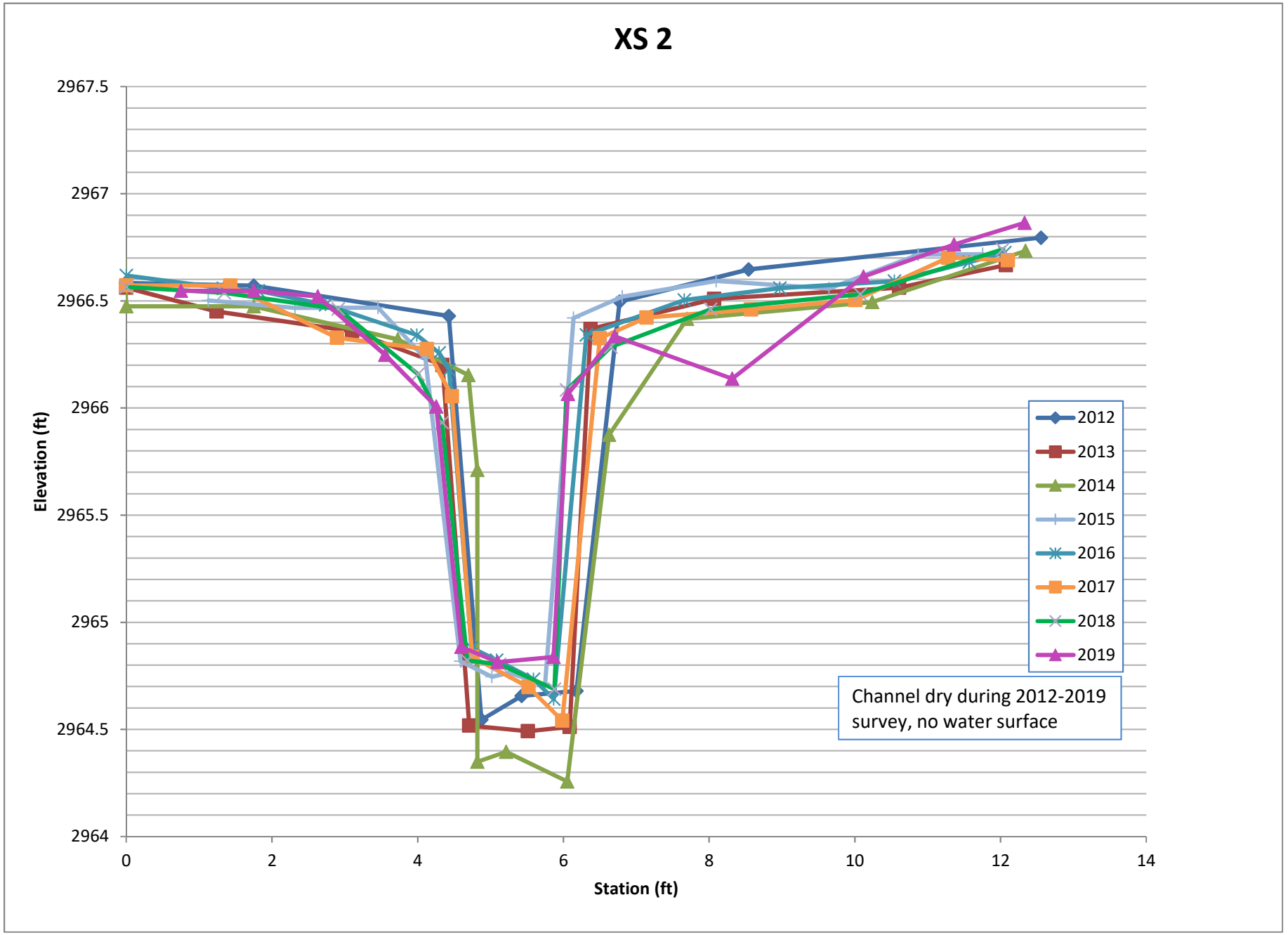
Cross-Section: XS-11 Location: Coyote/Schrieber Creeks
Bearing: 100 degrees Year: 2019

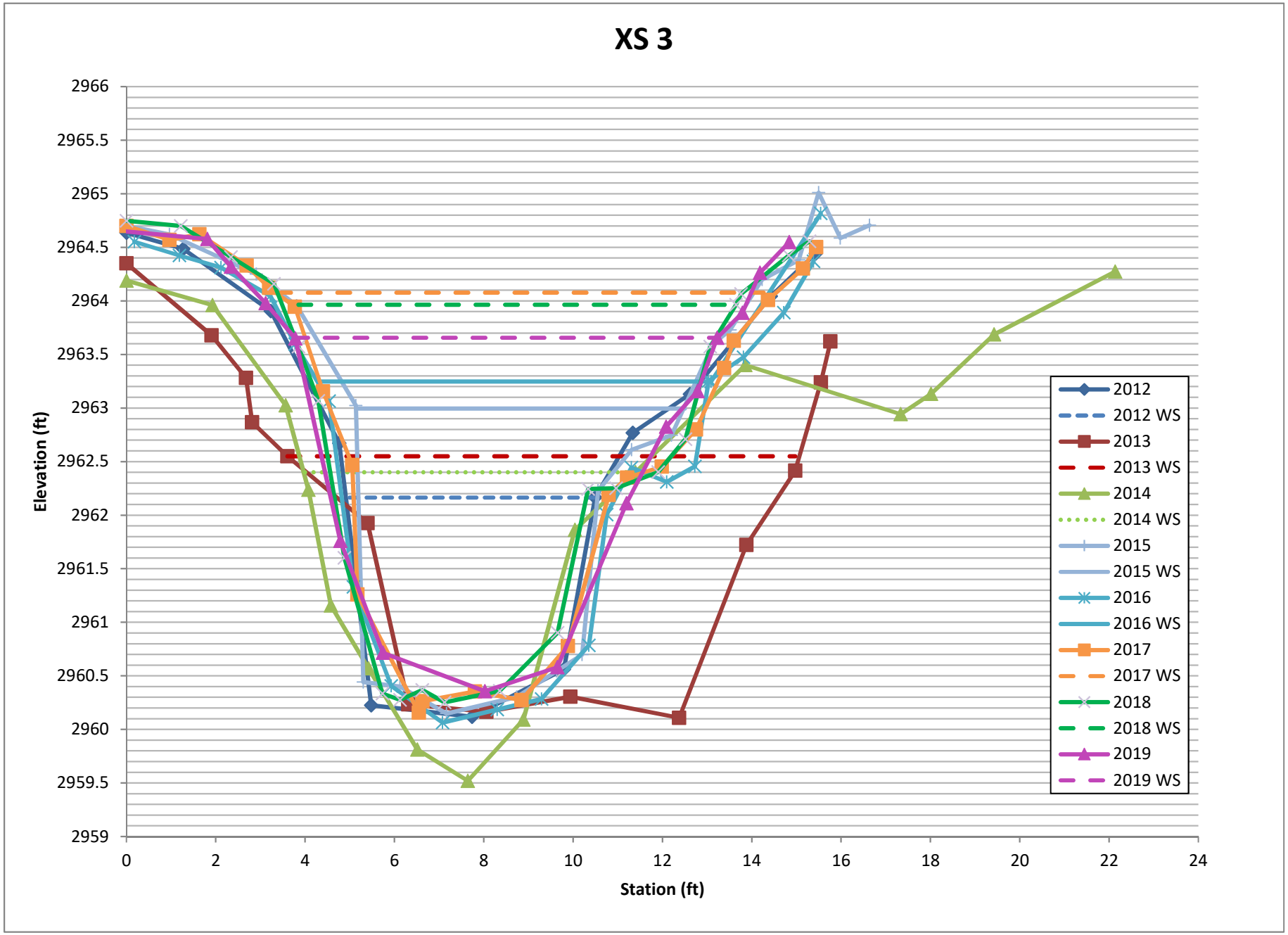
APPENDIX D

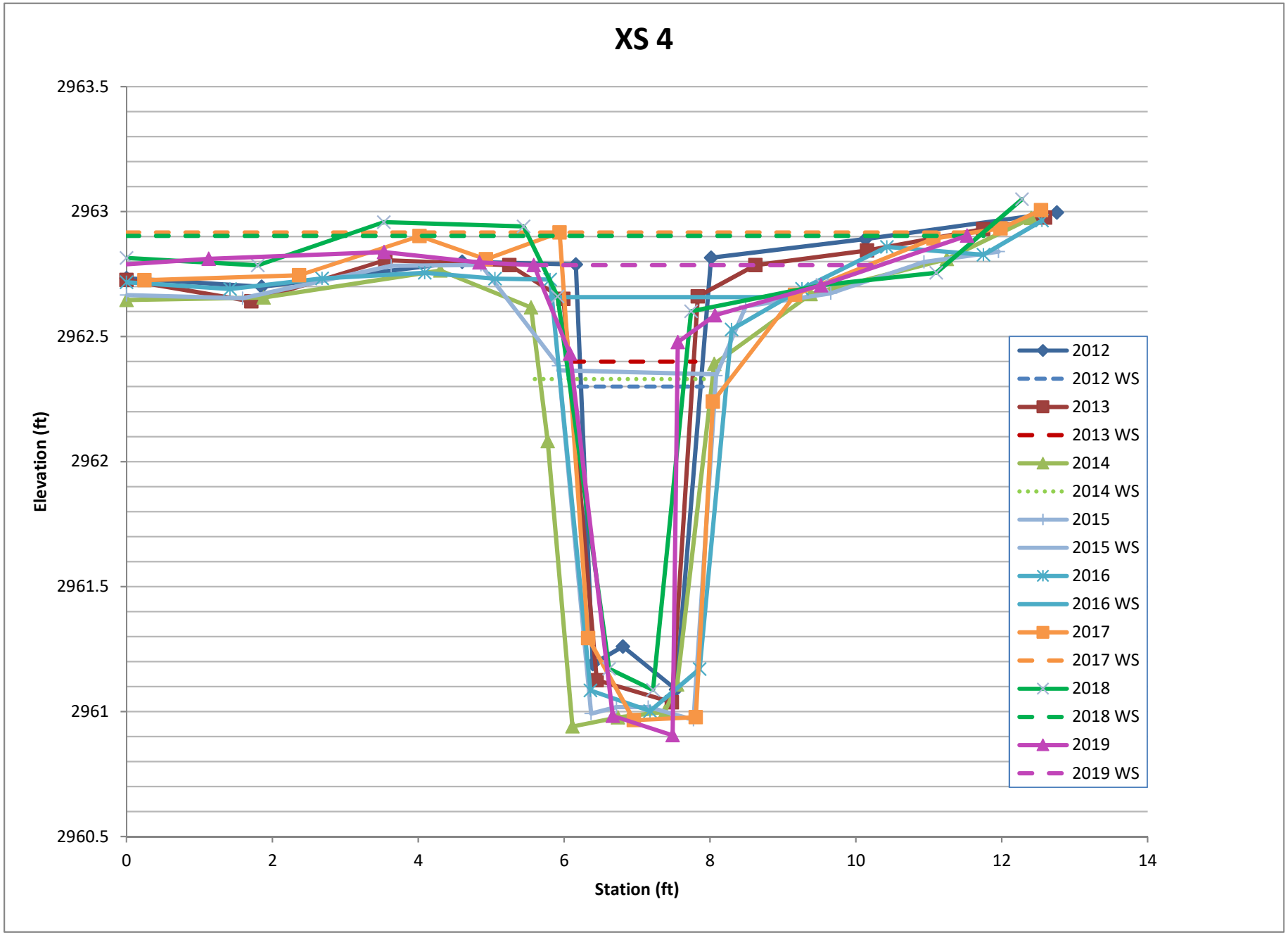
Surveyed Stream Cross Sections

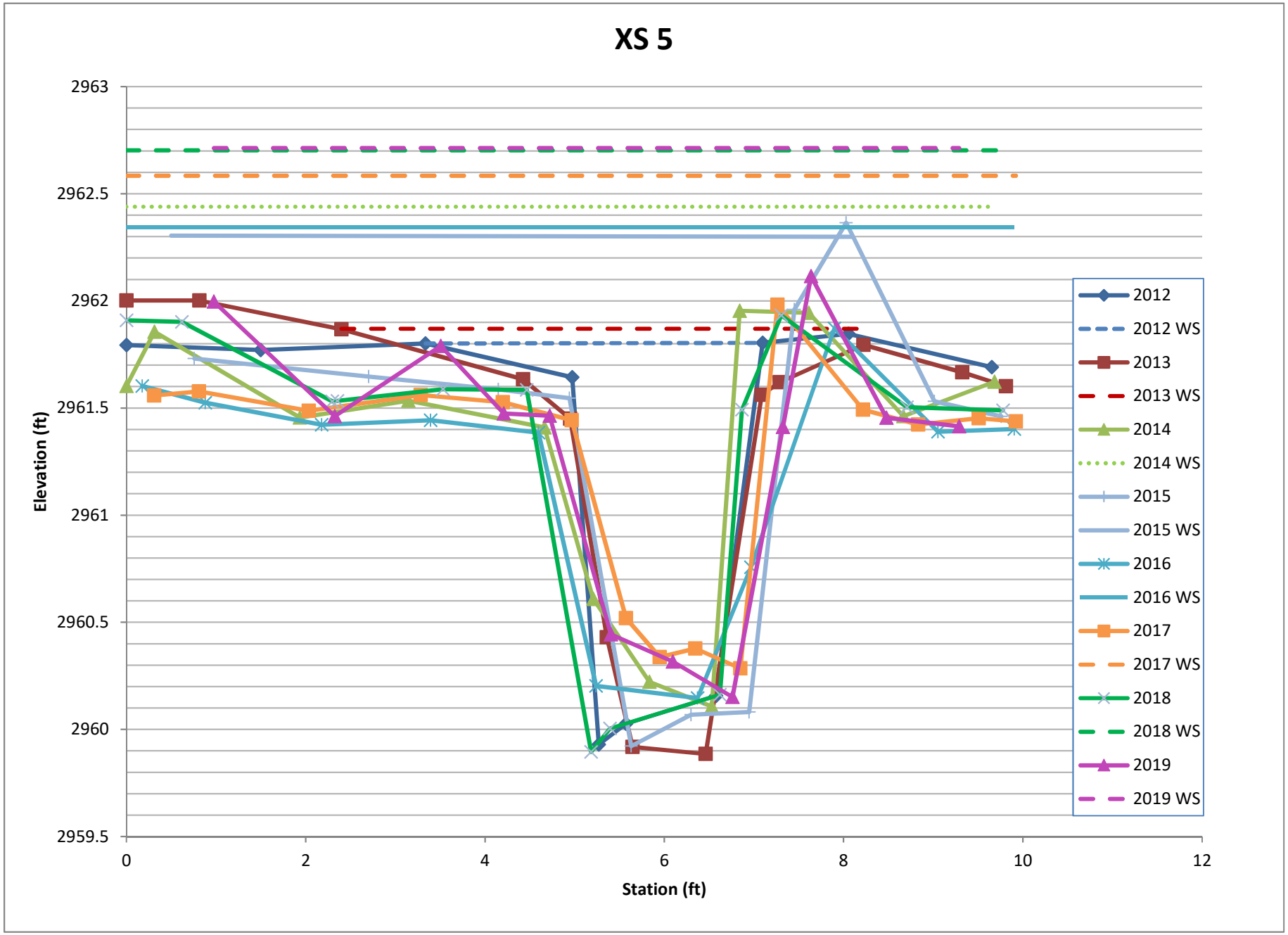
MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

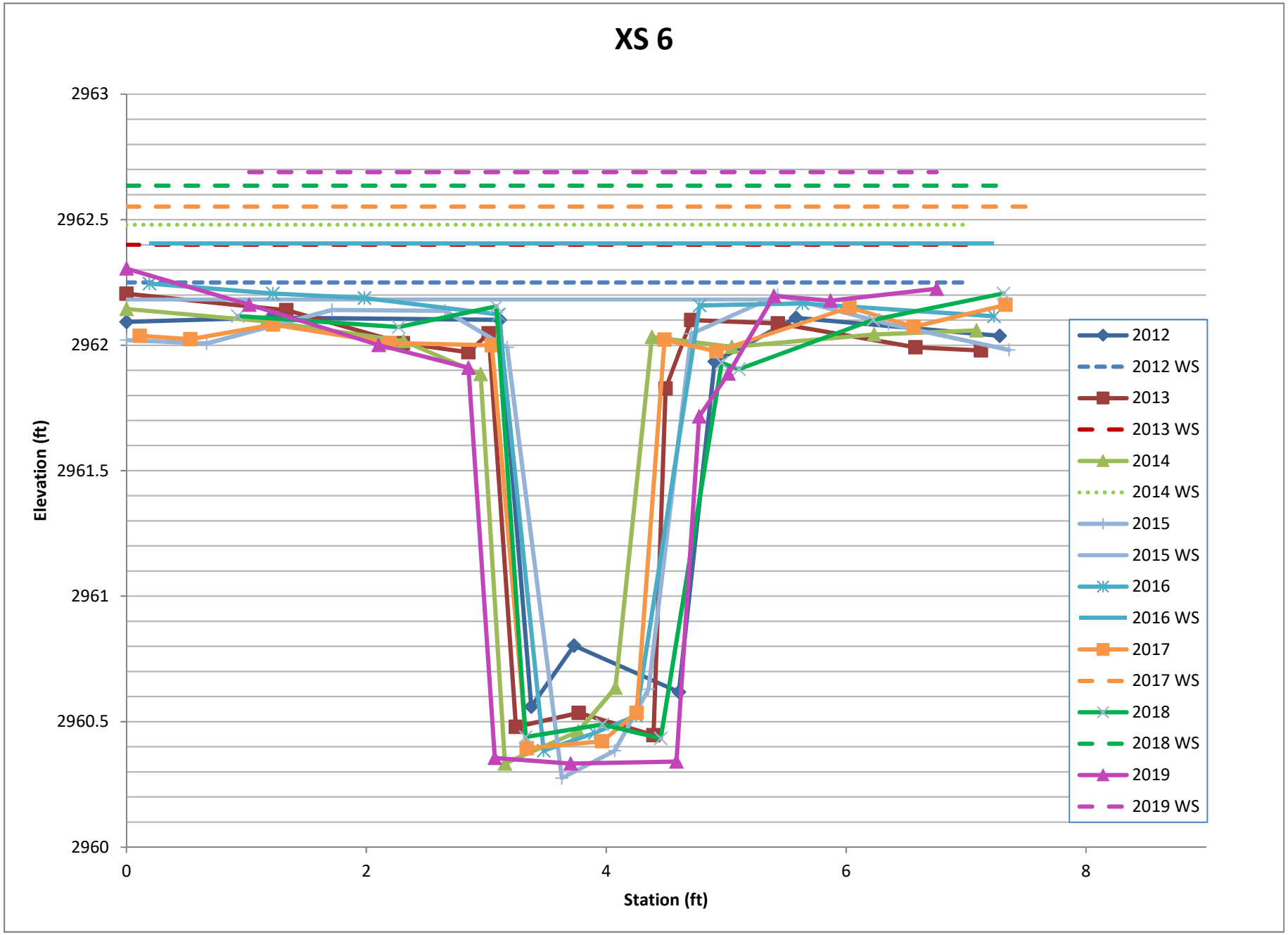

XS 1
2969.5
2969
2968.5
2968
2967.5
2967
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2013
2014
2015
2016
2017
2018
2019
Channel dry during 2012 - 2019 survey, no water surface

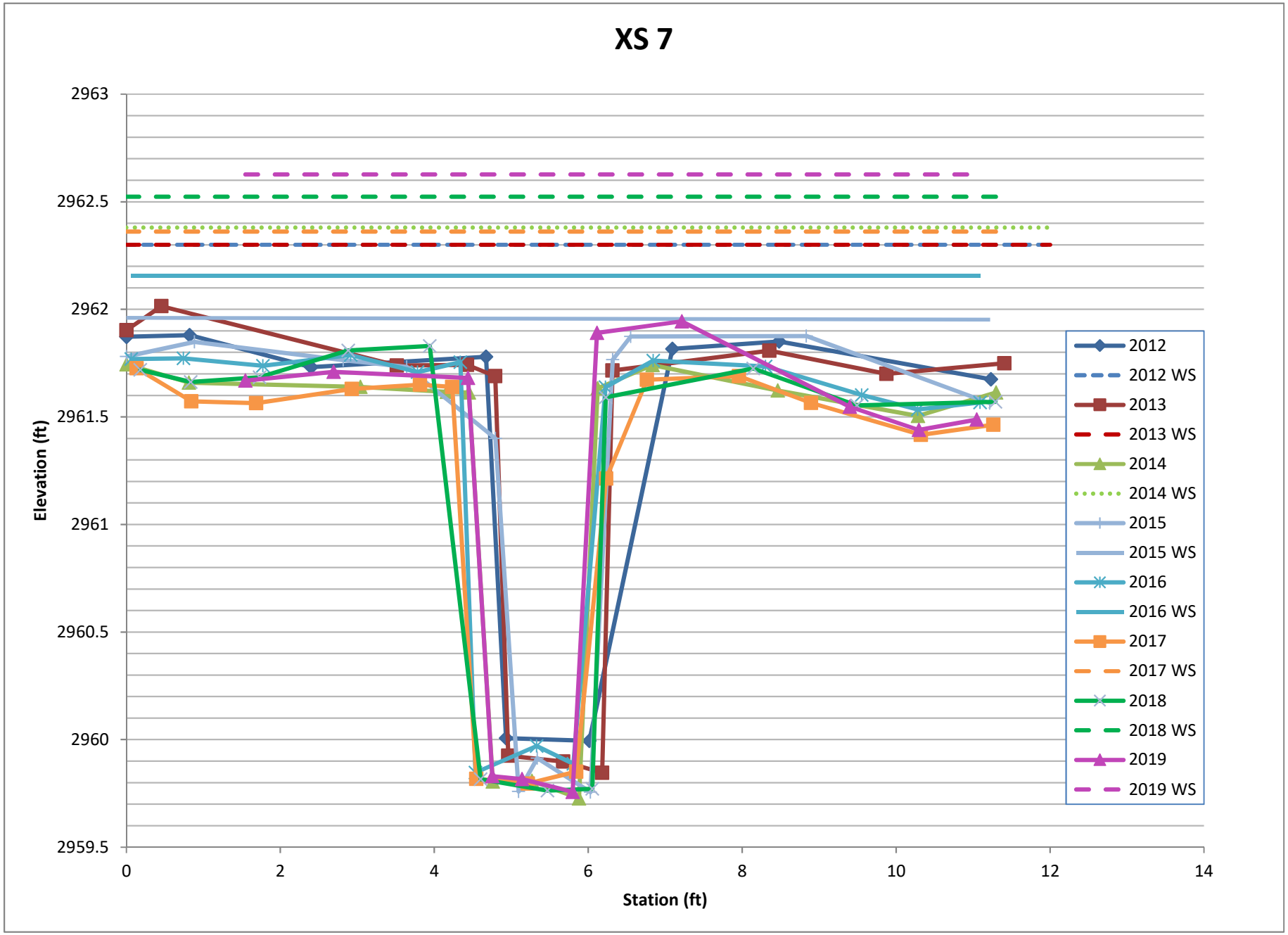

XS 2
2967.5
2967
2966.5
2966
2965.5
2965
2964.5
2964
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2013
2014
2015
2016
2017
2018
2019
Channel dry during 2012-2019 survey, no water surface

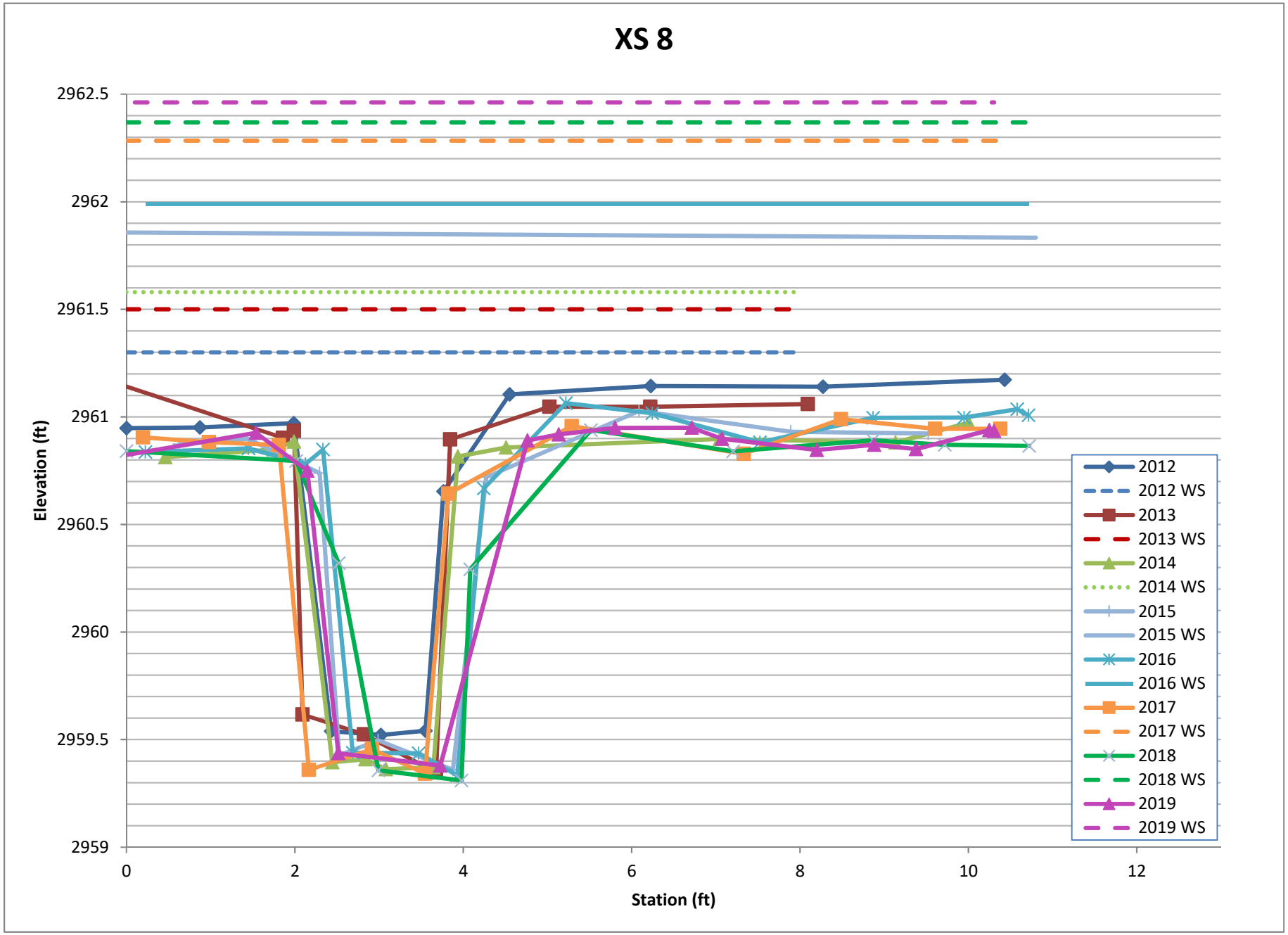

XS 3
Elevation (ft)
Station (ft)
2966
2965.5
2965
2964.5
2964
2963.5
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
0
2
4
6
8
10
12
14
16
18
20
22
24
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS

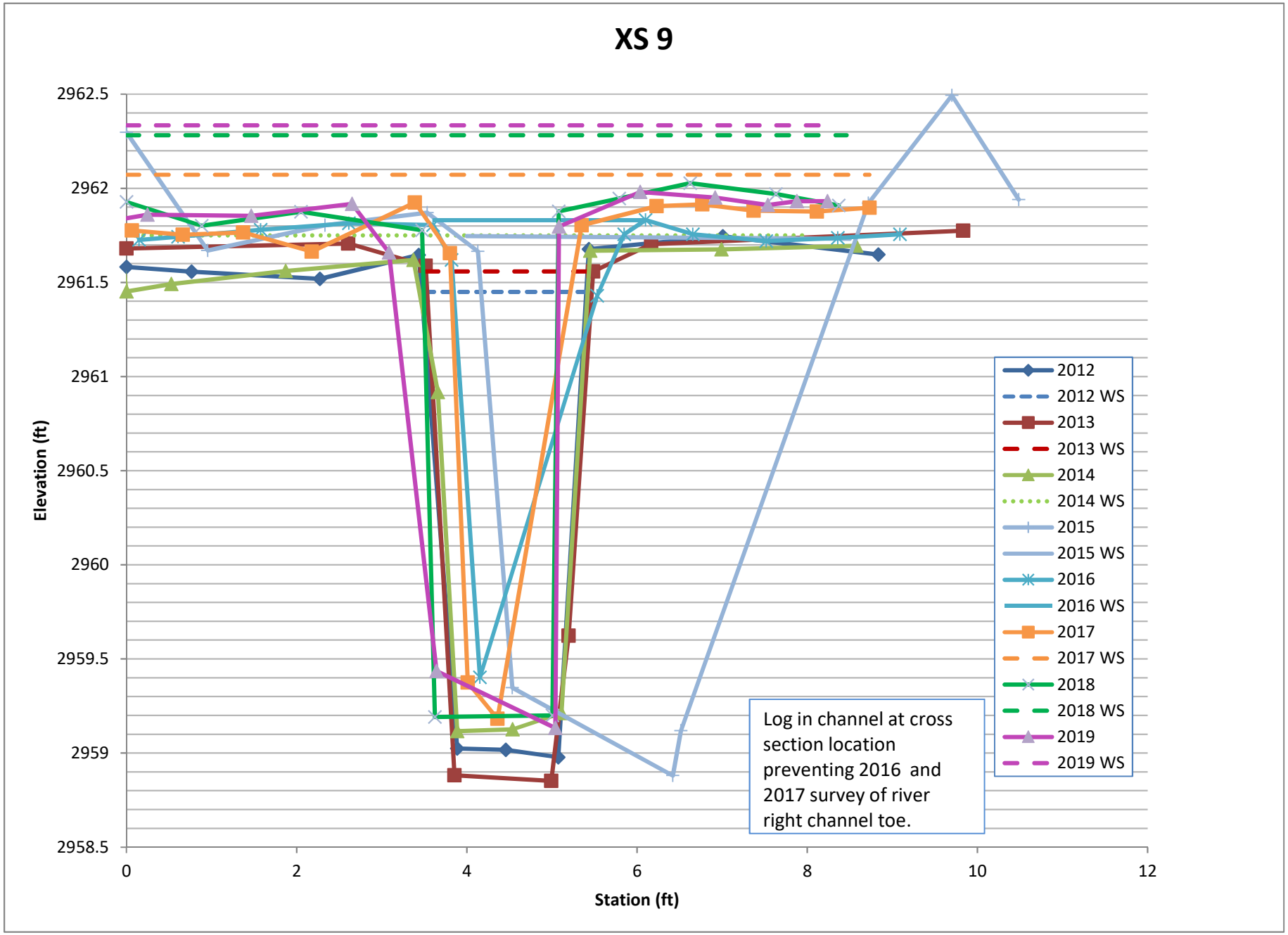

XS 4
2963.5
2963
2962.5
2962
2961.5
2961
2960.5
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS

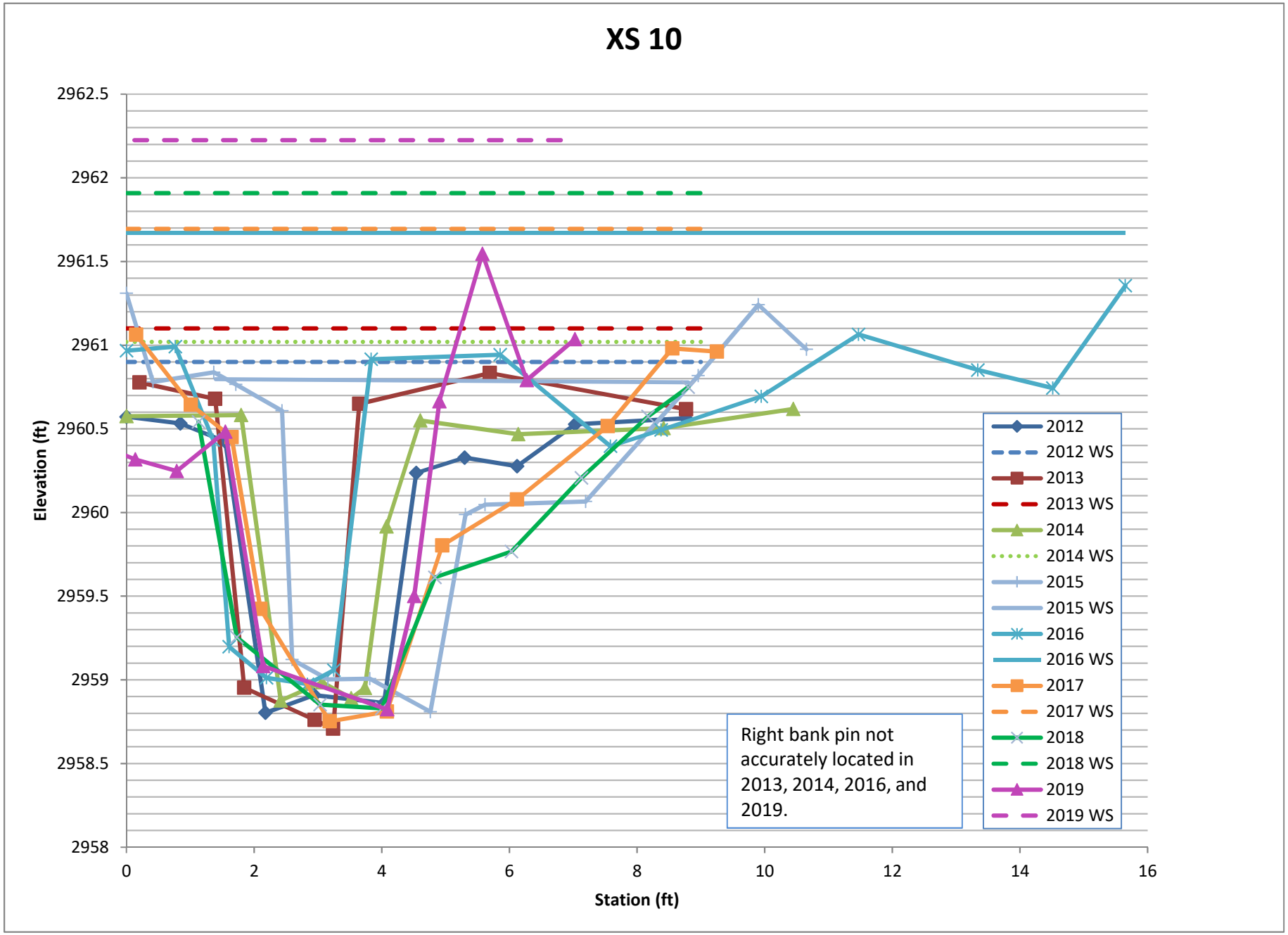

XS 5
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
Elevation (ft)
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS

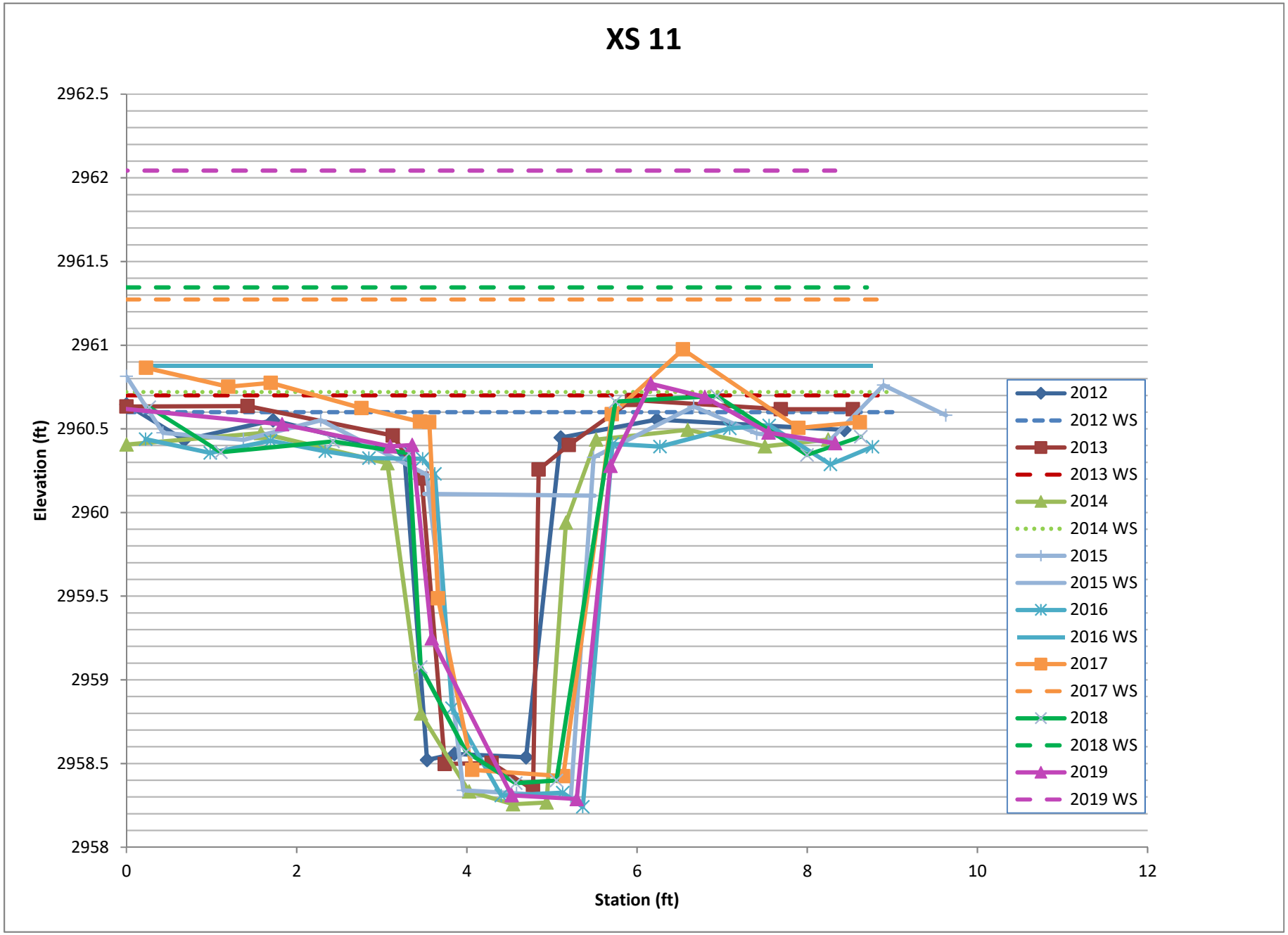

XS 6
2963
2962.5
2962
2961.5
2961
2960.5
2960
Elevation (ft)
0
2
4
6
8
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


XS 7
Elevation (ft)
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
0
2
4
6
8
10
12
14
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


XS 8
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
Elevation (ft)
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


XS 9
Elevation (ft)
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
Log in channel at cross section location preventing 2016 and 2017 survey of river right channel toe.


XS 10
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
2958
Elevation (ft)
0
2
4
6
8
10
12
14
16
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
Right bank pin not accurately located in 2013, 2014, 2016, and 2019.


XS 11
Elevation (ft)
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
2958
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS