SCHRIEBER LAKE MITIGATION SITE

Project Overview

Watershed: Watershed #1 – Kootenai River Basin

Monitoring Year: 2020

Years Monitored: 6th year of monitoring

Corps Permit Number: NWO-2013-00874-MTM

Stream Protection Act (SPA) Authorization Number: MDT-R1-40-2013

Monitoring Conducted By: Confluence Consulting Inc.

Dates Monitoring Was Conducted: July 13-14, 2020

Purpose of the Approved Project:

The site was constructed to provide 13.4 acres of compensatory wetland mitigation credits and 36,741.85 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 provide upland buffers around all wetlands. The project restored 1,398 linear feet of the Coyote Creek channel and 2,987 linear feet of the Schrieber Creek channel.

Site Location:

Latitude: 48.106833 **Longitude:** –115.409964

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

Map Included: Yes

Mitigation Site Construction Started: Summer/2014 **Construction Ended:** Spring/2015

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

Activity: Weed Spraying **Date:** May 27-28, 2020

Specific recommendations for any additional corrective actions: Weed treatment will continue in 2021. Consider removal of beaver dam from Schrieber Lake outlet to reduce standing surface water across the site.

Anticipated Wetland Credit Acres: 13.40

Wetland Credit Acres Generated to Date: 17.76

Anticipated Stream Credits: 36,741.87

Stream Credits Generated to Date: 34,349.67

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 Lake 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
		SC[(a)]	CC[(b)]	
Wetland Characteristics	The three parameter criteria are met for hydrology, vegetation, and soils as outlined in the 1987 Wetland Manual and 2010 Regional Supplement.	Y	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	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	Y	Hydric soil characteristics have developed throughout all constructed wetlands.
	Soil is sufficiently stable to prevent erosion.	Y	Y	Disturbed soil is stable and does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	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	Y	Areas 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	Y	State-listed noxious weeds are estimated well below 5 percent absolute cover within wetland areas.
	Woody plants exceed 50 percent survival after 5 years.	N	N	Woody plant survival remains very low and not trending toward meeting this success criteria.
Open Water	The project is intended to provide open water during the spring and early summer within excavated depressions. Open water with emergent, submerged, and/or floating vegetation will, therefore, be considered successful and creditable.	Y	Y	Excavated depressions throughout the entire mitigation area appear to support perennial inundation with an established aquatic macrophyte community.
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 with a root stability indexes greater than 6.	N/Y	Y	The ephemeral reaches of Schrieber Creek are establishing at different rates. Reach SC1 is not currently meeting the performance criteria; however, Reach SC2 is now meeting this success criteria. The downstream reaches of Schrieber Creek (Reaches SC3 and SC7) and both reaches of Coyote Creek (CC1A and CC1B) meet the success criteria.
	New stream channels will be allowed to naturally migrate within the established floodplain/riparian areas and to give it enough room to move and stabilize itself within the site.	Y	Y	No lateral migration has been documented along either Schrieber or Coyote Creek to date. However, no physical constraints were constructed to prevent lateral migration.

Performance Standards	Success Criteria	Criteria Achieved Y/N		Discussion
		SC[a]	CC[b]	
Bank Restoration Success	Rates of success will be determined by the following rates: i) Rate of less than 0.5 ft of erosion annually = Functioning ii) Rate of less than 1.0 ft/year = Functioning i.) Rate of less than 1.5 ft/year = Functioning at Risk iv) Rate of less than 2.5 ft/year = Functioning at Risk v) Rate of greater than 2.5 ft/year = Functioning at Risk or Not Functioning vi) Rate of less than 3 ft/year = Not Functioning.	Y	Y	Transect data derived from bank pin locations during the 2020 monitoring have documented no lateral channel migration since 2015.
Bank Restoration Success	Ratings for the streambank will be based on the Proper Functioning Condition (PFC) rating that determines if the area supports a healthy, stable bank area adjacent to the stream: i) Functioning – The streambank supports a healthy and stable bank area adjacent to the river. ii) Functioning at Risk – one or more functions of the streambank are adjusting to changes in the design within the reach area, and more monitoring is needed. iii) Not Functioning – Measurements of the functions indicate that the site is not achieving functional goals and is not.	N/Y	Y	An assessment PFC was performed during the 2018 and 2020 monitoring years. The 2018 and 2020 monitoring years performed a PFC for three areas of the site (the location of stream reaches are shown on Figure A-2 in Appendix A). All reaches are functioning based on the criteria. Coyote Creek (CC1) and Schrieber Creek Reaches SC2 and SC3 were rated as PFC because the banks along both streams are stable and support healthy vegetation communities. Reach SC1 was rated as Functional – At Risk due to the slower vegetation establishment and areas of bare soil along the bank. See Stream Monitoring section and Appendix B of this report for additional details regarding the PFC assessment.
Riparian Buffer Success	Creditable buffer areas must have at least 50 percent aerial cover of non-noxious weed species by the end of the monitoring period.	Y	Y	All riparian vegetation transects exhibited 50 percent or greater aerial cover of non-noxious weed species along both Schrieber and Coyote Creeks.
	Combined aerial cover of riparian and streambank vegetation communities is 70 percent or greater.	Y	Y	Combined aerial cover of riparian and streambank vegetation along Schrieber Creek is 90 percent. Combined areal cover of riparian and streambank vegetation along Coyote Creek is 100 percent.
	Noxious weeds do not exceed 5 percent cover within the riparian buffer areas.	Y	Y	Noxious weed cover along Schrieber Creek is estimated at 3 percent. Noxious weed cover along Coyote Creek is less than 1 percent.
	Planted trees and shrubs will be considered successful where they exhibit 50 percent survival after 5 years.	N	N	Planted trees and shrubs along Schrieber Creek and Coyote Creek exhibit well below 50 percent survival to date. The 7ft tall reed canary grass make it near impossible to even locate previous plantings.
Upland Buffer	Noxious weeds do not exceed 5 percent cover within upland buffer area.	Y	Y	Noxious weed cover is less than 5 percent within the upland buffer.

Performance Standards	Success Criteria	Criteria Achieved Y/N		Discussion
		SC[(a)]	CC[(b)]	
	Any area that was disturbed within creditable buffer zone must have at least 50 percent aerial cover of non-weed species by end of monitoring period.	Y	Y	Disturbed areas have established greater than 50 percent cover by non-noxious 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 Montana Department of Transportation (MDT) to minimize and/or eliminate the intrusion of state-listed noxious weed species within the site.	Y	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.

(a) SC = Schrieber Creek.

(b) CC = Coyote Creek.

Summary Data

Wetland Delineation –The total jurisdictional wetland and aquatic habitat delineated at the Schrieber Lake mitigation site in 2020 was 55.23 acres, an increase of 3.13 acres since 2019 (Table 2; see maps in Appendix A). Schrieber Lake occupied 8.00 acres and remaining 'open water' areas represented a total of 6.24 acres. The extensive wetland development at this site is the result of the excavation of wetland cells, construction of channel plugs, and the restoration of meanders and bed elevations for the Schrieber and Coyote creek channels. Beaver activity, noted for the first time in 2019, was also observed in 2020 and is contributing to wetland development at the site. The recently constructed beaver dam at the outlet of Schrieber Lake has increased inundation levels across the site in both 2019 and 2020. The continued influence from this beaver activity is expected to increase deep-water inundation levels and create shifts in vegetation communities as open water habitat expands across the site.

Table 2. Project Upland and Delineated Wetland Acres From 2015 Through 2020

Habitat Type	2015 Acres	2016 Acres	2017 Acres	2018 Acres	2019 Acres	2020 Acres
Uplands	**52.60**	**52.60**	**52.60**	**52.60**	**52.60**	**49.47**
Wetlands & Aquatic Habitat						
Schrieber Lake*	8.26	8.26	8.26	8.26	8.26	8.00
Remaining 'Open Water'*						6.24
Stream Channels	1.00	1.00	1.00	1.0	1.0	1.0
Riparian Buffer	3.90	3.90	3.90	3.9	3.9	3.9
USFS Wetlands	1.25	1.25	1.25	1.25	1.25	1.66
Remaining Wetlands	37.65	37.65	37.65	37.65	37.65	34.43
Wetlands Subtotal	**52.10**	**52.10**	**52.10**	**52.10**	**52.10**	**55.23**
Project Area	**104.70**	**104.70**	**104.70**	**104.70**	**104.70**	**104.70**

*Schrieber Lake and Remaining 'Open Water' areas all meet the recent USACE definition of open water and are shown as Open Water on Figures A-3 and A-5 in Appendix A

Vegetation – A total of 98 plant species have been identified at the site from 2015 through 2020, with two new species identified during the 2020 monitoring event. Seven wetland, three upland, and one

'open water' community types were identified and mapped at the mitigation site in 2020 (Figure A-3, Appendix A). Dominant plant species observed within each community are listed on the Wetland Mitigation Site Monitoring form (Appendix B). Wetland Type 12 – *Carex lasiocarpa* was replaced in 2020 by community Type 11 – Open Water/Aquatic macrophytes, due to the significant increase in open water and lack of emergent vegetation observed in this area. This community transition likely occurred between 2019 and 2020, as the area was not identified as community type 11 in previous monitoring reports and may be the result of increased inundation caused by beaver activity within the site. The vegetation community types, including one open water community type, identified on the site in 2020 include the following:

- Upland Type 1 – *Elymus repens/Bromus inermis*
- Upland Type 5 – *Pseudotsuga menziesii/Larix occidentalis*
- Upland Type 9 – *Crataegus douglasii/Symphoricarpos albus*
- Wetland Type 2 – *Betula pumila/Rhamnus alifolia*
- Wetland Type 3 – *Phalaris arundinacea/Carex Sp.*
- Wetland Type 4 – *Carex simulate/Persicaria amphibia*
- Wetland Type 6 – *Salix bebbiana/Phalaris arundinacea*
- Wetland Type 7 – *Alnus incana/Phalaris arundinacea*
- Wetland Type 8 – *Carex utriculata*
- Wetland Type 10 – *Typha latifolia*
- Open Water Type 11 – Open Water/Aquatic macrophytes (considered 'Open Water', not classified as an emergent vegetation community type)

Vegetation cover was measured along three belt transects (T-1, T-2, and T-3) in 2020 (Figure A-2, Appendix A). Photographs of the transect end points are provided in Appendix C. Table 3 summarizes the data for T-1 from 2015 through 2020. T-1 is 284 feet long and intersects vegetation community Type 3 and open water community Type 11. Hydrophytic vegetation accounted for 97 percent of the transect in 2020, a 3% decrease since 2019 due to an increase in open water along the transect.

Table 3. Data Summary for T-1 From 2015 Through 2020 at the Schrieber Lake Site

Monitoring Year	2015	2016	2017	2018	2019	2020
Transect Length (feet)	**284**	**284**	**284**	**284**	**284**	**284**
Vegetation Community Transitions Along Transect	3	3	3	3	3	2
Vegetation Communities Along Transect	3	3	3	3	3	1
Hydrophytic Vegetation Communities Along Transect	3	3	3	3	3	1
Total Vegetative Species	10	9	10	9	7	7
Total Hydrophytic Species	5	8	9	9	7	7
Total Upland Species	5	1	1	0	0	0
Estimated % Total Vegetative Cover	90	100	100	100	100	97
Estimated % Unvegetated	10	0	0	0	0	3
% Transect Length Comprising Hydrophytic Vegetation Communities	100	100	100	100	100	97.2
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0	0	0
% Transect Length Comprising Open Water	0	0	0	0	0	2.8
% Transect Length Comprising Mudflat	0	0	0	0	0	0

Table 4 summarizes the data for T-2 from 2015 through 2020. T-2 is 280 feet long and intersects vegetation community Types 3 and 6. Hydrophytic vegetation accounted for 100 percent of the transect in 2020. Hydrophytic vegetation accounted for 95 percent of the transect in 2020, a 5% decrease since 2019 due to an increase in open water within community Type 3.

Table 4. Data Summary for T-2 From 2015 Through 2020 at the Schrieber Lake Site

Monitoring Year	2015	2016	2017	2018	2019	2020
Transect Length (feet)	**280**	**280**	**280**	**280**	**280**	**280**
Vegetation Community Transitions Along Transect	1	1	1	1	1	1
Vegetation Communities Along Transect	2	2	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	2	2	2	2	2	2
Total Vegetative Species	7	5	6	6	6	6
Total Hydrophytic Species	5	5	6	6	6	6
Total Upland Species	2	0	0	0	0	0
Estimated % Total Vegetative Cover	99	100	100	100	100	95
Estimated % Unvegetated	1	0	0	0	0	5
% Transect Length Comprising Hydrophytic Vegetation Communities	100	100	100	100	100	100
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0	0	0
% Transect Length Comprising Open Water	0	0	0	0	0	0
% Transect Length Comprising Mudflat	0	0	0	0	0	0

Table 5 summarizes the data for T-3 from 2015 through 2020. T-3 is 584 feet long and intersects vegetation community Types 3 and 4. Hydrophytic vegetation accounted for 100 percent of the transect in 2020. This transect has seen an overall increase in percent hydrophytic vegetation communities since monitoring began in 2015, from 94 to 100%.

Table 5. Data Summary for T-3 From 2015 Through 2020 at the Schrieber Lake Site

Monitoring Year	2015	2016	2017	2018	2019	2020
Transect Length (feet)	**584**	**584**	**584**	**584**	**584**	**584**
Vegetation Community Transitions Along Transect	2	2	2	2	2	1
Vegetation Communities Along Transect	3	3	3	3	3	2
Hydrophytic Vegetation Communities Along Transect	2	2	2	2	2	2
Total Vegetative Species	16	11	10	12	9	6
Total Hydrophytic Species	14	10	8	10	7	6
Total Upland Species	2	1	2	2	2	0
Estimated % Total Vegetative Cover	100	100	100	100	100	95
Estimated % Unvegetated	0	0	0	0	0	5
% Transect Length Comprising Hydrophytic Vegetation Communities	94	94	94	94	97	100
% Transect Length Comprising Upland Vegetation Communities	6	6	6	6	3	0
% Transect Length Comprising Open Water	0	0	0	0	0	0
% Transect Length Comprising Mudflat	0	0	0	0	0	0

Priority 2B noxious weeds identified and mapped within the Schrieber Lake mitigation site included spotted knapweed (*Centaurea stoebe*), Canada thistle (*Cirsium arvense*), and butter-and-eggs (*Linaria vulgaris*). The most common noxious weed species observed on site was Canada thistle (Figure A-3, Appendix A). MDT has an ongoing weed control program for their mitigation sites and treated noxious weed infestations at the Schrieber Lake site on May 27-28, 2020.

MDT planted 1,500 woody plants in the riparian buffer along Schrieber Creek, Coyote Creek, and around some wetland excavations. Based on observations at the parallel and perpendicular belt transects, woody planting survival was estimated well below the required 50 percent survival. Woody survival is inhibited by competition with herbaceous vegetation, perennial inundation or extremely saturated soil conditions, herbivory by ungulates and rodents, and (in some areas) weed-spraying activities. No natural expansion of woody plants has occurred along either channel for the same reasons listed above.

Hydrology – During the 2020 investigation, the average depth of surface water across the site was estimated at greater than 3.0 feet with a range of depth from 0.5 to 5 feet. The deepest standing water is located within many of the excavated cells and within the creek channels. Approximately 90 percent of the AA was inundated during the 2020 site visit. The surface-water depth at the emergent vegetation and open-water boundary was estimated at 3.0 feet. In 2020, a beaver dam, first documented in 2019 at the outlet of Schrieber Lake, had significantly raised the water level across the entire wetland area. Schrieber Lake and the remaining open water areas represented 8.0 acres and 6.24 acres of open water habitat, respectively, during the 2020 monitoring event. These areas are depicted as community type 11 on Figure A-3 in Appendix A.

Nearly all wetland habitat on the site contained standing surface water in 2020, and average water depths across the site rose by 1.0 to 1.5 feet from previous years. The distinct topographic break between upland and wetland habitat at the site has primarily resulted in an increase in inundation depths within existing wetlands rather than an expansion of surface area inundation and newly created wetland habitat. Some upland areas immediately adjacent to the wetland boundary showed signs of soil saturation during the site visit but are still dominated by upland vegetation. A shift in vegetation and increase in wetland habitat is expected if the beaver dam persists and water levels remain high. Groundwater monitoring conducted by the US Geological Survey (USGS) indicates that water levels remained high across the site throughout the summer growing season, which can be directly attributed to the beaver dam activity at the outlet of Schrieber Lake. In most years, groundwater levels drop throughout the summer, but this was not the case in 2019 or 2020.

Soils – Soil test pits were excavated at six locations to evaluate the extent of hydric soil development across the site in 2020 (Appendices A and B). Soil textures within wetland test pits ranged from mucky peat to peat. Hydric soil indicators were observed in all three wetland test pits and included histosol, histic epipedon, and hydrogen sulfide. Soil textures within upland test pits ranged from sandy loam to clay loam. No hydric soil indicators were observed in either of the upland test pits. Additional field observations for the six data points are provided in the wetland determination data forms in Appendix B.

Functional Assessment – The 2008 Montana Wetland Assessment Method (MWAM) was used to evaluate the site in 2020 (Appendix B). The Assessment Area (AA) includes all delineated wetlands, including the creditable wetlands (34.43 acres), wetlands within the riparian buffers of Schrieber and Coyote Creeks (3.9 acres), Schrieber Lake and remaining open water areas (14.24 acres), portions of Schrieber and Coyote Creeks that flow through the wetland areas (1.00 acres), and the wetlands on US Forest Service (USFS) lands (1.66 acres). The wetlands in the AA received a Category I rating with 90.9% of the total possible points in 2020. The 55.2-acre AA was rated as a Category I wetland and scored exceptional for General Wildlife Habitat and Production Export/Food Chain Support and high for all other functions and values except General Fish/Aquatic Habitat and Flood Attenuation, which were scored as moderate.

Wildlife – Ten bird species were identified in 2020 at the Schrieber Lake site. In addition to the ten bird species, two white-tailed deer (*Odocoileus virginianus*), six ground squirrels, and a northern Columbia spotted frog (*Rana luteiventris*) was observed (Appendix B). Deer tracks and scat, ground squirrels, and bear scat were noted at the site as well.

Photographs – Ten photo points were initially established in the project area in 2015. Photographs were taken at all ten photo point locations during the 2020 site visit. 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).

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 2020 data were compared to the previous surveys and discussions to assess stream channel stability. The banks of the constructed channels were generally well-vegetated and exhibited stable conditions. Consequently, no major channel morphological changes have been observed throughout any of the monitoring years.

The ephemeral reaches of Schrieber Creek are establishing at different rates. Reach SC1 is at a higher elevation, with a steeper longitudinal slope, and steeper bank slopes, which are all contributing to slower vegetation establishment. Reach SC2 is at a lower elevation with less steep bank slopes, and deep-rooted vegetation is becoming more established, likely due to the higher moisture availability. In 2020, vegetation identified along Reach SC1 included a dominance by shallow-rooted spreading bent (*Agrostis stolonifera*) and creeping wild rye (*Elymus repens*), with minimal cover from deep-rooted species such as reed canary grass (*Phalaris arundinacea*). As a result, Reach SC1 is not currently meeting the channel restoration success criteria; however, Reach SC2 is now meeting this success criteria. The downstream reaches of Schrieber Creek (Reaches SC3 and SC7) and both reaches of Coyote Creek (CC1A and CC1B) also meet the channel restoration success criteria as they are dominated by reed canary grass, which has a root stability index of 9.

The 2018 and 2020 monitoring years performed a PFC for three areas of the site (the location of stream reaches are shown on Figure A-2 in Appendix A). Coyote Creek (CC) and Schrieber Creek Reach 3 (SC3) were grouped into one PFC assessment, and Schrieber Creek Reach 1 (SC1) and Reach 2 (SC2) consisted of the remaining two PFC assessment groups. The groups were based on similar stream characteristics. All reaches are functioning based on the criteria. Coyote Creek (CC1) and Schrieber Creek Reaches SC2 and SC3 were rated as PFC - Functioning because the banks along both streams are stable and support healthy vegetation communities. Reach SC1 was rated as Functional – At Risk due to the slower vegetation establishment and areas of bare soil along the bank. This reach has an upward trend because vegetation cover is increasing and is expected to do so over time, eventually providing greater stability to the banks. The At Risk qualifier was designated because the reach is most susceptible to damage after a large flow event.

Credit Summary – Stream Credits

The goal of the stream mitigation component of the Schrieber Lake project includes restoring approximately 2,130 linear feet of Schrieber Creek, 1,397 feet of Coyote Creek, and 978 feet of Schrieber Creek below the Schrieber/Coyote Creek confluence. When combined with the establishment of a riparian buffer of varying width on both sides of the restored channels, the project is expected to generate a total of 36,741.87 stream and riparian credits, as shown in Table 6.

Table 6. 2020 Riparian and Stream Mitigation Credits for the Schrieber Lake Site

Channel Segment	Reach	Side	Predicted Credits	2020 Credits
Coyote Creek	1A	A	4,141.63	4,141.63
		B	4,141.63	4,141.63
	1B	A	1,586.25	1,586.25
		B	1,692.00	1,692.00
Schrieber	1	A	2,392.20	1,196.1
		B	2,392.20	1,196.1
	2A	A	2,722.50	2,722.50
		B	2,722.50	2,722.50
	2B	A	576.65	576.65
		B	576.65	576.65
	3	A	3,964.83	3,964.83
		B	3,964.83	3,964.83
	7	A	2,934.00	2,934.00
		B	2,934.00	2,934.00
Total			**36,741.87**	**34,349.67**

Data collected during the 2020 monitoring event revealed continued development of vegetation cover along the stream reaches. Reach 1 of Schrieber Creek has yet to fully meet the performance criteria established for the development of deep-rooted vegetation within the riparian corridor. The ephemeral nature of this reach results in slower vegetation growth. As a result, Reach 1 of Schrieber Creek has not met all success criteria and is therefore generating half of the anticipated credits. Reaches 2A, 2B, 3, and 7 of Schrieber Creek, and Reaches 1A and 1B of Coyote Creek currently meet all success criteria and have generated the predicted credits outlined in the monitoring plan. Future monitoring will assess the vegetation establishment within Reach 1 of Schrieber Creek and whether it is progressing toward the meeting the success criteria and generating all anticipated credits. To date, the site has generated 34,349.67 stream credits.

Credit Summary – Wetland Credits

MDT anticipates generating 13.4 wetland credit acres from the Schrieber Lake project. Proposed mitigation credits from the 2014 Schrieber Lake Mitigation Plan included creating 3.06 wetland acres, re-establishing 2.53 wetland acres, enhancing 4.53 acres of the fen-carr shrubland expansion, preserving 25.6 acres of existing fen-carr *Carex* areas, and creating a 50-foot upland buffer (3.81 acres) around newly established wetlands in the center of the site. Table 7 summarizes the estimated wetland credits based on the pending USACE-approved credit ratios and the wetland delineation completed in July 2020. The 2020 wetland delineation identified 34.43 acres of creditable wetlands and 6.24 acres of creditable 'open water' within the mitigation site. Creditable wetland and 'open water' acreage included 7.25 acres of created wetland, 2.42 acres of re-established wetlands, 4.77 acres of enhanced wetlands, and 26.23 acres of preserved wetlands; with 3.81 acres of upland buffer around the perimeter of the delineated wetland. Schrieber Lake has never received mitigation credit at this site and is therefore excluded from Table 7. The 2020 estimated credit acres for this site have exceeded the proposed credit acres. To date, a total of 17.76 credit acres have developed at this site. Figure A-4 (Appendix A) shows the location of wetlands based on credit type.

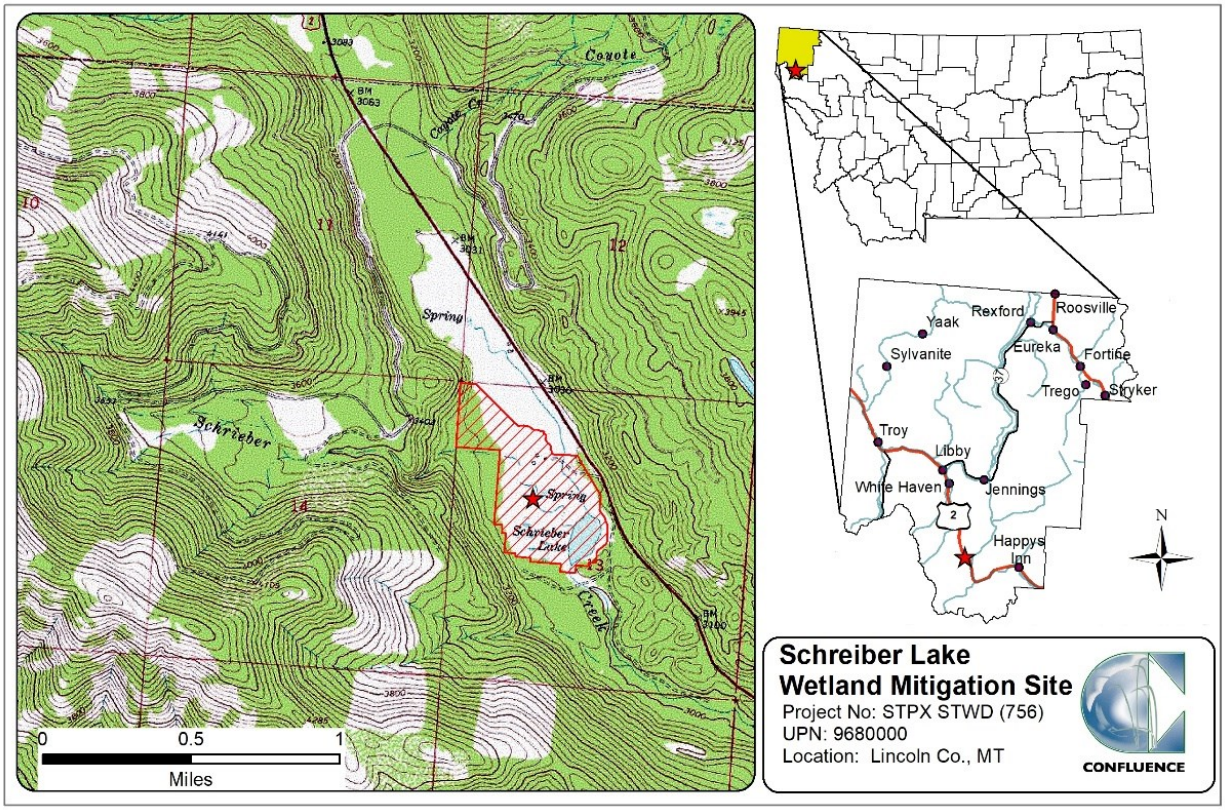
Table 7. Summary of Wetland Mitigation Credits at the Schrieber Lake Site in 2015, and 2019 through 2020

Mitigation Type	Total Proposed Acreage	Ratio[(a)]	Proposed Credit Acres	2015 Delineated Acreage	2015 Credit Acres	2019 Delineated Acreage	2019 Credit Acres	2020 Delineated Acreage	2020 Credit Acres
Creation	3.06	1:1	3.06	4.80	4.80	4.80	4.80	7.25	7.25
Restoration (Reestablishment)	2.53	1.5:1	1.69	2.42	1.62	2.42	1.62	2.42	1.62
Enhancement Areas – Carr Shrubland Expansion	4.53	3:1	1.51	4.77	1.59	4.77	1.59	4.77	1.59
Preservation – Existing Fen-Carr *Carex* Areas	25.60	4:1	6.40	25.66	6.42	25.66	6.42	26.23	6.56
Upland Buffer (50 ft)	3.81	5:1	0.76	8.42	1.68	3.81	0.76	3.81	0.76
Permanent Project Impacts	0.02	None	–0.02	–0.02	–0.02	–0.02	–0.02	-0.02	-0.02
Total Mitigation Acreage	**39.55**	**—**	**13.40**	**46.05**	**16.09**	**41.44**	**15.17**	**44.46**	**17.76**

*Open water acreage, with the exception of Schrieber Lake, is included in the Creation, Restoration, Enhancement, and Preservation Acreages listed above for 2020.

Maps, Plans, Photos

Site Location Map



Project Area Maps/Figures: See Appendix A

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

Photos: See Appendix C

Plans: See Appendix D of 2015 Monitoring Report
https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2015_REPORTS/2015_Schrieber_Lake_FINAL.PDF

Conclusions

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

1. Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years.
2. Bank Restoration Success (only along Reach SC-1).

Woody planting survival is not trending toward meeting the performance standard. Reach SC-1 along Schrieber Creek is an ephemeral reach that is taking longer for deep-rooted vegetation to establish but is expected to meet this success criteria in future monitoring events. No remedial actions are recommended at this time.

References

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

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers. Washington, DC.

Federal Geographic Data Committee (FGDC). 2013. *Classification of wetlands and deepwater habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

Lesica, P. 2012. *Manual of Montana Vascular Plants,* Brit Press, Fort Worth, TX.

Montana Natural Heritage Program. 2020. *Montana Species of Concern Report*. Montana Natural Heritage Program. Accessed on 1 October 2020 at *http://mtnhp.org/SpeciesOfConcern/?AorP=p*

Natural Resources Conservation Service (NRCS). 2018. *Field Indicators of Hydric Soils in the United States,* Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils. 55 p.

Natural Resources Conservation Service (NRCS). 2020a. *Climate Data for* [Libby Dam (BASE), MT]. Accessed on 15 December 2020 at *http://agacis.rcc-acis.org/*

Natural Resources Conservation Service (NRCS). 2020b. *Soil Survey (SSURGO) Database for* [Lincoln County Area, Montana]. Accessed on 1 October 2020 at *http://websoilsurvey.nrcs.usda.gov/*

US Army Corps of Engineers (USACE). 2005**.** *Montana Mitigation Information*. Accessed on 10 October 2016 at *http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/Mitigation/*

U.S. Army Corps of Engineers (USACE). 2010a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coasts Region* (Version 2.0), prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Environmental Laboratory, Vicksburg, MS.

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

U.S. Army Corps of Engineers (USACE). 2018. *National Wetland Plant List (Version 3.4),* prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

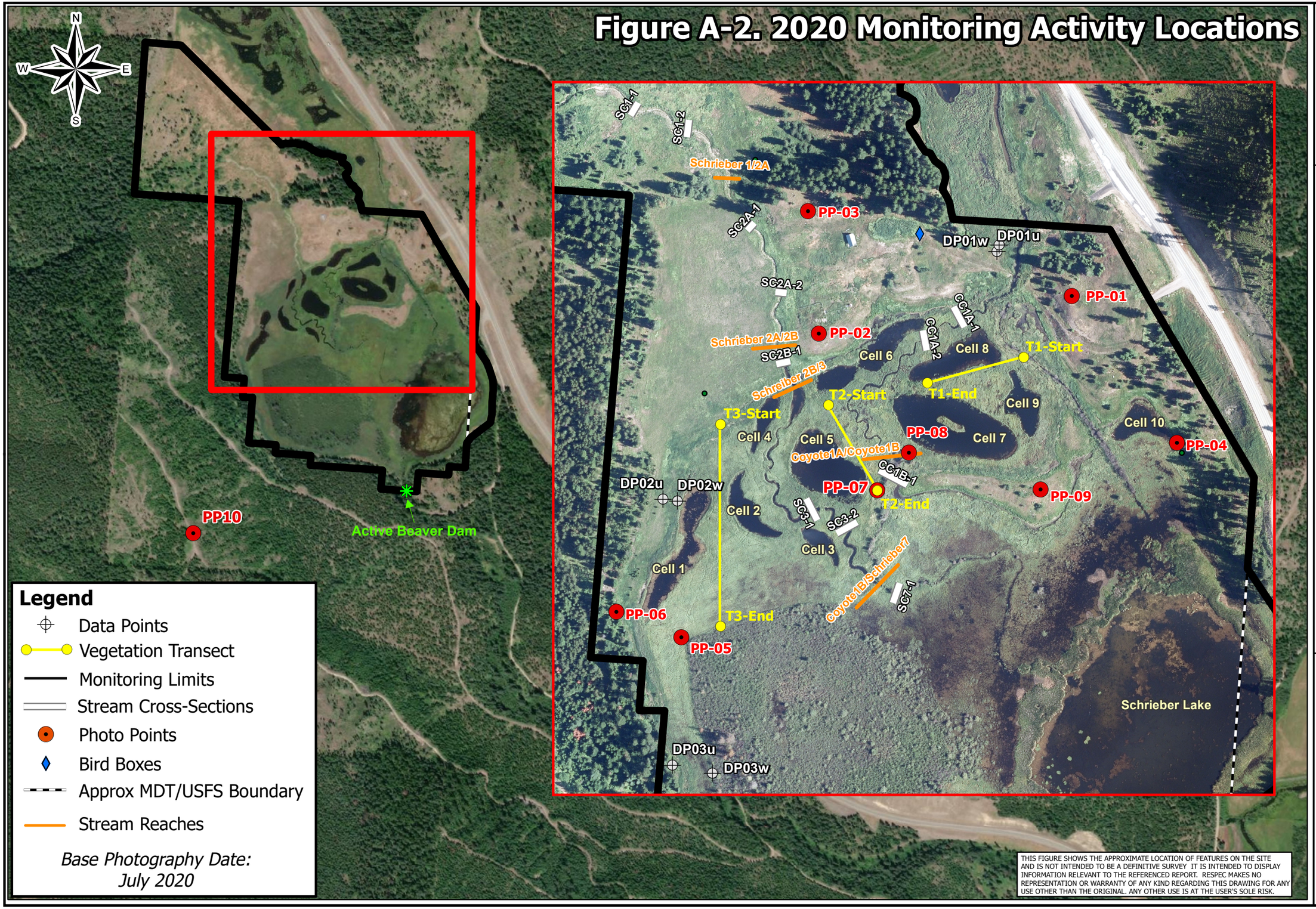
U.S. Fish and Wildlife Service (USFWS). 2020. *IPaC Resource List.* Environmental Conservation Online System (ECOS). Accessed on 1 October 2020 at *https://ecos.fws.gov/ipac/*

U.S. Geological Survey (USGS). 2020. *Annual Summary of Data Collected at Mitigation Areas, April – September 2020.* Prepared for Montana Department of Transportation by Sean Lawlor and August Schultz, U.S. Geological Survey, Wyoming-Montana Water Science Center, October 22, 2020.

APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

Figure A-2. 2020 Monitoring Activity Locations



Legend

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

Base Photography Date: July 2020

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

CONFLUENCE
consulting incorporated

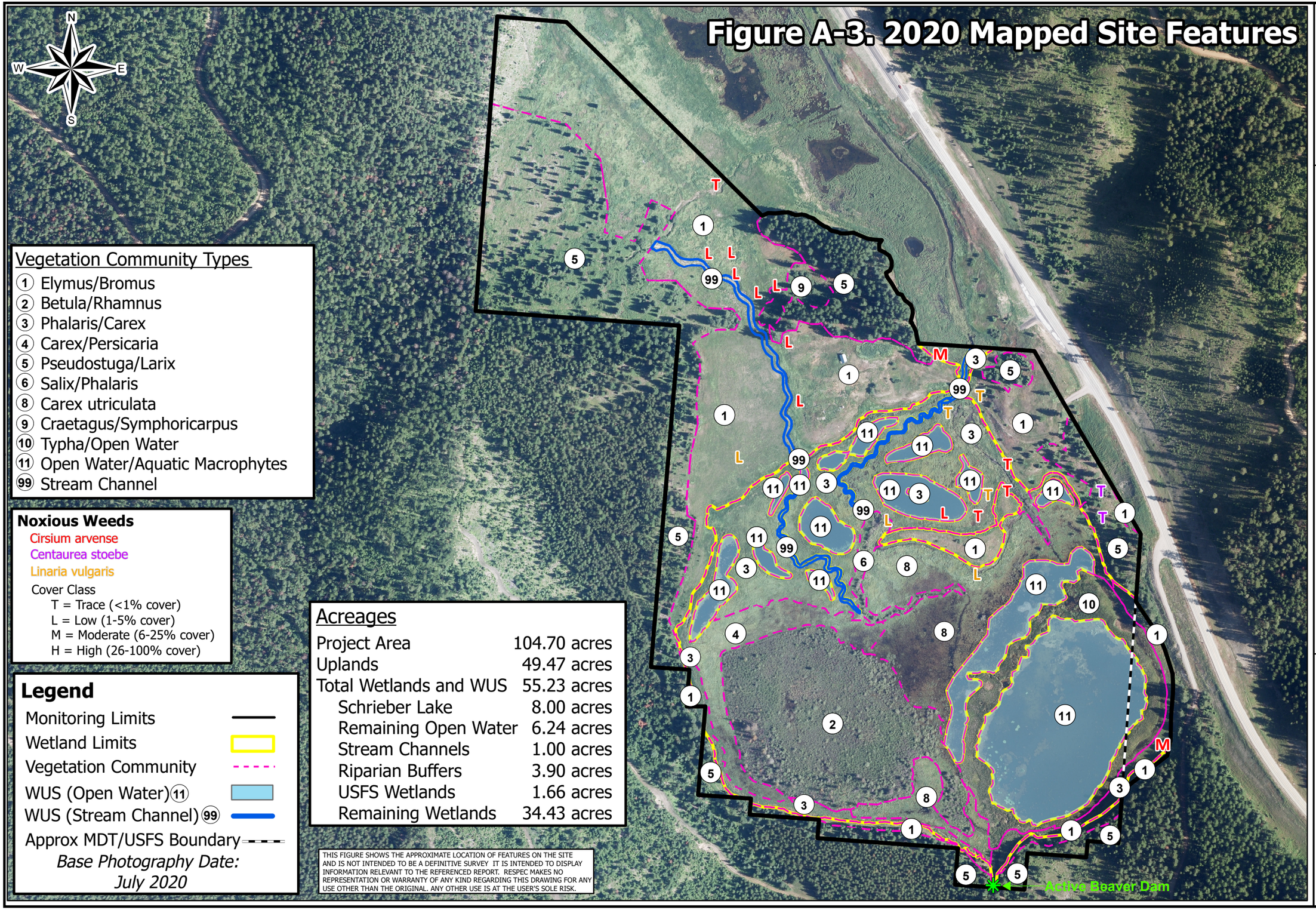
Schrieber Lake Mitigation Site
2020 Monitoring Activity Locations

0 100 200 400 600 800 1,000 Feet

Project:	STPP STWD (756)
Location:	Lincoln Co., Montana
Date:	October 2020
Project Manager:	R. McEldowney
Drawn By:	RQ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Schrieber Lake\2020\Monitor2020_MDT.mxd

Figure A-3. 2020 Mapped Site Features



Vegetation Community Types

1. Elymus/Bromus
2. Betula/Rhamnus
3. Phalaris/Carex
4. Carex/Persicaria
5. Pseudostuga/Larix
6. Salix/Phalaris
8. Carex utriculata
9. Craetagus/Symphoricarpus
10. Typha/Open Water
11. Open Water/Aquatic Macrophytes
99. Stream Channel

Noxious Weeds

Cirsium arvense
Centaurea stoebe
Linaria vulgaris

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

Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Community
- WUS (Open Water) 11
- WUS (Stream Channel) 99
- Approx MDT/USFS Boundary

Base Photography Date: July 2020

Acreages

Project Area	104.70 acres
Uplands	49.47 acres
Total Wetlands and WUS	55.23 acres
Schrieber Lake	8.00 acres
Remaining Open Water	6.24 acres
Stream Channels	1.00 acres
Riparian Buffers	3.90 acres
USFS Wetlands	1.66 acres
Remaining Wetlands	34.43 acres

CONFLUENCE
consulting incorporated

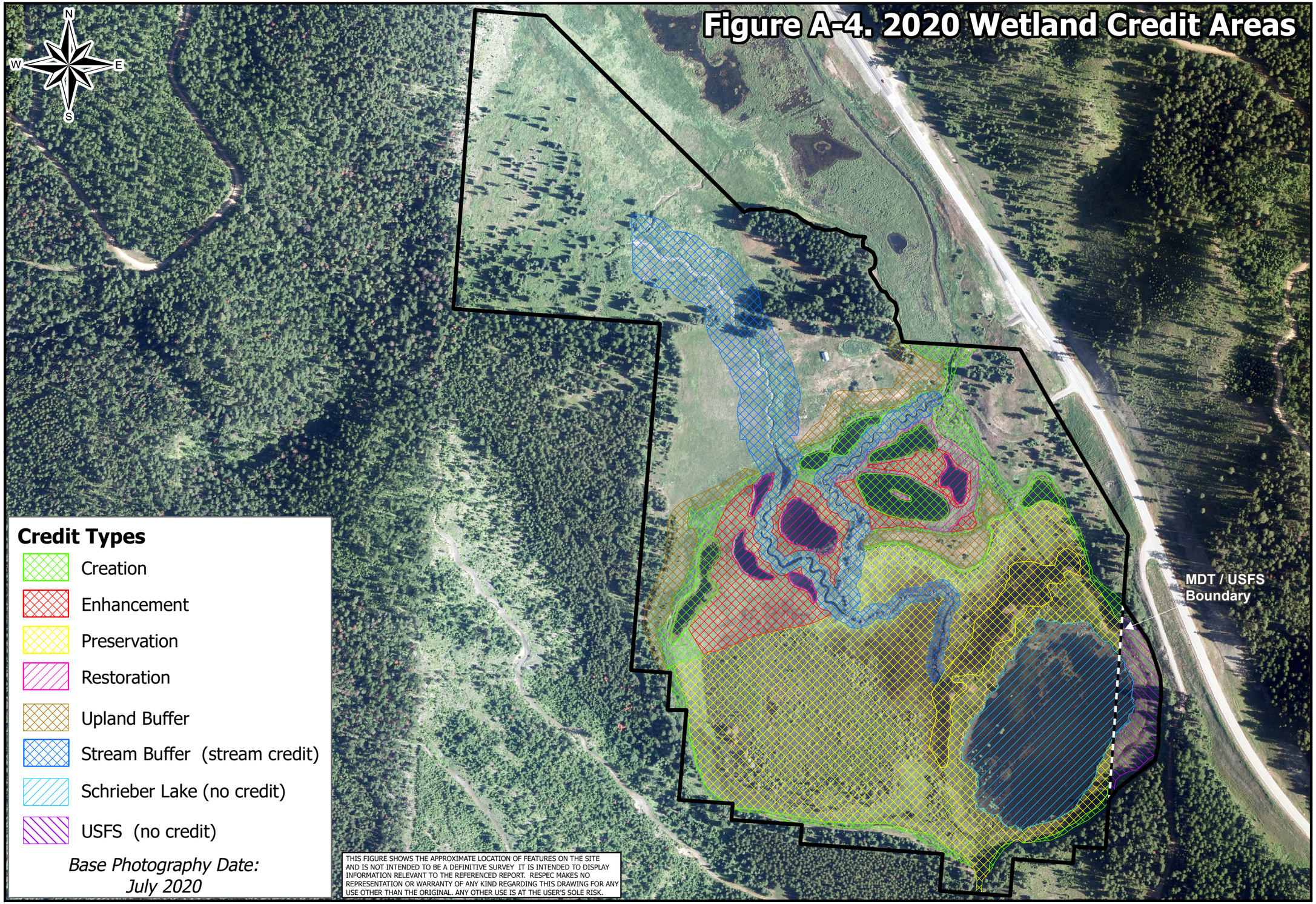
Schrieber Lake Mitigation Site
2020 Mapped Site Features

0 150 300 600 900 1,200 1,500 Feet

Project:	STPP STWD (756)
Location:	Lincoln Co., Montana
Date:	October 2020
Project Manager:	R. McEldowney
Drawn By:	RQ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Schrieber Lake\2020\Veg2020_MDT.mxd

Figure A-4. 2020 Wetland Credit Areas



Credit Types

- Creation
- Enhancement
- Preservation
- Restoration
- Upland Buffer
- Stream Buffer (stream credit)
- Schrieber Lake (no credit)
- USFS (no credit)

Base Photography Date: July 2020

CONFLUENCE
consulting incorporated

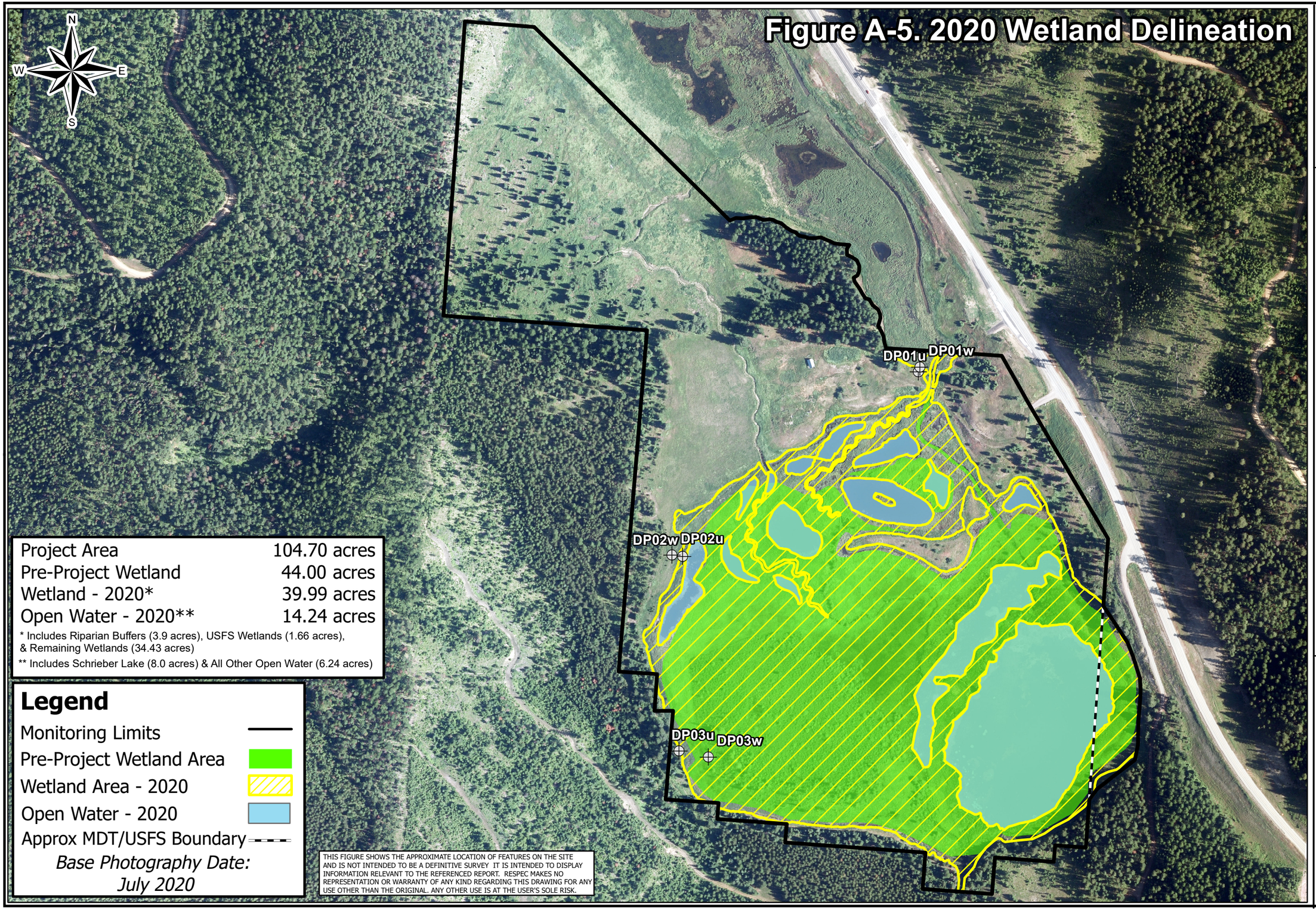
Schrieber Lake Mitigation Site
2020 Wetland Credit Areas

0 150 300 600 900 1,200 1,500 Feet

Project: STPP STWD (756)
Location: Lincoln Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RQ

File: X:\Project\MDT Wetland Mitigation 2\Wains\Schrieber Lake\2020\2020CreditAcres_MDT.mxd

Figure A-5. 2020 Wetland Delineation



Project Area	104.70 acres
Pre-Project Wetland	44.00 acres
Wetland - 2020*	39.99 acres
Open Water - 2020**	14.24 acres

* Includes Riparian Buffers (3.9 acres), USFS Wetlands (1.66 acres), & Remaining Wetlands (34.43 acres)

** Includes Schrieber Lake (8.0 acres) & All Other Open Water (6.24 acres)

Legend

- Monitoring Limits
- Pre-Project Wetland Area
- Wetland Area - 2020
- Open Water - 2020
- Approx MDT/USFS Boundary

Base Photography Date: July 2020

CONFLUENCE
consulting incorporated

Schrieber Lake Mitigation Site
2020 Wetland Delineation

0 150 300 600 900 1,200 1,500 Feet

Project: STPP STWD (756)
Location: Lincoln Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RQ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Schrieber Lake\2020\DeliIn2020_MDT.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Schrieber Lake Assessment Date/Time 7/15/2020

Person(s) conducting the assessment: R Quire, S Weyant, B Trudgeon

Weather: 75 degrees, sunny, clear Location: Highway 2, Swamp Creek East

MDT District: Missoula Milepost: 53.8

Legal Description: T 27N R 30W Section(s) 13

Initial Evaluation Date: 5/18/2015 Monitoring Year: 6 #Visits in Year: 1

Size of Evaluation Area: 105 (acres)

Land use surrounding wetland:

US Highway 2, US Forest Service, forested watershed, Weyerhaeuser lands to the south of the site.

HYDROLOGY

Surface Water Source: Schrieber Creek, Coyote Creek, precipitation, groundwater

Inundation: ☑ Average Depth: 3 **(ft)** Range of Depths: 0.5-5 **(ft)**

Percent of assessment area under inundation: 90 %

Depth at emergent vegetation-open water boundary: 3 **(ft)**

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

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

Surface water, saturation, high water table, hydrogen sulfide odor, iron deposits, geomorphic position, FAC neutral test, inundation visible on aerials.

Groundwater Monitoring Wells

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

Additional Activities Checklist:

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

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

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

Hydrology Notes:

Water depth refers to wetland cells, not including Schreiber Lake. 90% inundation does not include the uplands in the northern "panhandle" of the project area. Beaver dam at outlet of Schrieber Lake observed in 2019 and 2020 - has created significant impact on water depths across site. Depths ranged from 6"-60". Deepest water in channels, excavated depressions, and Schrieber Lake.

VEGETATION COMMUNITIES

Site Schrieber Lake

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

Community # 1 **Community Type:** Elymus repens / Bromus spp. **Acres:** 27

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis stolonifera	1
Alopecurus arundinaceus	2	Alopecurus pratensis	1
Bromus inermis	3	Bromus tectorum	2
Elymus repens	4	Nassella viridula	1
Pascopyrum smithii	3	Phalaris arundinacea	2
Phleum pratense	3	Poa compressa	3
Poa pratensis	1	Pseudoroegneria spicata	1
Pseudotsuga menziesii	1	Verbascum thapsus	1

Comments:

Upland community at edges of wetland boundaries across the site.

Community # 2 **Community Type:** Betula pumila / Rhamnus alnifolia **Acres:** 10.7

Species	Cover class	Species	Cover class
Betula pumila	4	Carex spp.	2
Comarum palustre	1	Open Water	3
Persicaria amphibia	1	Phalaris arundinacea	3
Rhamnus alnifolia	2	Salix bebbiana	1
Salix boothii	1	Salix candida	1
Salix geyeriana	1		

Comments:

In 2020, many shrubs observed as dead or stressed from the recent 3ft inundation level caused by the 2019-2020 beaver dam at the southern project boundary.

Community # 3 Community Type: Phalaris arundinacea / Carex spp. **Acres:** 12.43

Species	Cover class	Species	Cover class
Agrostis scabra	1	Alopecurus arundinaceus	1
Alopecurus pratensis	1	Carex aquatilis	1
Carex lasiocarpa	2	Carex nebrascensis	1
Carex simulata	1	Carex utriculata	4
Carex vesicaria	1	Comarum palustre	0
Deschampsia caespitosa	0	Geum macrophyllum	0
Juncus tenuis	0	Lemna minor	1
Open Water	1	Persicaria amphibia	1
Phalaris arundinacea	5	Symphyotrichum spathulatum	1
Typha latifolia	1		

Comments:

In 2020, this community expanded across the site, particularly at the outer edges of the wetland boundaries and between the excavated depressions. Reed canary grass has outcompeted most other species and was observed at an average height of 7ft tall. Many areas within this CT inundated with an average of 3 feet of standing water. Very difficult to move through.

Community # 4 Community Type: Carex spp. / Persicaria amphibia **Acres:** 2.85

Species	Cover class	Species	Cover class
Carex aquatilis	3	Carex lasiocarpa	2
Carex nebrascensis	2	Carex simulata	1
Carex utriculata	4	Comarum palustre	1
Geum macrophyllum	1	Open Water	3
Persicaria amphibia	3	Phalaris arundinacea	1
Potentilla norvegica	1	Symphyotrichum spathulatum	1

Comments:

In western portion of project area.

Community # 5 Community Type: Pseudotsuga menziesii / Larix occidentalis **Acres:** 21.73

Species	Cover class	Species	Cover class
Abies grandis	2	Arctostaphylos uva-ursi	2
Berberis repens	1	Bromus inermis	2
Calamagrostis rubescens	2	Carex geyeri	2
Centaurea stoebe	0	Elymus glaucus	2
Larix occidentalis	3	Pinus contorta	3
Pseudotsuga menziesii	3	Symphoricarpos albus	2

Comments:

Upland forested community at edges of wetland boundaries.

Community # 6 Community Type: Salix bebbiana / Phalaris arundinacea **Acres:** 0.81

Species	Cover class	Species	Cover class
Alnus incana	0	Crataegus douglasii	1
Open Water	3	Persicaria amphibia	1
Phalaris arundinacea	5	Salix bebbiana	3

Comments:

Many shrubs observed as stunted and dying due to high level of inundation.

Community # 8 Community Type: Carex utriculata / **Acres:** 8.7

Species	Cover class	Species	Cover class
Carex aquatilis	1	Carex lasiocarpa	2
Carex utriculata	4	Open Water	3
Persicaria amphibia	1	Phalaris arundinacea	2
Salix bebbiana	1	Salix candida	1

Comments:

In 2019 and 2020, this community is becoming more inundated with greater than 3 feet of ponded water.

Community # 9 Community Type: Crataegus douglasii / Symphoricarpos albus **Acres:** 0.74

Species	Cover class	Species	Cover class
Achillea millefolium	0	Alopecurus pratensis	1
Cirsium arvense	1	Crataegus douglasii	5
Cynoglossum officinale	0	Dactylis glomerata	0
Elymus trachycaulus	1	Galium triflorum	0
Phalaris arundinacea	2	Symphoricarpos albus	4
Taraxacum officinale	0	Urtica dioica	0

Comments:

Upland community type in the northern portion of project area.

Community # 10 Community Type: Typha latifolia / Open Water **Acres:** 4.5

Species	Cover class	Species	Cover class
Comarum palustre	2	Open Water	4
Phalaris arundinacea	1	Typha latifolia	5

Comments:

Wetland community type that surrounds Schrieber Lake.

Community # 11 Community Type: Open Water / Aquatic macrophytes **Acres:** 14.24

Species	Cover class	Species	Cover class
Aquatic macrophytes	4	Open Water	5
Persicaria amphibia	1	Typha latifolia	1

Comments:

Open water community, which increased in acreage in 2020, due to high level of inundation and minimal presence of emergent vegetation. This community type replaced wetland community type 12 - Carex lasiocarpa in 2020 and likely in 2019 as well.

VEGETATION TRANSECTS

Site: Schrieber Lake Date: 7/15/2020

Transect Number: 1 **Compass Direction from Start:** 251 °

Interval Data:

Ending Station 93 **Community Type:** Phalaris arundinacea / Carex spp.

Species	Cover class	Species	Cover class
Carex lasiocarpa	4	Carex utriculata	2
Persicaria amphibia	1	Phalaris arundinacea	5

Ending Station 101 **Community Type:** Open Water / Aquatic macrophytes

Species	Cover class	Species	Cover class
Aquatic macrophytes	0	Open Water	5
Persicaria amphibia	2	Typha latifolia	2

Ending Station 284 **Community Type:** Phalaris arundinacea / Carex spp.

Species	Cover class	Species	Cover class
Carex lasiocarpa	4	Carex utriculata	4
Lemna minor	0	Persicaria amphibia	2
Phalaris arundinacea	5	Typha latifolia	1

Transect Notes:

Very difficult to move through. Reed canary grass greater than 7ft tall, water at times greater than 4ft deep, monitoring this transect was hazardous and extreme caution taken by crew.

Transect Number: 2 **Compass Direction from Start:** 152 °

Interval Data:

Ending Station 260 **Community Type:** Phalaris arundinacea / Carex spp.

Species	Cover class	Species	Cover class
Carex lasiocarpa	4	Carex utriculata	4
Carex vesicaria	2	Open Water	1
Persicaria amphibia	3	Phalaris arundinacea	5

Ending Station 280 **Community Type:** Salix bebbiana / Phalaris arundinacea

Species	Cover class	Species	Cover class
Persicaria amphibia	1	Phalaris arundinacea	5
Salix bebbiana	0		

Transect Notes:

Very difficult to move through. Reed canary grass greater than 7ft tall, water at times greater than 3ft deep, monitoring this transect was hazardous and extreme caution taken by crew.

Transect Number: 3 **Compass Direction from Start:** 175 °

Interval Data:

Ending Station 484 **Community Type:** Phalaris arundinacea / Carex spp.

Species	Cover class	Species	Cover class
Carex aquatilis	4	Carex lasiocarpa	4
Carex utriculata	2	Persicaria amphibia	2
Phalaris arundinacea	5	Typha latifolia	1

Ending Station 584 **Community Type:** Carex spp. / Persicaria amphibia

Species	Cover class	Species	Cover class
Carex aquatilis	3	Carex lasiocarpa	4
Carex utriculata	3	Open Water	2
Persicaria amphibia	3	Phalaris arundinacea	2

Transect Notes:

Very difficult to move through. Reed canary grass greater than 7ft tall, water at times greater than 4ft deep, monitoring this transect was hazardous and extreme caution taken by crew.

PLANTED WOODY VEGETATION SURVIVAL

Schrieber Lake

Planting Type	#Planted	#Alive	Notes
Various Species	1500		

Comments

MDT planted 1,500 woody plants in the riparian buffer along Schrieber Creek, Coyote Creek, and around some wetland excavations. Based on observations at the parallel and perpendicular belt transects woody planting survival was estimated as well below the required 50% survival. For most of the plantings, competition with herbaceous vegetation such as reed canary grass is problematic, as are conditions that are either too wet or too dry for woody survival. MDT staff (contacted July 2017) indicated that some of the woody plantings along the Schrieber Creek corridor were likely adversely affected by weed spraying activities at the site.

Schrieber Lake

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bird Boxes

How many? 2

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Old nesting materials were present in bird boxes, but did not appear to be in use during monitoring site visit.

Species	#Observed	Behavior	Habitat
Canada Goose	5	FO, L	
Cedar Waxwing	2	FO	
Killdeer	2	FO	
Mallard	6	FO, L	
Meadowlark	2	FO, L	
Mountain Bluebird	2	FO	
Red-winged Blackbird	25	FO, L	
Sparrow sp.	8	FO	
Tree Swallow	20	FO, L	
Yellow Warbler	7	FO	

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Bear		No	Yes	No	
Columbia Spotted Frog	1	No	No	No	
Ground Squirrel Sp.	6	No	No	Yes	
White-tailed Deer	2	Yes	Yes	No	

Wildlife Comments:

Schrieber Lake

PHOTOGRAPHS

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

Photograph Checklist:

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

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

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

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

Photo #	Latitude	Longitude	Bearing	Description
CC1A-1	48.106803	-115.410891	320	CC1A-1 right bank
CC1A-1	48.106803	-115.410891	50	CC1A-1 upstream
CC1A-2	48.1066	-115.41127	175	CC1A-2 left bank
CC1A-2	48.1066	-115.41127	85	CC1A-2 upstream
CC1B-1	48.105509	-115.411518		
CC1B-1	48.105509	-115.411518	200	CC1B-1 downstream
DP01U	48.107337	-115.410505		
DP01W	48.107391	-115.410487		
DP02U	48.105204	-115.414183		
DP02W	48.105198	-115.414011		
DP03U	48.103133	-115.413838		
DP03W	48.103095	-115.413365		
PP-1	48.107033	-115.409592	242	Photo Point 1, Photo 1
PP-1	48.107033	-115.409592	197	Photo Point 1, Photo 2
PP-1	48.107033	-115.409592	164	Photo Point 1, Photo 3
PP-10	48.100529	-115.415406	39	Photo Point 10
PP-2	48.106591	-115.412511	104	Photo Point 2, Photo 4
PP-2	48.106591	-115.412511	69	Photo Point 2, Photo 5
PP-2	48.106591	-115.412511	162	Photo Point 2, Photo 3
PP-2	48.106591	-115.412511	205	Photo Point 2, Photo 2
PP-2	48.106591	-115.412511	323	Photo Point 2, Photo 1
PP-3	48.10754	-115.412747	183	Photo Point 3
PP-4	48.105948	-115.408236	287	Photo Point 4
PP-5	48.104136	-115.413847	173	Photo Point 5, Photo 1
PP-5	48.104136	-115.413847	35	Photo Point 5, Photo 2
PP-5	48.104136	-115.413847	359	Photo Point 5, Photo 3

PP-6	48.104297	-115.414628	150	Photo Point 6, Photo 1
PP-6	48.104297	-115.414628	103	Photo Point 6, Photo 2
PP-6	48.104297	-115.414628	52	Photo Point 6, Photo 3
PP-7	48.105398	-115.411691	228	Photo Point 7, Photo 1
PP-7	48.105398	-115.411691	299	Photo Point 7, Photo 2
PP-7	48.105398	-115.411691	355	Photo Point 7, Photo 3
PP-8	48.105714	-115.411356	79	Photo Point 8, Photo 3
PP-8	48.105714	-115.411356	320	Photo Point 8, Photo 1
PP-8	48.105714	-115.411356	49	Photo Point 8, Photo 2
PP-9	48.105502	-115.409787	323	Photo Point 9, Photo 1
PP-9	48.105502	-115.409787	120	Photo Point 9, Photo 2
SC1-1	48.10823599	-115.4148624	300	SC1-1 upstream
SC1-1	48.108236	-115.414862	30	SC1-1 left bank
SC1-2	48.108116	-115.414221	280	SC1-2 upstream
SC1-2	48.108116	-115.414221	10	SC1-2 left bank
SC2A-1	48.107386	-115.413401	45	SC2A-1 left bank
SC2A-1	48.107386	-115.413401	315	SC2A-1 downstream
SC2A-2	48.106889	-115.41299	185	SC2A-2 downstream
SC2A-2	48.106889	-115.41299	275	SC2A-2 downstream
SC2B-1	48.106342	-115.412902	175	SC2B-1 downstream
SC2B-1	48.106342	-115.412902	265	SC2B-1 right bank
SC3-1	48.105212	-115.412439	240	SC3-1 upstream
SC3-1	48.105212	-115.412439	330	SC3-1 left bank
SC3-2	48.10509	-115.412014	70	SC3-2 left bank
SC3-2	48.10509	-115.412014	160	SC3-2 downstream
SC7-1	48.104608	-115.41138	110	SC7-1 downstream
SC7-1	48.104608	-115.41138	20	SC7-1 left bank
T-1 end	48.106268	-115.411205	71	Transect 1 end
T-1 start	48.106526	-115.410102	251	Transect 1 start
T-2 end	48.105398	-115.411692	332	Transect 2 end
T-2 start	48.106037	-115.412335	152	Transect 2 start
T-3 end	48.104242	-115.413401	335	Transect 3 end
T-3 start	48.105866	-115.413539	175	T-3 start

Comments:

Schrieber Lake

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

The total wetland and aquatic habitat delineated at the Schrieber Lake mitigation site in 2020 was 55.23 acres, an increase of 3.13 acres since 2019 (Table 2; see maps in Appendix A). Schrieber Lake occupied 8.00 acres and remaining 'open water' areas represented a total of 6.24 acres.

Functional Assessments

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

Functional Assessment Comments:

Classified as Category I wetland.

Maintenance

Were man-made nesting structures installed at this site? Yes

If yes, do they need to be reaired? 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 waterflow into or out of the wetland? No

If yes, are the structures in need of repair

Active beaver dam observed at outlet along southern project boundary. If the beaver dam remains, water levels are expected to remain high across the site, which is and will continue to adversely affect the survival of herbaceous and woody vegetation. Water level across the site is very high and reed canary grass very dense and over 7ft tall, making this site hazardous and many areas nearly inaccessible for crew to conduct monitoring activities. Kayak needed to conduct monitoring.

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

Project/Site: Schrieber Lake | City/County: Lincoln | Sampling Date: 7/14/2020

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

Investigator(s): R Quire, S Weyant | Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Hillside | Local relief (concave, convex, none): convex | Slope (%): 5

Subregion (LRR): LRR E | Lat: 48.107337 | Long: -115.410505 | Datum: NAD 83

Soil Map Unit Name: Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrochrepts, glac | NWI classification: Not Mapped

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

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

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Elymus repens	25	☑	FAC
Pascopyrum smithii	40	☑	FACU
Poa pratensis	5	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 30

Dominance Test worksheet

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:
OBL species	0 X 1	0
FACW species	0 X 2	0
FAC species	30 X 3	90
FACU species	40 X 4	160
UPL species	0 X 5	0
Column Totals	70 (A)	250 (B)

Prevalence Index = B/A = 3.57143

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:
BG/litter=30%

SOIL

Sampling Point: DP01u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 4/1	100					Sandy Loam	
13+							Cobbles	**Cobble bottom.**

[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 Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except 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)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ 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 along 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 (2 or more 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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Schrieber Lake City/County: Lincoln Sampling Date: 7/14/2020

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

Investigator(s): R Quire, S Weyant Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRR E Lat: 48.107391 Long: -115.410487 Datum: NAD 83

Soil Map Unit Name: Andic Dystric Eutrochrepts, lacustrine terraces-Andic Dystrochrepts, glac NWI classification: Not Mapped

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
PEM riverine/depressional located west of where Coyote Creek enters the site.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius) — Absolute % Cover: — Dominant Species? — Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Phalaris arundinacea	65	☑	FACW

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 35

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	% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	0	X 1	0
FACW species	65	X 2	130
FAC species	0	X 3	0
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	65 (A)		130 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:
BG/litter/shallow ponded water=35%

SOIL

Sampling Point: DP01w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/2	100					Peat	**Organic-fibric**

[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.)

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [x] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (**except 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)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes [x] No [ ]

Remarks:

Sulfidic odor and histosol observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [x] 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)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 (2 or more 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)
- [x] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Raised Ant Mounds (D6) (**LRR A**)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes [x] No [ ] Depth (inches): 2

Water Table Present? Yes [x] No [ ] Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes [x] No [ ] Depth (inches): 0

Wetland Hydrology Present? Yes [x] No [ ]

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

Remarks:

Iron deposits, sulfidic odor and 2" of standing water observed at sample point.

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

Project/Site: Schrieber Lake City/County: Lincoln Sampling Date: 7/14/2020

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

Investigator(s): R Quire, S Weyant Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): undulating Slope (%): 5

Subregion (LRR): LRR E Lat: 48.105204 Long: -115.414183 Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained NWI classification: Not Mapped

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Located in central portion of site near west boundary.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Alopecurus pratensis	15	☑	FAC
Bromus inermis	35	☑	UPL
Elymus repens	5	☐	FAC
Pascopyrum smithii	10	☐	FACU
Phleum pratense	5	☐	FAC
Poa pratensis	10	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 20

Dominance Test worksheet

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	0	X 2	0
FAC species	35	X 3	105
FACU species	10	X 4	40
UPL species	35	X 5	175
Column Totals	80 (A)		320 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:
BG/litter=20%

SOIL

Sampling Point: DP02u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2	100					Clay Loam	
10-14	10YR 6/3	99	10YR 5/6	1	C	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 Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except 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)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ 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 along 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 (2 or more 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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Schrieber Lake City/County: Lincoln Sampling Date: 7/14/2020

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

Investigator(s): R Quire, S Weyant Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRR E Lat: 48.105198 Long: -115.414011 Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained NWI classification: Not Mapped

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
PEM depressional wetland near western project boundary.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Agrostis stolonifera	5	☐	FAC
Alopecurus arundinaceus	5	☐	FAC
Glyceria striata	5	☐	OBL
Pascopyrum smithii	2	☐	FACU
Phalaris arundinacea	10	☐	FACW
Phleum pratense	3	☐	FAC
Scirpus microcarpus	60	☑	OBL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 10

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 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	65	X 1	65
FACW species	10	X 2	20
FAC species	13	X 3	39
FACU species	2	X 4	8
UPL species	0	X 5	0
Column Totals	90 (A)		132 (B)

Prevalence Index = B/A = 1.46667

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:
BG/litter=10%

SOIL

Sampling Point: DP02w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 2/2	100					Mucky Peat	**Organic-hemic**

[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 Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except 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)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

13" organic horizon 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 along 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 (2 or more 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): 1

Water Table Present? Yes ☑ No ☐ Depth (inches): 10

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

1" of surface water observed at sample point.

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

Project/Site: Schrieber Lake | City/County: Lincoln | Sampling Date: 7/15/2020

Applicant/Owner: MDT | State: Montana | Sampling Point: DP03u

Investigator(s): R Quire, S Weyant | Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): undulating | Slope (%): 7

Subregion (LRR): LRR E | Lat: 48.103133 | Long: -115.413838 | Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained | NWI classification: Not Mapped

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Upland sample point, located at forest's edge in southwest corner of site.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status
Abies grandis	10	☑	FACU
Picea engelmannii	5	☐	FAC
Pinus contorta	15	☑	FAC

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Arctostaphylos uva-ursi	10	☑	FACU
Crataegus douglasii	5	☑	FAC
Symphoricarpos albus	5	☑	FACU

Herbaceous Stratum Plot size (5 Foot Radius)

Elymus repens	60	☑	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 40

Dominance Test worksheet

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

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:
OBL species	0 X 1	0
FACW species	0 X 2	0
FAC species	85 X 3	255
FACU species	25 X 4	100
UPL species	0 X 5	0
Column Totals	110 (A)	355 (B)

Prevalence Index = B/A = 3.22727

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:
BG/litter=40%

SOIL

Sampling Point: DP03u

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
0-15	10YR 4/1	100					Sandy 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 Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except 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)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ 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 along 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 (2 or more 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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology observed. Soils dry.

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

Project/Site: Schrieber Lake City/County: Lincoln Sampling Date: 7/15/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP03w

Investigator(s): R Quire, S Weyant Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRR E Lat: 48.103095 Long: -115.413365 Datum: NAD 83

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

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
PEM/PSS depressional/riverine wetland, in southwest corner of site.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Betula pumila	7	☑	OBL
Salix bebbiana	10	☑	FACW
Salix boothii	5	☑	FACW
Salix geyeriana	3	☐	FACW

Herbaceous Stratum Plot size (5 Foot Radius)

Phalaris arundinacea	50	☑	FACW

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 50

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	7	X 1	7
FACW species	68	X 2	136
FAC species	0	X 3	0
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	75 (A)		143 (B)

Prevalence Index = B/A = 1.90667

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:
Ponded water=50%. Most shrubs were stunted or dying due to 3 feet of inundation.

SOIL

Sampling Point: DP03w

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
								Soils not described.

[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 Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except 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)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Soils were not described as data point was inundated with 3 feet of water. Hydrogen sulfide odor 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 along 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 (2 or more 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): 36

Water Table Present? Yes ☑ No ☐ Depth (inches): 0

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

3 feet of inundation at soil pit. Hydrogen sulfide odor observed. Stunted and stress/dying shrubs observed as a result of inundation.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Schrieber Lake **2. MDT project#** STPP STWD (756) **Control#** 9680000

3. Evaluation Date 7/15/2020 **4. Evaluators** R Quire, S Weyant, B Trudgeon **5. Wetland/Site# (s)** Schrieber Lake

6. Wetland Location(s): **T** 27N **R** 30W **Sec1** 13 **T** **R** **Sec2**

Approx Stationing or Mileposts Approximately Milepost 53.8

Watershed 1 - Kootenai **Watershed/County** Lincoln

7. Evaluating Agency CCI for MDT

8. Wetland size acres 55.23

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 55.23

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Aquatic Bed		Permanent/Perennial	25
Depressional	Emergent Wetland		Permanent/Perennial	10
Riverine	Unconsolidated Bottom		Permanent/Perennial	5
Slope	Emergent Wetland		Permanent/Perennial	30
Slope	Emergent Wetland		Seasonal/Intermittent	10
Slope	Scrub-Shrub Wetland		Permanent/Perennial	20

11. Estimated Relative Abundance Rare

12. General Condition of AA

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

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

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

Highway 2 and USFS roads are adjacent to the AA.

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

Spotted knapweed, Canada thistle, and Linaria vulgaris

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

Site is in a relatively flat valley bottom that has historically been used for agriculture and hay production. The valley sides are heavily forested with secondary growth coniferous forest. Nearly entire AA has permanent/perennial water regime, and dominated by hydrophytic vegetation. PSS wetlands occur along pre-existing creek channels and in southwest corner of the site where a "carr" fen occurs. The fen supports bog birch and has been reported in previous years to support hoary willow.

13. Structural Diversity: (based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes], see #10 above)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: aquatic bed, emergent, scrub-shrub

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	◉ D ○ S	Grizzly bear
Incidental habitat (list species)	○ D ○ S	
No usable habitat	☐ S	

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

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

Sources for documented use: USFS personnel observed a boar grizzly upstream of the AA in the Schrieber Creek drainage in 2010. Wolverines could potentially be in the area.

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

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

Primary or critical habitat (list species)	◉ D ○ S	Salix candida (S3/S4),Western toad (S2);
Secondary habitat (list Species)	◉ D ○ S	Townsend's big-eared bat (S3), hoary bat (S3)
Incidental habitat (list species)	○ D ◉ S	Westslope cuthroat trout (S2), fisher (S3)
No usable habitat	☐ S	

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

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

Sources for documented use: MDT BRR. USFS, MNHP and MFWP databases and discussions with reg wildlife and fisheries biologists. Western toads observed by MDT and Kootenai Nat'l Forest personel in April 2011.

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments Good habitat diversity with substantial wildlife evidence.

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

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

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

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

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .5M

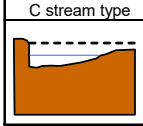
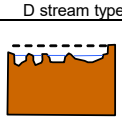
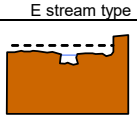
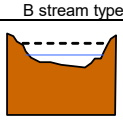
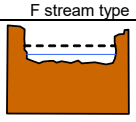
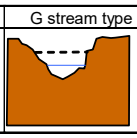
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating .5M

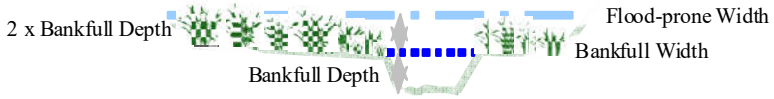
iii. Final Score and Rating: .5 M **Comments:** Brook Trout documented in Schrieber Creek immediately up and downstream of Schrieber Lake by FWP in 2011 (MFISH query). Westslope Cutthroat documented upstream, outside project area.

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

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

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

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



Floodprone width 25 / **Bankfull width** 10 = **Entrenchment ratio** 2.5

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

Comments: Stream channels in AA have free access to most of their floodplains. Floodplains dominated by herbaceous vegetation.

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

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

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

Comments: Extensive areas of inundation, much great than 5 ac-feet, observed in 2020 and previous monitoring events.

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

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

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

Comments: AA has potential to receive minor sedimentation from nearby US Hwy 2 and adjacent hillsides that have been logged.

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

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

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

Comments: Shorelines and banks are well vegetated with primarily reed canary grass, cat tail, and Carex spp.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

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 & ii below)

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

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

14K. Uniqueness:

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

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

Comments: This wetland complex contains a fen, is relatively undisturbed, and so is fairly unique in the watershed.

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

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

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

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

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

Comments:

This site is open to public access and has a high potential for education, especially for birders since there is a great hill at the entrance to the site that provides a good vantage point for low impact bird viewing.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Schrieber Lake

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	H	.8	1	44.18	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	49.71	☐
C. General Wildlife Habitat	E	1	1	55.23	☑
D. General Fish Habitat	M	.5	1	27.62	☐
E. Flood Attenuation	M	.6	1	33.14	☐
F. Short and Long Term Surface Water Storage	H	1	1	55.23	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	55.23	☐
H. Sediment/Shoreline Stabilization	H	1	1	55.23	☐
I. Production Export/Food Chain Support	E	1	1	55.23	☑
J. Groundwater Discharge/Recharge	H	1	1	55.23	☐
K. Uniqueness	H	1	1	55.23	☑
L. Recreation/Education Potential (bonus points)	H	.2	NA	11.05	☐
Totals:		10	11	552.30	
Percent of Possible Score			**90.91** %		

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

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

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

☐

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

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

I **II** **III** **IV**

Proper Functioning Condition – Standard Checklist

Name of Riparian-Wetland Area: Coyote Creek, Lower Schrieber Creek

Date: November 2020

Segment/Reach ID: CC1A-1, CC1A-2, CC1B-1, SC3-1, SC3-2, SC7-1

ID Team Observers: Ryan Quire, Stacey Weyant

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events Entire adjacent wetland is permanently inundated or saturated. When high flows enter these reaches, they likely dissipate quickly with a slight increase in water surface elevation in the adjacent wetland.
		X	2) Where beaver dams are present they are active and stable No beaver activity observed in these reaches.
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region) Following the first monitoring year and subsequent section measurements, the dimensionless parameters are within the range for the intended stream type (E).
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events Dense root masses present along entire length of both constructed reaches.
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate riparian-wetland vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery) Plant communities primarily herbaceous along both channels.

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

(Revised 1998)

Remarks:
The lower restored wet meadow within the project area contains constructed and reactivated portions of Coyote and Schrieber Creek. Both reaches have similar characteristics, typical of a meandering, low gradient, wet meadow, E-type stream. The banks are well vegetated with high root density. The pattern and profile of both streams appear stable after six monitoring years, with little to no lateral or vertical movement observed. The extensive, well vegetated floodplain should readily dissipate the energy associated with high flow events. Minimal sedimentation has been observed in some areas of the stream but is expected in this low gradient system. Therefore, these reaches were scored with a Proper Functioning Condition.

Summary Determination
Functional Rating:
Proper Functioning Condition __X__

Functional—At Risk _____

Nonfunctional _____

Unknown _____

Trend for Functional—At Risk:
Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside the control of the manager?
Yes _____

No __X__

If yes, what are those factors?

Flow regulations _____
Channelization _____
Augmented flows _____
Mining activities _____
Road encroachment _____
Other (specify) _____
Upstream channel conditions _____
Oil field water discharge _____

Proper Functioning Condition – Standard Checklist

Name of Riparian-Wetland Area: Upper Schrieber Creek

Date: November 2020

Segment/Reach ID: SC1-1, SC1-2

ID Team Observers: Ryan Quire, Stacey Weyant

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in "relatively frequent" events No indication of over bank flows over the last six years of monitoring. However, this ephemeral stream likely flows for a short duration and does not leave much evidence.
		X	2) Where beaver dams are present they are active and stable No beaver activity observed
	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region) Following the first monitoring year and subsequent section measurements, the dimensionless parameters may be slightly off target for the intended stream type (B). The actual depth may be too large for there to be relatively frequent out of bank flows.
X			4) Riparian-wetland area is widening or has achieved potential extent Revegetation is slower as compared to Lower Schrieber Creek, due to less moisture availability, but has continually increased over the last six monitoring years.
X			5) Upland watershed is not contributing to riparian-wetland degradation Does not appear to be excessive sediment load into the reach or flows in excess of what the reach can handle.

Yes	No	N/A	VEGETATION
	X		6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery) Early successional, herbaceous dominated community composed of primarily shallow rooted species.
	X		7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery) Vegetation dominated by non-native *Elymus repens, Agrostis stolonifera,* and minimal cover from *Phalaris arundinacea*.
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics FAC/FACW species present
	X		9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events Dense root masses lacking along these reaches.
X			10) Riparian-wetland plants exhibit high vigor
	X		11) Adequate riparian-wetland vegetative cover is present to protect banks and dissipate energy during high flows Minimal increase in cover observed in 2020 than in 2018, will likely increase with time.
X			12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery) Forest upstream of reach.

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy The engineered drop structures and imported coarse streambed material appear adequate at dispersing energy.
X			14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity No lateral movement observed over six-year monitoring period.
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition) No obvious head-cutting or excessive deposition observed.

(Revised 1998)

Remarks:
See individual comments. The pattern and profile appear stable after six monitoring years. There has been no obvious evidence of frequent out of bank flooding observed. This constructed reach appears to be functioning properly, although revegetation has been slower here than in other reaches due to its ephemeral nature and steeper side slopes. There are bare soils and bank fabric exposed at some locations along this reach, and more noxious weed infestations than in other areas. This reach is more susceptible to damage and erosion during a high flow event and was therefore rates as Functional – At Risk with an upward trend. Upward trend was selected because vegetation cover is increasing and is expected to do so over time, eventually providing greater stability to the banks.

Summary Determination
Functional Rating:
Proper Functioning Condition _____

Functional—At Risk __X___

Nonfunctional _____

Unknown _____

Trend for Functional—At Risk:
Upward __X__

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside the control of the manager?
Yes __X___

No _____

If yes, what are those factors?

Flow regulations _____
Channelization _____
Augmented flows _____
Mining activities _____

Road encroachment _____
Other (specify) __X - Its ephemeral nature and steeper channel banks are taking longer for deep rooted vegetation to establish___
Upstream channel conditions _____
Oil field water discharge _____

Proper Functioning Condition – Standard Checklist

Name of Riparian-Wetland Area: Upper Schrieber Creek

Date: November 2020

Segment/Reach ID: SC2A-1, SC2A-2, SC2B-1

ID Team Observers: Ryan Quire, Stacey Weyant

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in "relatively frequent" events No indication of over bank flows over the last six years of monitoring. However, this ephemeral stream likely flows for a short duration and does not leave much evidence.
		X	2) Where beaver dams are present they are active and stable No beaver activity observed
	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region) Following the first monitoring year and subsequent section measurements, the dimensionless parameters may be slightly off target for the intended stream type (B and C). The actual depth may be too large for there to be relatively frequent out of bank flows.
X			4) Riparian-wetland area is widening or has achieved potential extent Revegetation is slower as compared to Lower Schrieber Creek, due to less moisture availability, but has continually increased over the last six monitoring years.
X			5) Upland watershed is not contributing to riparian-wetland degradation Does not appear to be excessive sediment load into the reach or flows in excess of what the reach can handle.

Yes	No	N/A	VEGETATION
	X		6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery) Early successional, herbaceous dominated community composed of primarily non-native graminoids
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics FAC/FACW species present
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events Dense root masses present along most of this reach.
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate riparian-wetland vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery) Large trees adjacent to old barn should supply sufficient coarse woody debris.

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy

			The engineered drop structures and imported coarse streambed material appear adequate at dispersing energy.
X			14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity No lateral movement observed over six-year monitoring period.
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition) No obvious head-cutting or excessive deposition observed.

(Revised 1998)

Remarks:

See individual comments. The pattern and profile appear stable after six monitoring years. There has been no obvious evidence of frequent out of bank flooding observed. This constructed reach appears to be functioning properly and is more vegetated than the upper section of Schrieber Creek, likely a result of increased moisture availability and less steep channel side slopes. Therefore, these reaches were scored with a Proper Functioning Condition.

Summary Determination

Functional Rating:

Proper Functioning Condition __X__

Functional—At Risk _____

Nonfunctional _____

Unknown _____

Trend for Functional—At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside the control of the manager?

Yes _____

No _____

If yes, what are those factors?

Flow regulations _____
Channelization _____
Augmented flows _____
Mining activities _____
Road encroachment _____
Other (specify) _____
Upstream channel conditions _____
Oil field water discharge _____

Scientific Names	Common Names	WMVC Indicator Status[1]
Abies grandis	Grand Fir	FACU
Achillea millefolium	Common Yarrow	FACU
Agrostis scabra	Rough Bent	FAC
Agrostis stolonifera	Spreading Bent	FACW
Algae, green	Algae, green	N/A
Alnus incana	Speckled Alder	FACW
Alopecurus arundinaceus	**Creeping Meadow-Foxtail**	**FAC**
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Amelanchier alnifolia	Saskatoon Service-Berry	FACU
Antennaria sp.	Pussytoes	N/A
Apocynum androsaemifolium	Spreading Dogbane	FACU
Arctostaphylos uva-ursi	Red Bearberry	FACU
Berberis repens	Creeping Oregon-grape	UPL
Betula pumila	Bog Birch	OBL
Bromus carinatus	Mountain Brome	UPL
Bromus inermis	Smooth Brome	UPL
Bromus tectorum	**Cheatgrass**	**UPL**
Calamagrostis rubescens	Pinegrass	UPL
Campanula rotundifolia	Bluebell-of-Scotland	FACU
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex bebbii	Bebb's Sedge	OBL
Carex geyeri	Geyer's Sedge	UPL
Carex inops	Long-stolon Sedge	UPL
Carex lasiocarpa	Woolly-Fruit Sedge	OBL
Carex nebrascensis	Nebraska Sedge	OBL
Carex simulata	Analogue Sedge	OBL
Carex sp.	Sedge	N/A
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	Lesser Bladder Sedge	OBL
Centaurea stoebe	Spotted Knapweed	UPL
Cirsium arvense	Canadian Thistle	FAC
Cirsium vulgare	Bull thistle	FACU
Comarum palustre	Purple Marshlocks	OBL
Cornus canadensis	Canadian Bunchberry	FAC
Crataegus douglasii	Black Hawthorn	FAC
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchard Grass	FACU
Deschampsia caespitosa	Tufted Hair Grass	FACW
Eleocharis palustris	Common Spike-Rush	OBL

Schrieber Lake Wetland Mitigation Site – 2015 – 2020 Vegetation Species List

Scientific Names	Common Names	WMVC Indicator Status[1]
Elymus glaucus	Blue Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FAC
Elymus trachycaulus	Slender Wild Rye	FAC
Epilobium ciliatum	Fringed Willow Herb	FACW
Equisetum arvense	Field Horsetail	FAC
Fragaria virginiana	Virginia Strawberry	FACU
Galium triflorum	Fragrant Bedstraw	FACU
Geum macrophyllum	Large-Leaf Avens	FAC
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Gnaphalium palustre	Western Marsh Cudweed	FACW
Hypericum perforatum	Common St. John's-Wort	FACU
Juncus nodosus	Knotted Rush	OBL
Juncus tenuis	Lesser Poverty Rush	FAC
Larix occidentalis	Western Larch	FACU
Lemna minor	Common Duckweed	OBL
Lepidium draba	Whitetop	UPL
Leucanthemum vulgare	Ox-Eye Daisy	FACU
Linaria dalmatica	Dalmatian Toadflax	UPL
Linaria vulgaris	Butter-and-eggs	UPL
Maianthemum stellatum	Starry False Solomon's-Seal	FAC
Moss	Sphagnum/Aulacomnium moss	N/A
Nassella viridula	Barkworth Green Needlegrass	UPL
Pascopyrum smithii	Western-Wheat Grass	FACU
Penstemon sp.	Beardtongue	N/A
Persicaria amphibia	Water Smartweed	OBL
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FACU
Pinus contorta	Lodgepole Pine	FAC
Pinus monticola	Western White Pine	FACU
Pinus ponderosa	Ponderosa Pine	FACU
Plantago sp.	Plantain	N/A
Poa compressa	Flat-Stem Blue Grass	FACU
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Poa sp.	Blue Grass	N/A
Potentilla anserina	Silverweed	OBL
Potentilla norvegica	Norwegian Cinquefoil	FAC
Pseudoroegneria spicata	Bluebunch Wheatgrass	UPL

Schrieber Lake Wetland Mitigation Site – 2015 – 2020 Vegetation Species List

Scientific Names	Common Names	WMVC Indicator Status[1]
Pseudotsuga menziesii	Douglas-Fir	FACU
Rhamnus alnifolia	Alder-Leaf Buckthorn	FACW
Rosa woodsii	Woods' Rose	FACU
Rumex acetosella	Common Sheep Sorrel	FACU
Salix bebbiana	Gray Willow	FACW
Salix boothii	Booth's Willow	FACW
Salix candida	Sage Willow	OBL
Salix geyeriana	Geyer's Willow	FACW
Salix sp.	Willow	N/A
Scutellaria galericulata	Hooded Skullcap	OBL
Shepherdia canadensis	Russet Buffalo-Berry	UPL
Symphoricarpos albus	Common Snowberry	FACU
Symphyotrichum spathulatum	Mountain American-Aster	FAC
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	UPL
Trifolium aureum	Yellow Clover	UPL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Vaccinium sp.	Blueberry	N/A
Verbascum thapsus	Great Mullein	FACU

[1] 2018 NWPL (USACE 2018)

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

APPENDIX C
PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

Schrieber Lake: Photo Point Photographs

Photo Point: 1 – Photo 1 Location: Northwest Boundary
Bearing: 242 degrees Year: 2015

Photo Point: 1 – Photo 1 Location: Northwest Boundary
Bearing: 242 degrees Year: 2020

Photo Point: 1 – Photo 2 Location: Northwest Boundary
Bearing: 200 degrees Year: 2015

Photo Point: 1 – Photo 2 Location: Northwest Boundary
Bearing: 200 degrees Year: 2020

Photo Point: 1 – Photo 3 Location: Northwest Boundary
Bearing: 164 degrees Year: 2015

Photo Point: 1 – Photo 3 Location: Northwest Boundary
Bearing: 164 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 2 – Photo 1 Location: Near Corral
Bearing: 323 degrees Year: 2015

Photo Point: 2 – Photo 1 Location: Near Corral
Bearing: 323 degrees Year: 2020

Photo Point: 2 – Photo 2 Location: Near Corral
Bearing: 205 degrees Year: 2015

Photo Point: 2 – Photo 2 Location: Near Corral
Bearing: 205 degrees Year: 2020

Photo Point: 2 – Photo 3 Location: Near Corral
Bearing: 162 degrees Year: 2015

Photo Point: 2 – Photo 3 Location: Near Corral
Bearing: 162 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 2 – Photo 4 Location: Near Corral
Bearing: 104 degrees Year: 2015

Photo Point: 2 – Photo 4 Location: Near Corral
Bearing: 104 degrees Year: 2020

Photo Point: 2 – Photo 5 Location: Near Corral
Bearing: 69 degrees Year: 2015

Photo Point: 2 – Photo 5 Location: Near Corral
Bearing: 69 degrees Year: 2020

Photo Point: 3 Location: West of Corrals
Bearing: 183 degrees Year: 2015

Photo Point: 3 Location: West of Corrals
Bearing: 183 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 4 Location: East corner of Cell 10
Bearing: 287 degrees Year: 2015

Photo Point: 4 Location: East corner of Cell 10
Bearing: 287 degrees Year: 2020

Photo Point: 5 – Photo 1 Location: Corner of carr
Bearing: 143 degrees Year: 2015

Photo Point: 5 – Photo 1 Location: Corner of carr
Bearing: 143 degrees Year: 2020

Photo Point: 5 – Photo 2 Location: Corner of carr
Bearing: 35 degrees Year: 2015

Photo Point: 5 – Photo 2 Location: Corner of carr
Bearing: 35 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 5 – Photo 3 Location: Corner of carr
Bearing: 359 degrees Year: 2015

Photo Point: 5 – Photo 3 Location: Corner of carr
Bearing: 359 degrees Year: 2020

Photo Point: 6 – Photo 1 Location: South end of Cell 1
Bearing: 150 degrees Year: 2015

Photo Point: 6 – Photo 1 Location: South end of Cell 1
Bearing: 150 degrees Year: 2020

Photo Point: 6 – Photo 2 Location: South end of Cell 1
Bearing: 103 degrees Year: 2015

Photo Point: 6 – Photo 2 Location: South end of Cell 1
Bearing: 103 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 6 – Photo 3 Location: South end of Cell 1
Bearing: 52 degrees Year: 2015

Photo Point: 6 – Photo 3 Location: South end of Cell 1
Bearing: 52 degrees Year: 2020

Photo Point: 7 – Photo 1 Location: South end of Transect 2
Bearing: 228 degrees Year: 2015

Photo Point: 7 – Photo 1 Location: South end of Transect 2
Bearing: 228 degrees Year: 2020

Photo Point: 7 – Photo 2 Location: South end of Transect 2
Bearing: 299 degrees Year: 2015

Photo Point: 7 – Photo 2 Location: South end of Transect 2
Bearing: 299 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 7 – Photo 3 Location: South end of Transect 2
Bearing: 355 degrees Year: 2015

Photo Point: 7 – Photo 3 Location: South end of Transect 2
Bearing: 355 degrees Year: 2020

Photo Point: 8 – Photo 1 Location: Interior of site
Bearing: 320 degrees Year: 2015

Photo Point: 8 – Photo 1 Location: Interior of site
Bearing: 320 degrees Year: 2020

Photo Point: 8 – Photo 2 Location: Interior of site
Bearing: 49 degrees Year: 2015

Photo Point: 8 – Photo 2 Location: Interior of site
Bearing: 49 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 8 – Photo 3 Location: Interior of site
Bearing: 79 degrees Year: 2015

Photo Point: 8 – Photo 3 Location: Interior of site
Bearing: 79 degrees Year: 2020

Photo Point: 9 – Photo 1 Location: Upland island center of site
Bearing: 323 degrees Year: 2015

Photo Point: 9 – Photo 1 Location: Upland island center of site
Bearing: 323 degrees Year: 2020

Photo Point: 9 – Photo 2 Location: Upland island center of site
Bearing: 120 degrees Year: 2015

Photo Point: 9 – Photo 2 Location: Upland island center of site
Bearing: 120 degrees Year: 2020

Schrieber Lake: Photo Point Photographs

Photo Point: 10 Location: Overlook
Bearing: 39 degrees Year: 2015

Photo Point: 10 Location: Overlook
Bearing: 39 degrees Year: 2020

Schrieber Lake: Vegetation Transect Photographs

Transect 1: Start Location: T-1
Bearing: 251 degrees Year: 2015

Transect 1: Start Location: T-1
Bearing: 251 degrees Year: 2020

Transect 1: End Location: T-1
Bearing: 71 degrees Year: 2015

Transect 1: End Location: T-1
Bearing: 71 degrees Year: 2020

Transect 2: Start Location: T-2
Bearing: 152 degrees Year: 2015

Transect 2: Start Location: T-2
Bearing: 152 degrees Year: 2020

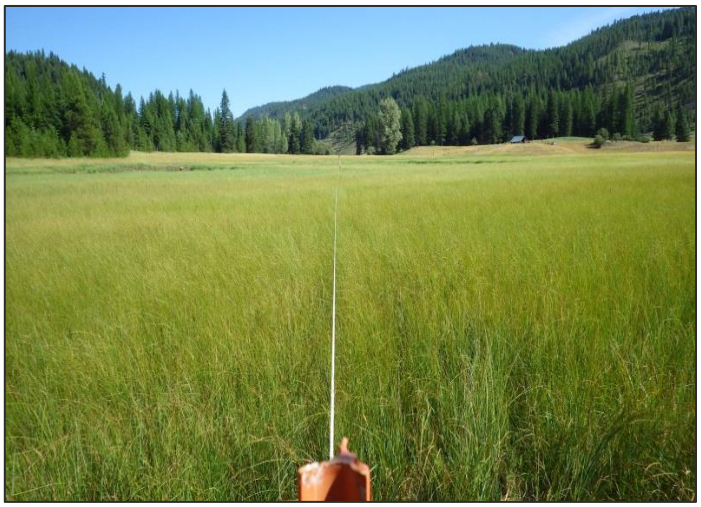
Schrieber Lake: Vegetation Transect Photographs

Transect 2: End Location: T-2
Bearing: 332 degrees Year: 2015

Transect 2: End Location: T-2
Bearing: 332 degrees Year: 2020

Transect 3: Start Location: T-3
Bearing: 175 degrees Year: 2015

Transect 3: Start Location: T-3
Bearing: 175 degrees Year: 2020



Transect 3: End Location: T-3
Bearing: 355 degrees Year: 2015

Transect 3: End Location: T-3
Bearing: 355 degrees Year: 2020

Schrieber Lake: Data Point Photographs

Data Point: DP01w Location: Veg Com 3
Year: 2020

Data Point: DP01u Location: Veg Com 1
Year: 2020

Data Point: DP02w Location: Veg Com 3
Year: 2020

Data Point: DP02u Location: Veg Com 1
Year: 2020

Data Point: DP03w Location: Veg Com 3; T-3 Start
Year: 2020

Data Point: DP03u Location: Veg Com 1; T-3 Start
Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: SC1-1 Location: Schrieber Creek
Bearing: 300° – upstream Year: 2016

Cross-Section: SC1-1 Location: Schrieber Creek
Bearing: 300° – upstream Year: 2020

Cross-Section: SC1-1 Location: Schrieber Creek
Bearing: 30° – Left Bank Year: 2016

Cross-Section: SC1-1 Location: Schrieber Creek
Bearing: 30° – Left Bank Year: 2020

Cross-Section: SC1-2 Location: Schrieber Creek
Bearing: 280˚ – upstream Year: 2016

Cross-Section: SC1-2 Location: Schrieber Creek
Bearing: 280˚ – upstream Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: SC1-2 Location: Schrieber Creek
Bearing: 10° – Left Bank Year: 2016

Cross-Section: SC1-2 Location: Schrieber Creek
Bearing: 10° – Left Bank Year: 2020

Cross-Section: SC2A-1 Location: Schrieber Creek
Bearing: 315° – downstream Year: 2016

Cross-Section: SC2A-1 Location: Schrieber Creek
Bearing: 315° – downstream Year: 2020

Cross-Section: SC2A-1 Location: Schrieber Creek
Bearing: 45° – Left Bank Year: 2016

Cross-Section: SC2A-1 Location: Schrieber Creek
Bearing: 45° – Left Bank Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: SC2A-2 Location: Schrieber Creek
Bearing: 185° – downstream Year: 2016

Cross-Section: SC2A-2 Location: Schrieber Creek
Bearing: 185° – downstream Year: 2020

Cross-Section: SC2A-2 Location: Schrieber Creek
Bearing: 275° – Right Bank Year: 2016

Cross-Section: SC2A-2 Location: Schrieber Creek
Bearing: 275° – Right Bank Year: 2020

Cross-Section: SC2B-1 Location: Schrieber Creek
Bearing: 175° – downstream Year: 2016

Cross-Section: SC2B-1 Location: Schrieber Creek
Bearing: 175° – downstream Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: SC2B-1 Location: Schrieber Creek
Bearing: 265° – Right Bank Year: 2016

Cross-Section: SC2B-1 Location: Schrieber Creek
Bearing: 265° – Right Bank Year: 2020

Cross-Section: SC3-1 Location: Schrieber Creek
Bearing: 240° – Upstream Year: 2016

Cross-Section: SC3-1 Location: Schrieber Creek
Bearing: 240° – Upstream Year: 2020

Cross-Section: SC3-1 Location: Schrieber Creek
Bearing: 330° – Left Bank Year: 2016

Cross-Section: SC3-1 Location: Schrieber Creek
Bearing: 330° – Left Bank Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: SC3-2 Location: Schrieber Creek
Bearing: 160° – downstream Year: 2016

Cross-Section: SC3-2 Location: Schrieber Creek
Bearing: 160° – downstream Year: 2020

Cross-Section: SC3-2 Location: Schrieber Creek
Bearing: 70° – Left Bank Year: 2016

Cross-Section: SC3-2 Location: Schrieber Creek
Bearing: 70° – Left Bank Year: 2020

Cross-Section: SC7-1 Location: Schrieber Creek
Bearing: 110° – downstream Year: 2016

Cross-Section: SC7-1 Location: Schrieber Creek
Bearing: 110° – downstream Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: SC7-1 Location: Schrieber Creek
Bearing: 20° – Left Bank Year: 2016

Cross-Section: SC7-1 Location: Schrieber Creek
Bearing: 20° – Left Bank Year: 2020

Cross-Section: CC1A-1 Location: Coyote Creek
Bearing: 50° – Upstream Year: 2016

Cross-Section: CC1A-1 Location: Coyote Creek
Bearing: 50° – Upstream Year: 2020

Cross-Section: CC1A-1 Location: Coyote Creek
Bearing: 320° – Right Bank Year: 2016

Cross-Section: CC1A-1 Location: Coyote Creek
Bearing: 320° – Right Bank Year: 2020

Schrieber Lake: Cross-Section Photographs

Cross-Section: CC1A-2 Location: Coyote Creek
Bearing: 85° – Upstream Year: 2016

Cross-Section: CC1A-2 Location: Coyote Creek
Bearing: 85° – Upstream Year: 2020

Cross-Section: CC1A-2 Location: Coyote Creek
Bearing: 355° – Right Bank Year: 2016

Cross-Section: CC1A-2 Location: Coyote Creek
Bearing: 175° – Left Bank Year: 2020

Cross-Section: CC1B-1 Location: Coyote Creek
Bearing: 200° – Downstream Year: 2016

Cross-Section: CC1B-1 Location: Coyote Creek
Bearing: 200° – Downstream Year: 2020

Schrieber Lake: Cross-Section Photographs

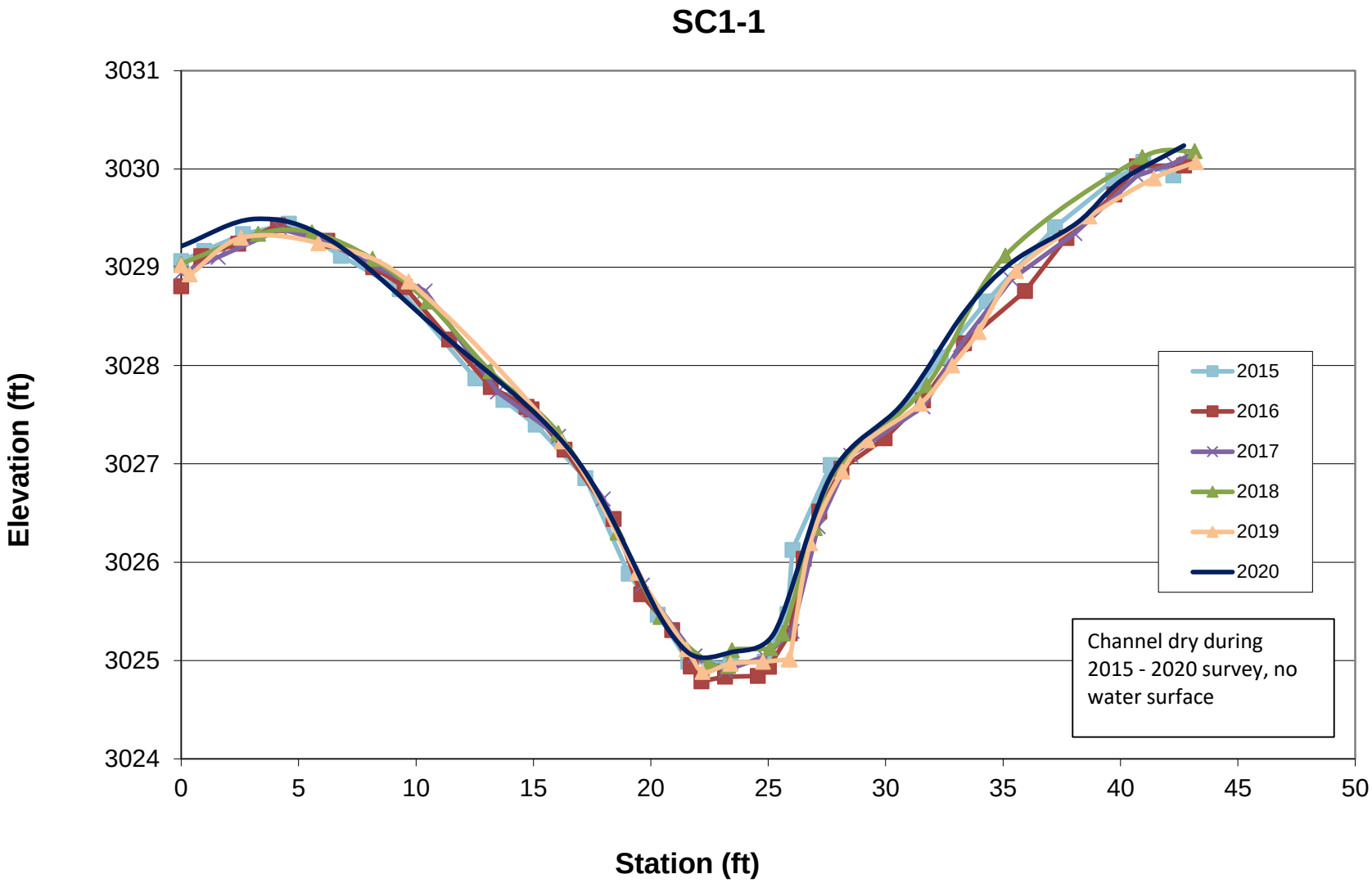
Cross-Section: CC1B-1 Location: Coyote Creek
Bearing: 110° – Left Bank Year: 2016

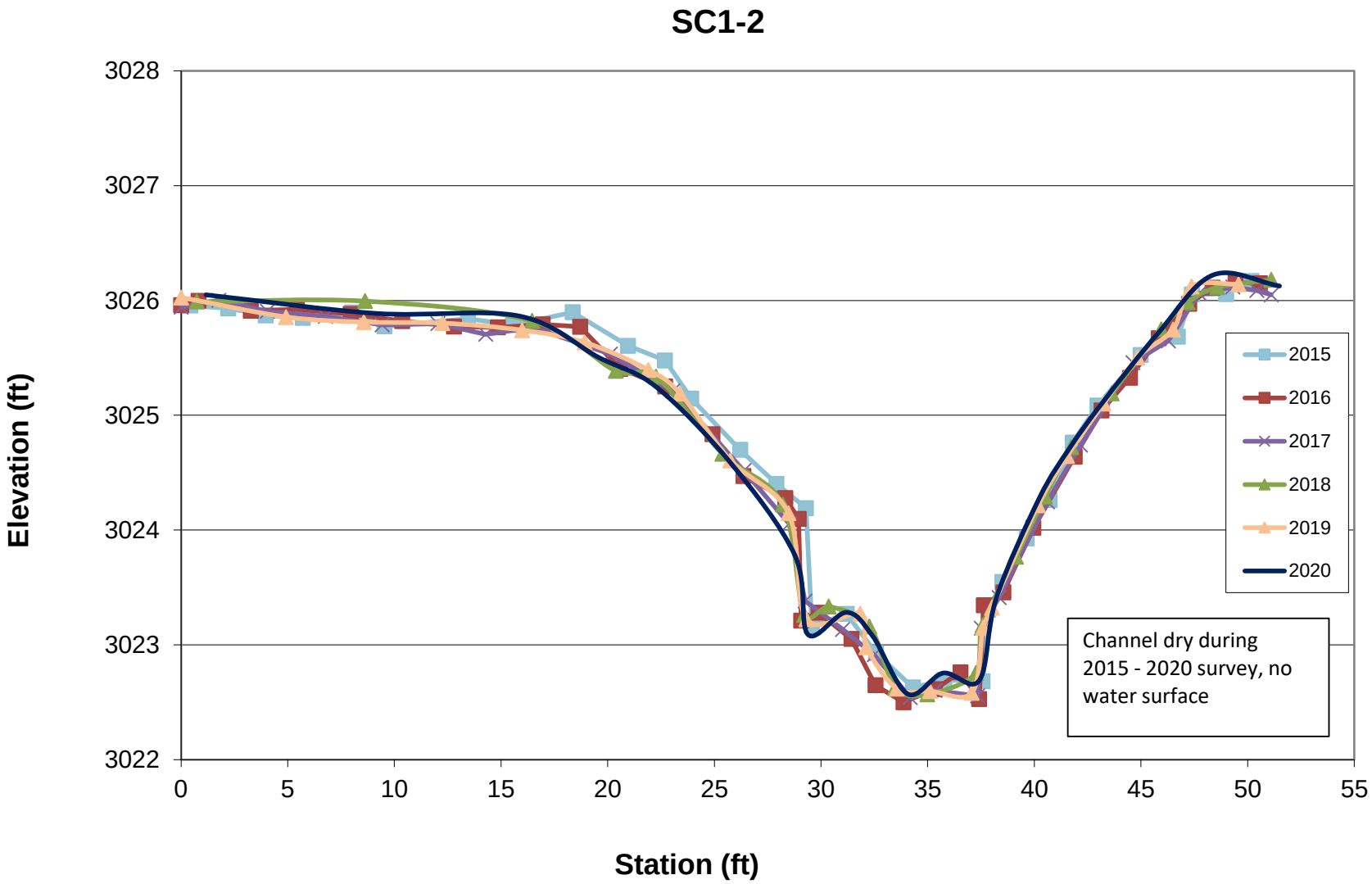
Cross-Section: CC1B-1 Location: Coyote Creek
Bearing: 110° – Left Bank Year: 2020

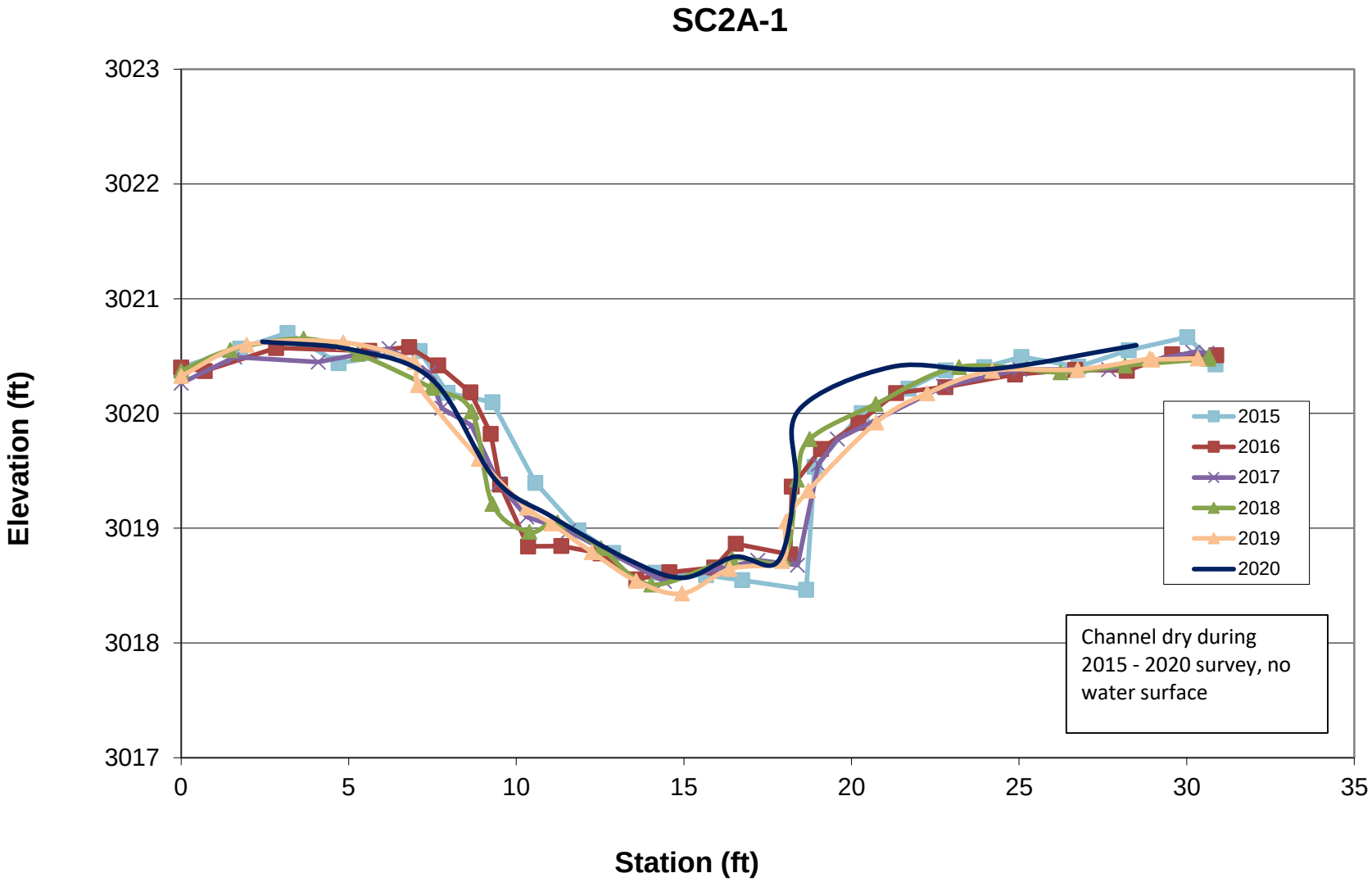
APPENDIX D

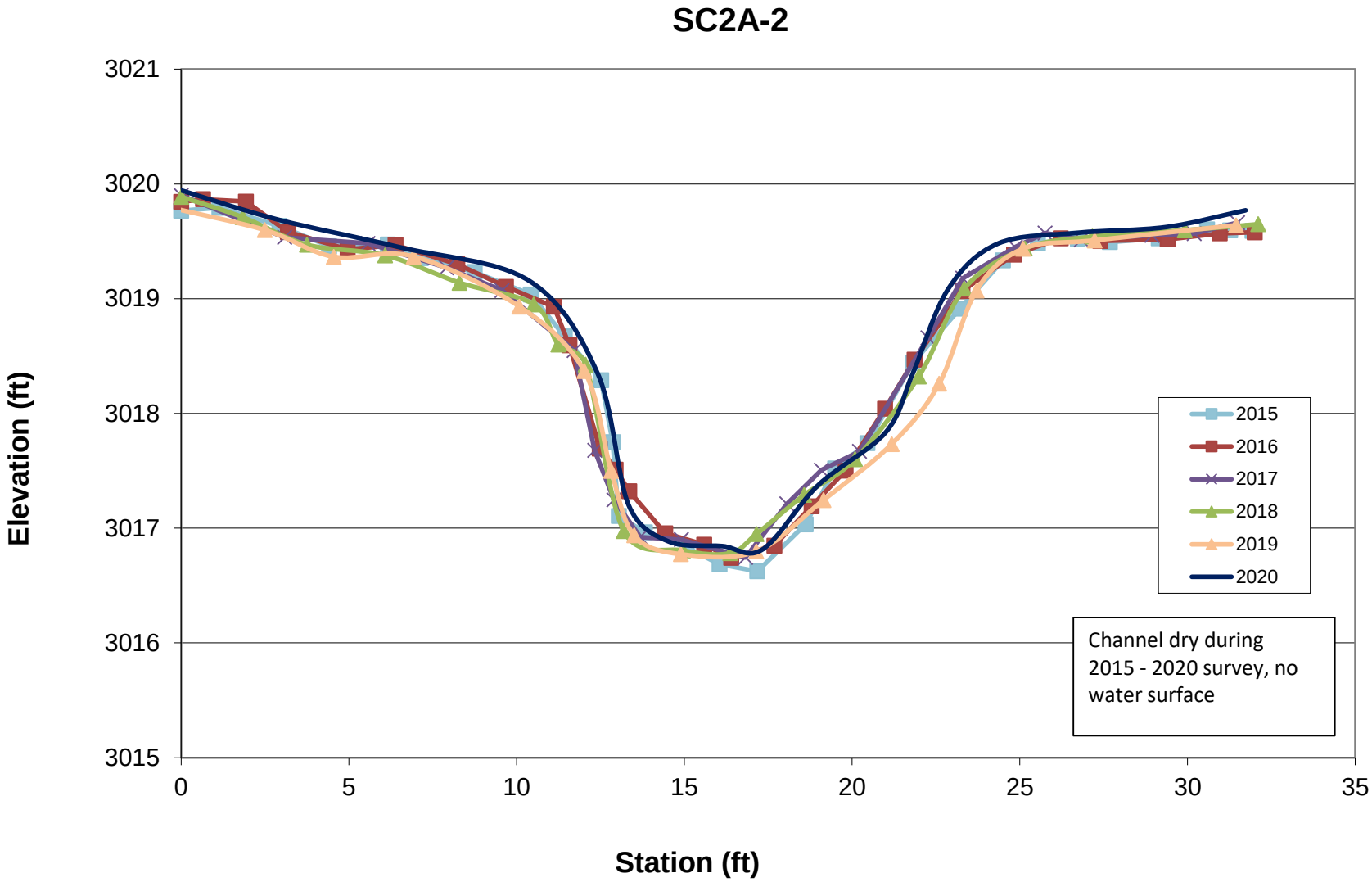
Surveyed Stream Cross Sections

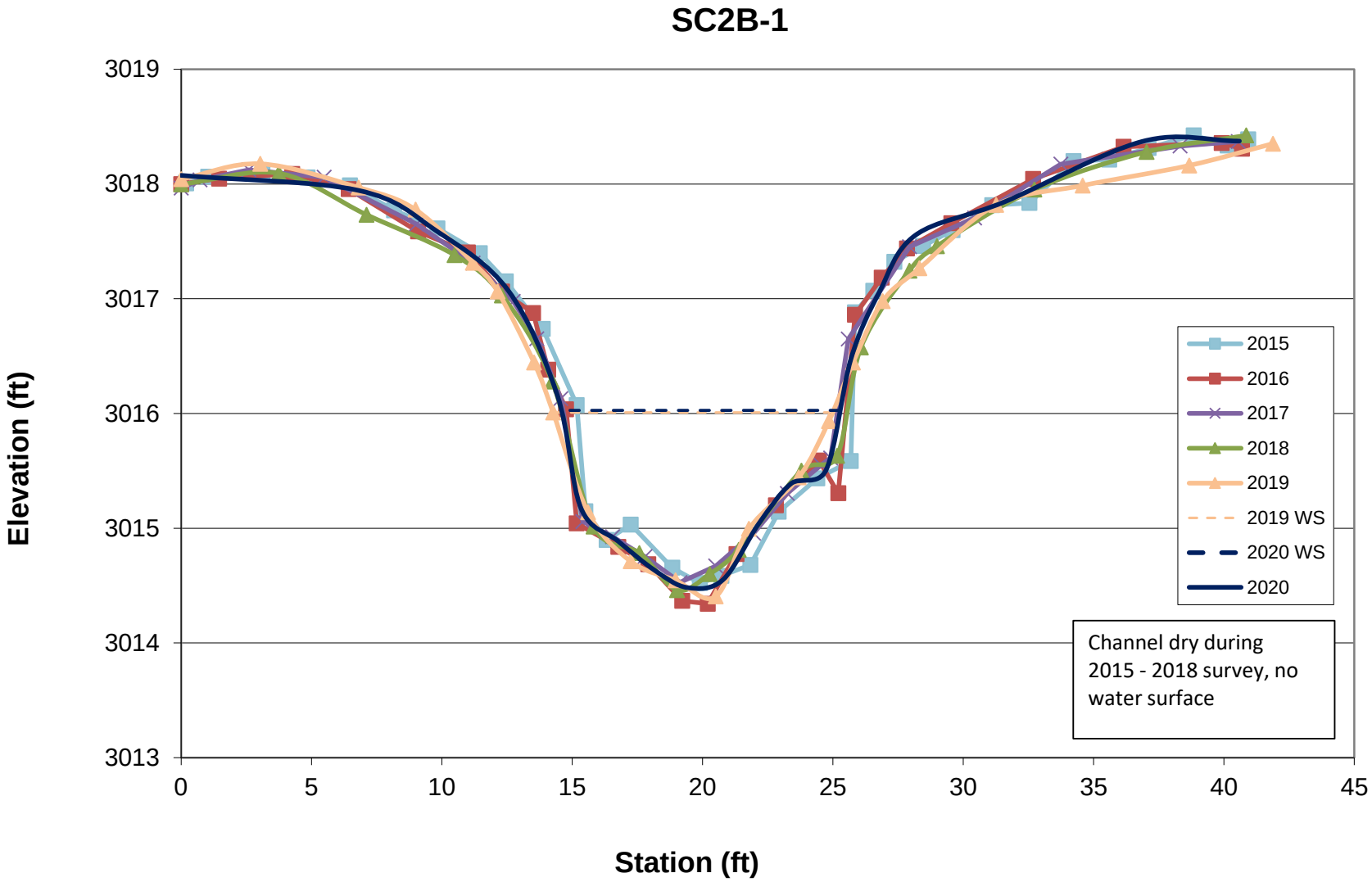
MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

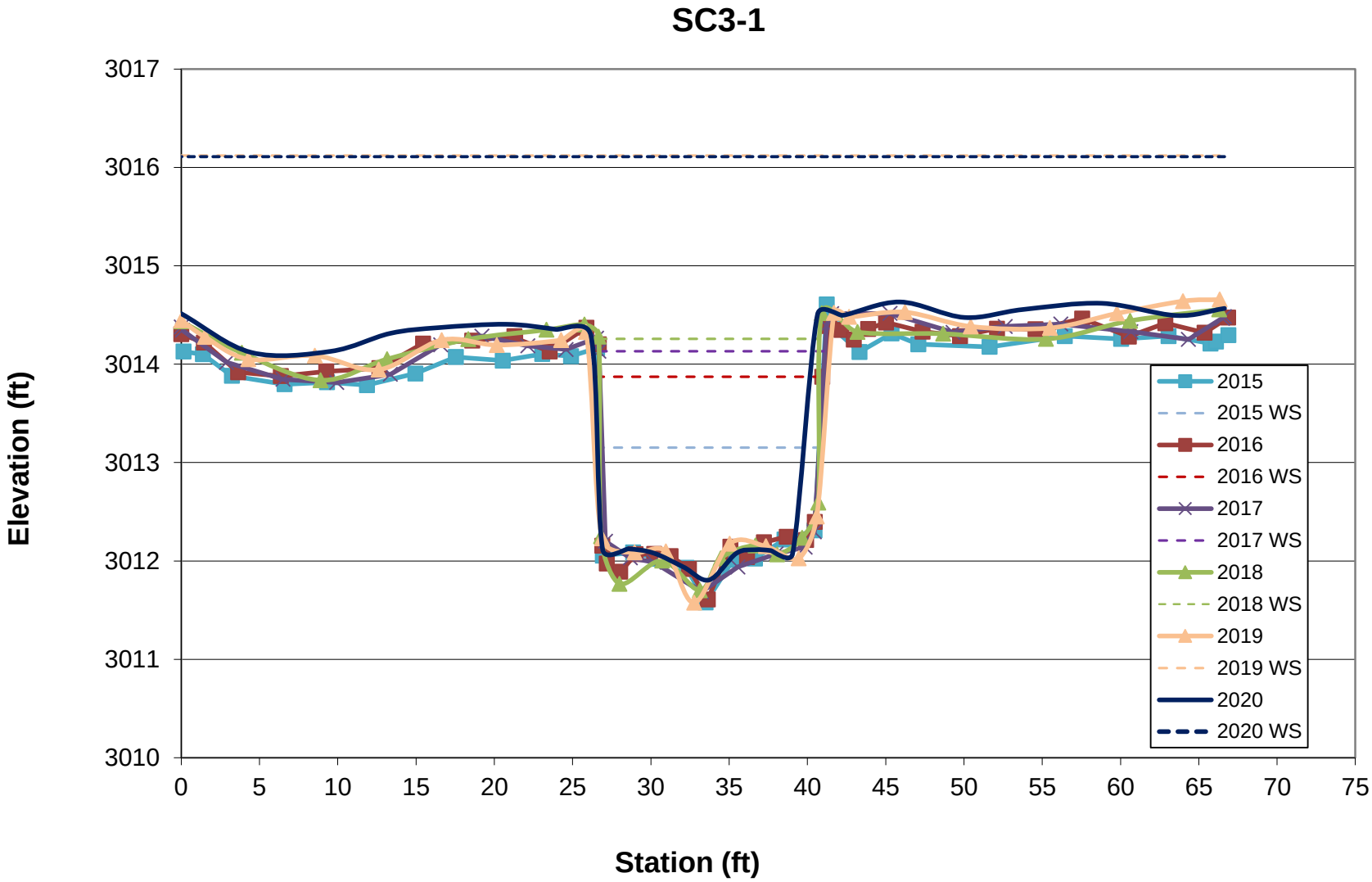

SC1-1
Elevation (ft)
3031
3030
3029
3028
3027
3026
3025
3024
0
5
10
15
20
25
30
35
40
45
50
Station (ft)
2015
2016
2017
2018
2019
2020
Channel dry during 2015 - 2020 survey, no water surface

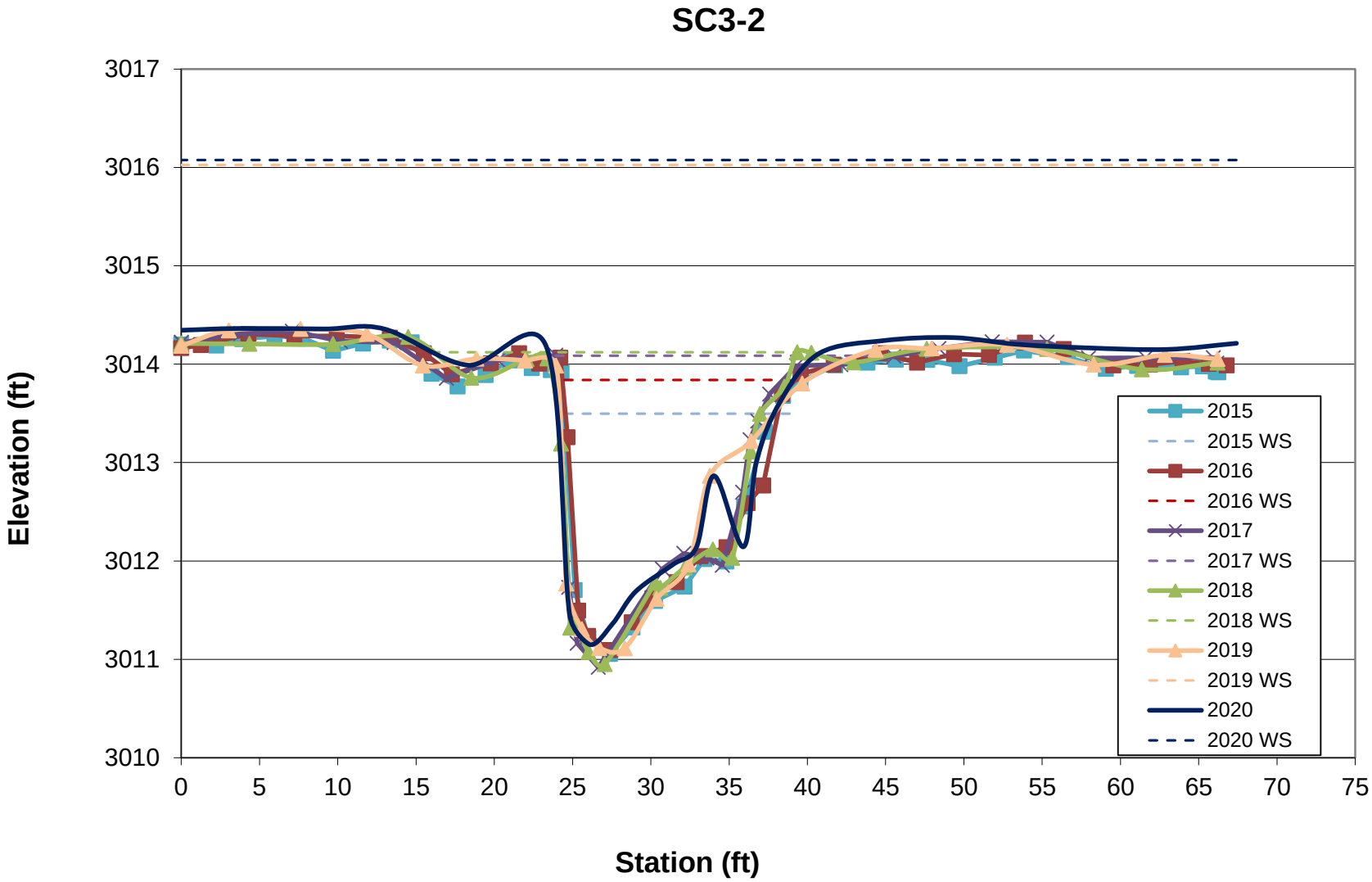

SC1-2
Elevation (ft)
3028
3027
3026
3025
3024
3023
3022
0
5
10
15
20
25
30
35
40
45
50
55
Station (ft)
2015
2016
2017
2018
2019
2020
Channel dry during 2015 - 2020 survey, no water surface


SC2A-1
3023
3022
3021
3020
3019
3018
3017
0
5
10
15
20
25
30
35
Elevation (ft)
Station (ft)
2015
2016
2017
2018
2019
2020
Channel dry during 2015 - 2020 survey, no water surface


SC2A-2
Elevation (ft)
3021
3020
3019
3018
3017
3016
3015
0
5
10
15
20
25
30
35
Station (ft)
2015
2016
2017
2018
2019
2020
Channel dry during 2015 - 2020 survey, no water surface


SC2B-1
Elevation (ft)
3019
3018
3017
3016
3015
3014
3013
0
5
10
15
20
25
30
35
40
45
Station (ft)
2015
2016
2017
2018
2019
2019 WS
2020 WS
2020
Channel dry during 2015 - 2018 survey, no water surface


SC3-1
Elevation (ft)
Station (ft)
3017
3016
3015
3014
3013
3012
3011
3010
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


SC3-2
Elevation (ft)
Station (ft)
3017
3016
3015
3014
3013
3012
3011
3010
0
5
10
15
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25
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35
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45
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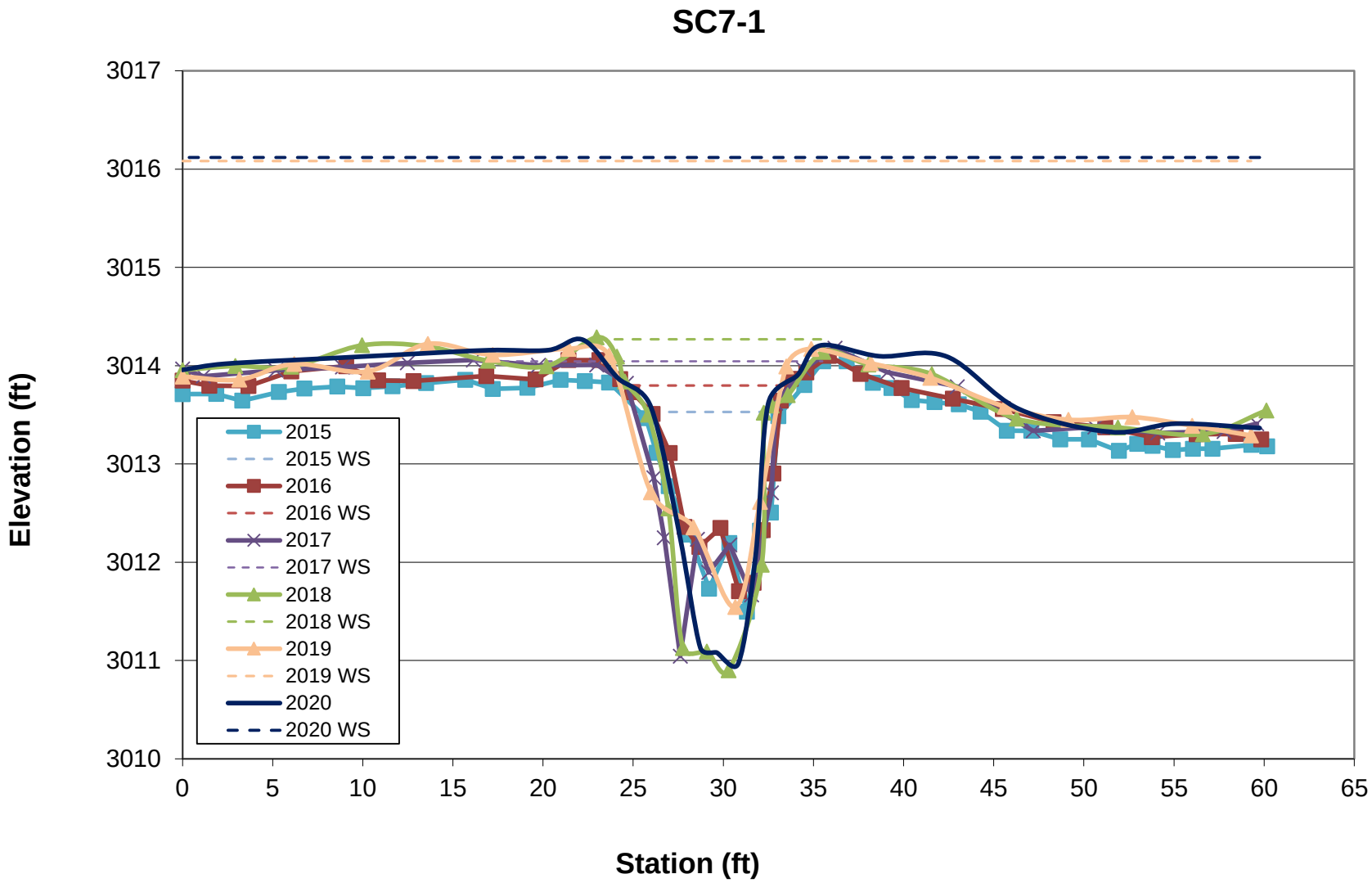
75
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


SC7-1
Elevation (ft)
Station (ft)
3017
3016
3015
3014
3013
3012
3011
3010
0
5
10
15
20
25
30
35
40
45
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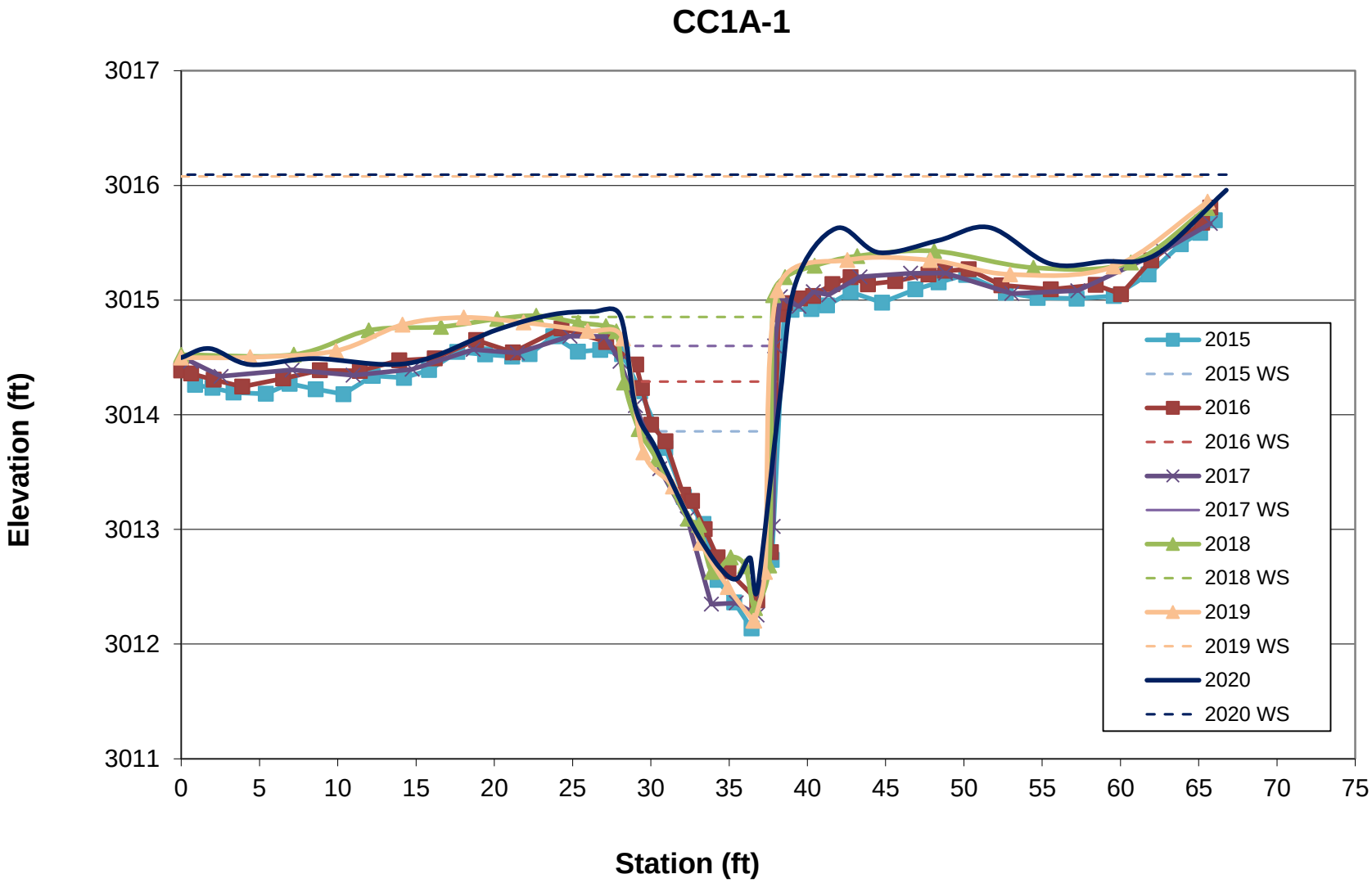
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


CC1A-1
Elevation (ft)
Station (ft)
3017
3016
3015
3014
3013
3012
3011
0
5
10
15
20
25
30
35
40
45
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75
2015
2015 WS
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2016 WS
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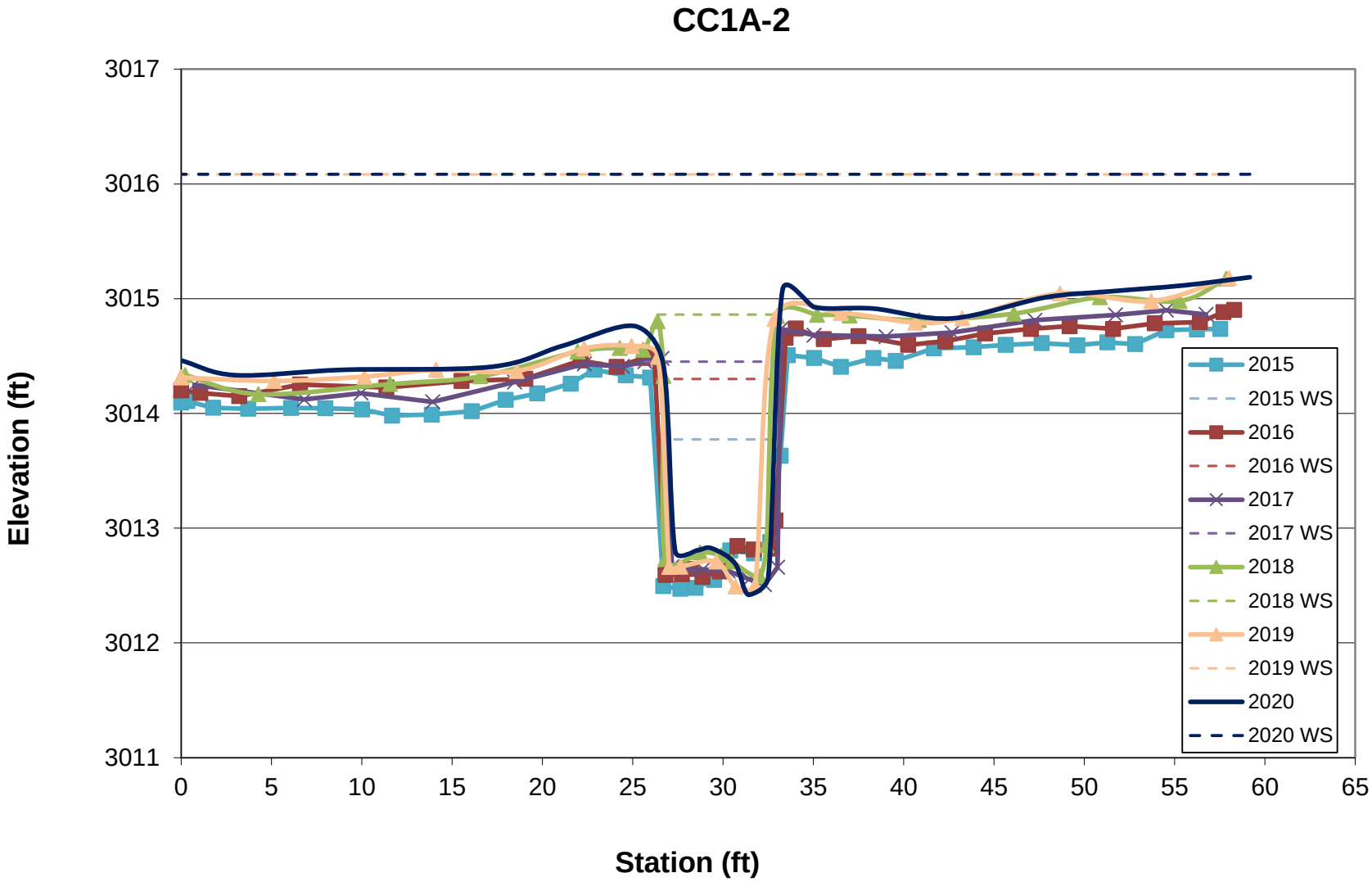
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


CC1A-2
Elevation (ft)
Station (ft)
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3016
3015
3014
3013
3012
3011
0
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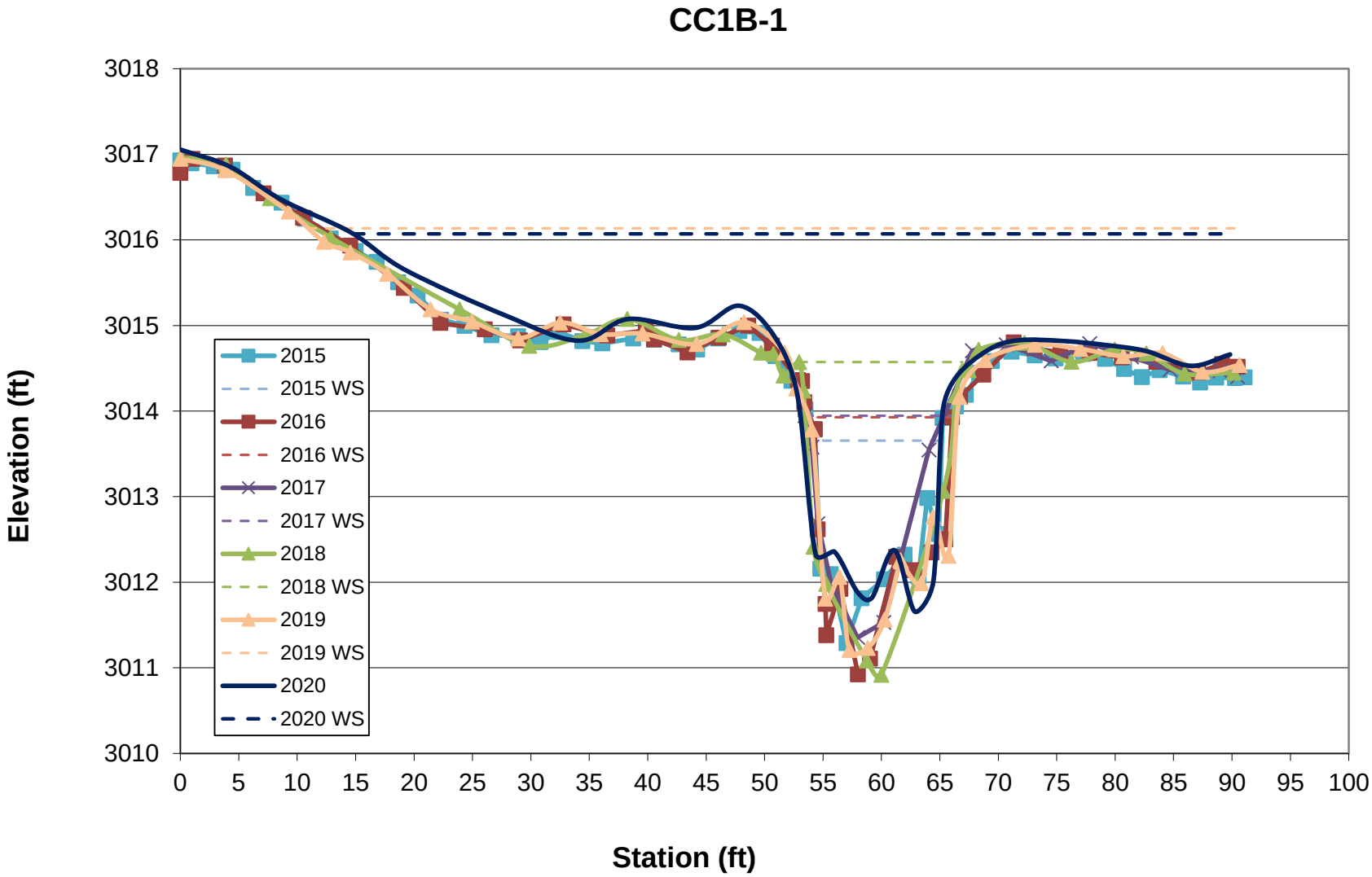
10
15
20
25
30
35
40
45
50
55
60
65
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


CC1B-1
Elevation (ft)
Station (ft)
3018
3017
3016
3015
3014
3013
3012
3011
3010
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS