SCHRIEBER LAKE MITIGATION SITE

Project Overview

Watershed: Watershed #1 – Kootenai River Basin

Monitoring Year: 2019

Years Monitored: 5th year of monitoring

Corps Permit Number: NWO-2013-00874-MTM

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

Monitoring Conducted By: RESPEC/HDR for MDT

Dates Monitoring Was Conducted: July 30–31, 2019

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:** June 27, 2019 **Specific recommendations for any additional corrective actions:** Weed treatment will continue in 2020.

Anticipated Wetland Credit Acres: 13.40

Wetland Credit Acres Generated to Date: 15.17

Anticipated Stream Credits: 36,741.87

Stream Credits Generated to Date: 31,957.47

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 a majority of the 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 that were identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC).
	State-listed noxious weeds do not exceed 5 percent absolute cover.	Y	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 is very low.
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 within the upper reach of the site experience seasonal drawdown, and rooted hydrophytic vegetation development has been observed. The lower depressions appear to support perennial inundation with 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.	Y	Y	The ephemeral reaches of Schrieber Creek are establishing at different rates. Reach 1 is at a higher elevation, with a steeper longitudinal slope, and steeper bank slopes, which are all contributing to slower vegetation establishment. Reach 2 is at a lower elevation with less steep bank slopes, and vegetation appears to be establishing at a higher rate, likely also because of the higher moisture availability. As a result, SC1 is not currently meeting the performance criteria; however, SC2 appears to have met the criteria. The downstream reaches of Schrieber Creek (Reaches SC3 and SC7) and both reaches of Coyote Creek (CC1A and CC1B) meet the success criteria because they are dominated by reed canary grass, which has a root stability index of 9.
	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 2019 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 monitoring year and will also be performed in the 2020 monitoring year. The 2018 monitoring year 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 of the 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 because of less vegetation establishment and some areas of bare soil along the bank. This reach has an upward trend because vegetation continues to establish, just at a slower rate likely because of less moisture availability and steeper bank slopes. The At Risk qualifier was designated because the reach is most susceptible to damage after a large flow event.
Riparian Buffer Success	Creditable buffer areas must have at least 50 percent aerial cover of nonnoxious weed species by the end of the monitoring period.	Y	Y	All riparian vegetation transects exhibited 50 percent or greater aerial cover of nonnoxious 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 87 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 3.5 percent. Noxious weed cover along Coyote Creek is 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 exhibit less than 50 percent survival to date. Planted trees and shrubs along Coyote Creek exhibit a 43 percent survival rate to date.

Performance Standards	Success Criteria	Criteria Achieved Y/N		Discussion
		SC[a]	CC[b]	
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.
	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-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 postconstruction 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 acreage that was delineated at the Schrieber Lake mitigation site in 2019 was 52.1 acres, as shown in Table 2. The wetland acreage has remained constant since monitoring began in 2015. The extensive development of wetlands at this site is the product of excavating the wetland cells, plugging the former stream channels, and re-meandering and raising the bed elevation of the restored creek channels. As a result, widespread inundation was present throughout the site during the July 2019 site visit. Beaver activity was noted at this site in 2019 for the first time since monitoring began in 2015. The newly constructed beaver damn at the outlet of Schrieber Lake contributed greatly to the inundation levels across the site. Continued beaver dam influence at this site may result in expanded wetland area in the future as well as shifts in vegetation communities as obligate species displace facultative species. Wetland development in the low-lying meadow in the west-central part of the site seems to have plateaued but will continue to be monitored for wetland expansion in this area.

Functional Assessment – The 2008 Montana Westland Assessment Method (MWAM) form was used to evaluate the site in 2019 (Appendix B). The MWAM Assessment Area (AA) includes all of the delineated wetlands, including the creditable wetlands (37.65 acres), the wetlands within the riparian buffers of Schrieber and Coyote Creeks (3.9 acres), the open water within Schrieber Lake (8.26 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 (1.25 acres). The wetlands in the AA received a Category I rating with 87 percent of the total possible points in 2019. The 52.1-acre AA was rated as a Category I wetland and scored excellent for General Wildlife Habitat and Production Export/Food Chain Support and high for Listed/Proposed Threatened-and-Endangered Species Habitat, Short- and Long-Term Surface-Water Storage, Sediment/Nutrient/Toxicant Removal, sediment/shoreline stabilization, Groundwater/Discharge/Recharge, and Uniqueness.

Table 2. Project Upland and Delineated Wetland Acres From 2015 Through 2019

Habitat Type	2015 Acres	2016 Acres	2017 Acres	2018 Acres	2019 Acres
Uplands	**52.60**	**52.60**	**52.60**	**52.60**	**52.60**
Wetlands & Aquatic Habitat					
Schrieber Lake	8.26	8.26	8.26	8.26	8.26
Stream Channels	1.00	1.00	1.00	1.0	1.0
Riparian Buffer	3.90	3.90	3.90	3.9	3.9
USFS Wetlands	1.25	1.25	1.25	1.25	1.25
Remaining Wetlands	37.65	37.65	37.65	37.65	37.65
Wetlands Subtotal	**52.10**	**52.10**	**52.10**	**52.10**	**52.10**
Project Area	**104.70**	**104.70**	**104.70**	**104.70**	**104.70**

Vegetation – A total of 96 plant species have been identified at the site from 2015 through 2019. Nine wetland and three upland community types were identified and mapped at the mitigation site in 2019 (Figure A-3, Appendix A). Dominant plant species that were observed within each community are listed on the Wetland Mitigation Site Monitoring form (Appendix B). The vegetation community types identified on the site in 2019 include the following:

- Upland Type 1 – *Elymus repens/Bromus inermis*
- Wetland Type 2 – *Betula pumila/Rhamnus alifolia*
- Wetland Type 3 – *Phalaris arundinacea/Carex Sp.*
- Wetland Type 4 – *Carex simulate/Persicaria amphibia*
- Upland Type 5 – *Pseudotsuga menziesii/Larix occidentalis*
- Wetland Type 6 – *Salix bebbiana/Phalaris arundinacea*
- Wetland Type 7 – *Alnus incana/Phalaris arundinacea*
- Wetland Type 8 – *Carex utriculata*
- Upland Type 9 – *Crataegus douglasii/Symphoricarpos albus*
- Wetland Type 10 – *Typha latifolia*
- Wetland Type 11 – Open Water/Aquatic macrophytes
- Wetland Type 12 – *Carex lasiocarpa*

Vegetation cover was measured along three belt transects (T-1, T-2, and T-3) in 2019 (Figure A-2, Appendix A). Photographs of the transect end points are provided in Appendix C. Table 3 summarizes the data for T-1 from 2015 through 2019. T-1 is 284 feet long and intersects vegetation community Types 3, 7, and 11. Hydrophytic vegetation accounted for 100 percent of the transect in 2019. Vegetation along this transect has shifted to 100 percent hydrophytic species after starting out as an even mix of upland and hydrophytic species.

Table 4 summarizes the data for T-2 from 2015 through 2019. T-2 is 280 feet long and intersects vegetation community Types 3 and 6. Hydrophytic vegetation accounted for 100 percent of the transect in 2019. Vegetation along this transect has shifted to 100 percent hydrophytic species after starting out as a mix of upland and hydrophytic species.

Table 3. Data Summary for T-1 From 2015 Through 2019 at the Schrieber Lake Site

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

Table 4. Data Summary for T-2 From 2015 Through 2019 at the Schrieber Lake Site

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

Table 5 summarizes the data for T-3 from 2015 through 2019. T-3 is 584 feet long and intersects vegetation community Types 1, 3, and 4. Hydrophytic vegetation accounted for 94 percent of the transect in 2019. This transect has seen an overall increase in percent hydrophytic vegetation communities since monitoring began in 2015.

Priority 2B noxious weeds that were identified within the Schrieber Lake mitigation site included spotted knapweed, Canada thistle, St. John's-wort (*Hypericum perforatum*), dalmatian toadflax (*Linaria dalmatica*), and butter-and-eggs (*Linaria vulgaris*). Infestation areas were mapped in 2019. The most common weed species found on the site were spotted knapweed and Canada thistle (Figure A-3, Appendix A). Canada thistle remains a problem along the Schrieber Creek channel and remains challenging to treat because of its close proximity to planted woody species. MDT has an ongoing weed-

control program for their mitigation sites that includes conducting an annual assessment of weeds that are identified at each location and containing and controlling the identified populations. MDT completed noxious weed spraying at the Schrieber Lake site on June 27, 2019, and completed a second spraying in September 2019.

Table 5. Data Summary for T-3 From 2015 Through 2019 at the Schrieber Lake Site

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

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 plantings survival was estimated to be below the required 50 percent survival. Woody planting survival is hampered by competition with herbaceous vegetation, extremely saturated soil conditions, herbivory by ungulates and rodents, and (in some areas) weed-spraying activities. Little natural expansion of woody plants has occurred along either channel for the same reasons listed above.

Hydrology – During the 2019 investigation, the average depth of surface water across the site was estimated at 2.0 feet with a range of depth from 0.5 to 4 feet. Approximately 90 percent of the AA was inundated. The surface-water depth at the emergent vegetation and open-water boundary was estimated at 2.0 feet. In 2019, a new beaver dam at the outlet of Schrieber Lake significantly raised the water level across the entire wetland area. Nearly all of the wetland habitat on the site contained standing surface water in 2019, and average water depths across the site raised by 0.5 to 1.0 foot from previous years. Because of a distinct topographic break between upland and wetland habitat across the site, the increased water elevation did not result in greater surface area inundation but, rather, increased inundation across existing wetlands. Upland habitat immediately adjacent to the wetland boundary showed signs of soil saturation during the site visit but upland vegetation still persisted in these areas. A shift in vegetation could occur if the beaver dam persists and water levels remain high; as a result, the wetland area would increase across the site. 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 through the summer but this was not the case in 2019. Water levels will continue to be monitored moving forward.

Photographs – Ten photo points were initially established in the project area in 2015. All ten photo point locations were documented during the 2019 site visit. Additionally, photographs were taken at each surveyed stream cross section, sampled data point, and start and end of the vegetation transects

(T-1, T-2, and T-3) in 2019. The locations of these photographs are illustrated on Figure A-2 in Appendix A. The 2019 photographs with a comparison to the first year of monitoring are provided in Appendix C. Please refer to previous years monitoring reports for all previous annual photographs (https://www.mdt.mt.gov/publications/brochures/wetland_mitigation.shtml).

Soils – Six soil pits were evaluated to determine the extent of hydric soil development across the site. DP-1W consisted of black 10YR 2/1 loam that satisfied hydric soil indicators with the presence of a hydrogen sulfide odor. DP-1U revealed a brown (10YR 3/2) loam-textured soil without redox features from 0 to 10 inches. No positive indicators of hydric soil were observed at upland data point DP-1U. DP-2W (a new data point added in 2018) revealed a 10YR 3/1 peat layer to 20 inches and qualifies as a histosol (A1), while DP-2U was excavated in a very dry, rocky soil in the adjacent uplands. DP-2U revealed a brown (10YR 4/3) loam with roots and small gravel in the upper 4 inches and rocks below. No positive indicators of hydric soil were observed at upland data point DP-2U. DP-3W (a new data point in 2018) revealed a (10YR 2/1) loam with heavy organics that qualify as a histic epipedon, while DP-3U was excavated in adjacent upland habitat. DP-3U revealed a very dark grayish-brown (10YR 3/2) loam to a depth of 20 inches. No positive indicators of hydric soil were observed at upland data point DP-3U.

Wildlife – Seven bird species were identified in 2019 at the Schrieber Lake site. Temperatures were very warm during the survey, which likely limited the number of species observed. In addition to the seven bird species, northern Columbia spotted frogs (*Rana luteiventris*) were observed within many of the excavated wetland cells (Appendix B). Deer tracks and scat and ground squirrel burrows were noted on the site as well.

Stream Monitoring – The survey results for 11 permanent cross sections that were established along the constructed Coyote and Schrieber Creeks (Figure A-2, Appendix A) are shown in Appendix D. The 2019 data 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 all of the monitoring years. Only the upper reaches of Coyote Creek are not meeting all success criteria because vegetation has been slow to develop along the banks.

Credit Summary – 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, which should result in an overall increase of 3,108 linear feet of stream length. When combined with establishing and protecting 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.

Data collected during the 2019 monitoring revealed continued development of vegetation cover along the stream reaches. Reach 1 of Schrieber Creek has yet to fully meet performance criteria established for (1) establishing bank-stabilizing vegetation communities and (2) percent cover of noxious weeds within the riparian corridor. The ephemeral nature of this reach results in slower vegetative growth. Because not all success criteria are being met, Reach 1 of Schrieber Creek is generating one-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 of the success criteria and are expected to generate the predicted credits outlined in the monitoring plan. Future site monitoring will determine whether or not vegetation establishment within Reach 1 of Schrieber Creek results in achieving the success criteria and generating all of the anticipated credits. To date, the site has developed 34,349.67 stream credits.

Table 6. 2019 Riparian and Stream Mitigation Credits for the Schrieber Lake Site

Channel Segment	Reach	Side	Predicted Credits	2019 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**

MDT anticipates developing 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, reestablishing 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 2019. The 2019 wetland delineation indicates that 37.65 acres of wetland habitat consisting of Schrieber Lake, riparian buffer, and other uncreditable areas exist within the mitigation site. The wetland acreages that were delineated in 2019 included 4.8 acres of created wetland, 2.42 acres of reestablished wetlands, 4.77 acres of enhanced wetlands, 25.66 acres of preserved wetlands, and 3.81 acres of upland buffer. The 2019 estimated credit acres for this site have exceeded the proposed credit acres. A total of 15.17 credit acres have developed at this site after mitigation construction. Note that the 2015 and 2016 credit calculations in Table 7 included an upland buffer around all wetlands on the property rather than just the newly established wetlands toward the center of the site. Because MDT only proposes to obtain upland buffer credits on 3.81 acres of upland, these numbers were first adjusted in 2017. 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 From 2015 Through 2019

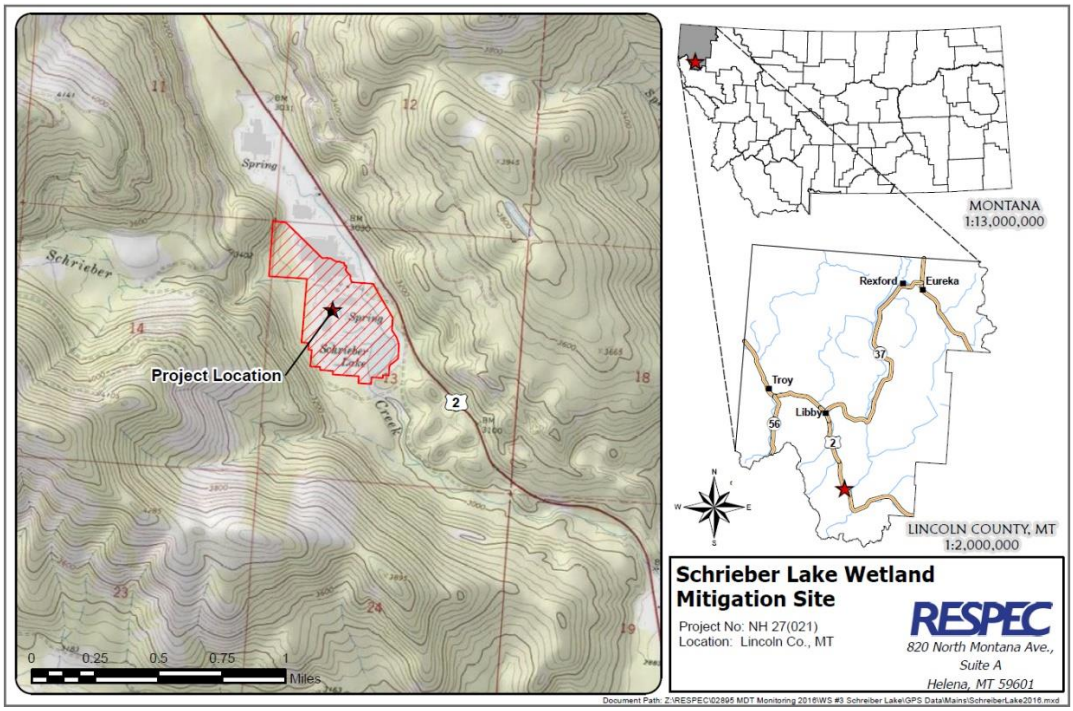
Mitigation Type	Total Proposed Acreage	Ratio[a]	Proposed Credit Acres	2015 Delineated Acreage	2015 Credit Acres	2016 Delineated Acreage	2016 Credit Acres	2017 Delineated Acreage	2017 Credit Acres	2018 Delineated Acreage	2018 Credit Acres	2019 Delineated Acreage	2019 Credit Acres
Creation	3.06	1:1	3.06	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
Restoration (Reestablishment)	2.53	1.5:1	1.69	2.42	1.62	2.42	1.62	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	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	25.66	6.42	25.66	6.42	25.66	6.42
Upland Buffer (50 ft)[b]	3.81	5:1	0.76	8.42	1.68	8.42	1.68	3.81	0.76	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	–0.02	–0.02	–0.02	–0.02
Total Mitigation Acreage	**39.55**	**—**	**13.40**	**46.05**	**16.09**	**46.05**	**16.09**	**41.44**	**15.17**	**41.44**	**15.17**	**41.44**	**15.17**

(a) The ratios used are from Column A of the Montana Regulatory Program Wetland Compensatory Mitigation Ratios, April 2005.

(b) A standard 50-foot upland buffer was assumed for the perimeter of the delineated wetland.
Wetland acreages within riparian buffer were subtracted from wetland credit total; the riparian buffer does not include upland buffer acreage.
Riparian buffer areas were used to calculate stream and riparian credits.
No credits are being reported for the existing Schrieber Lake.

Maps, Plans, Photos

Site Location Map



Project Area Maps/Figures: See Appendix A

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

Photos: See Appendix C

Plans: See Appendix D of 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 ninth year of monitoring, the mitigation site is continuing to develop into a diverse wetland ecosystem. The site is meeting all performance standards except for the following:

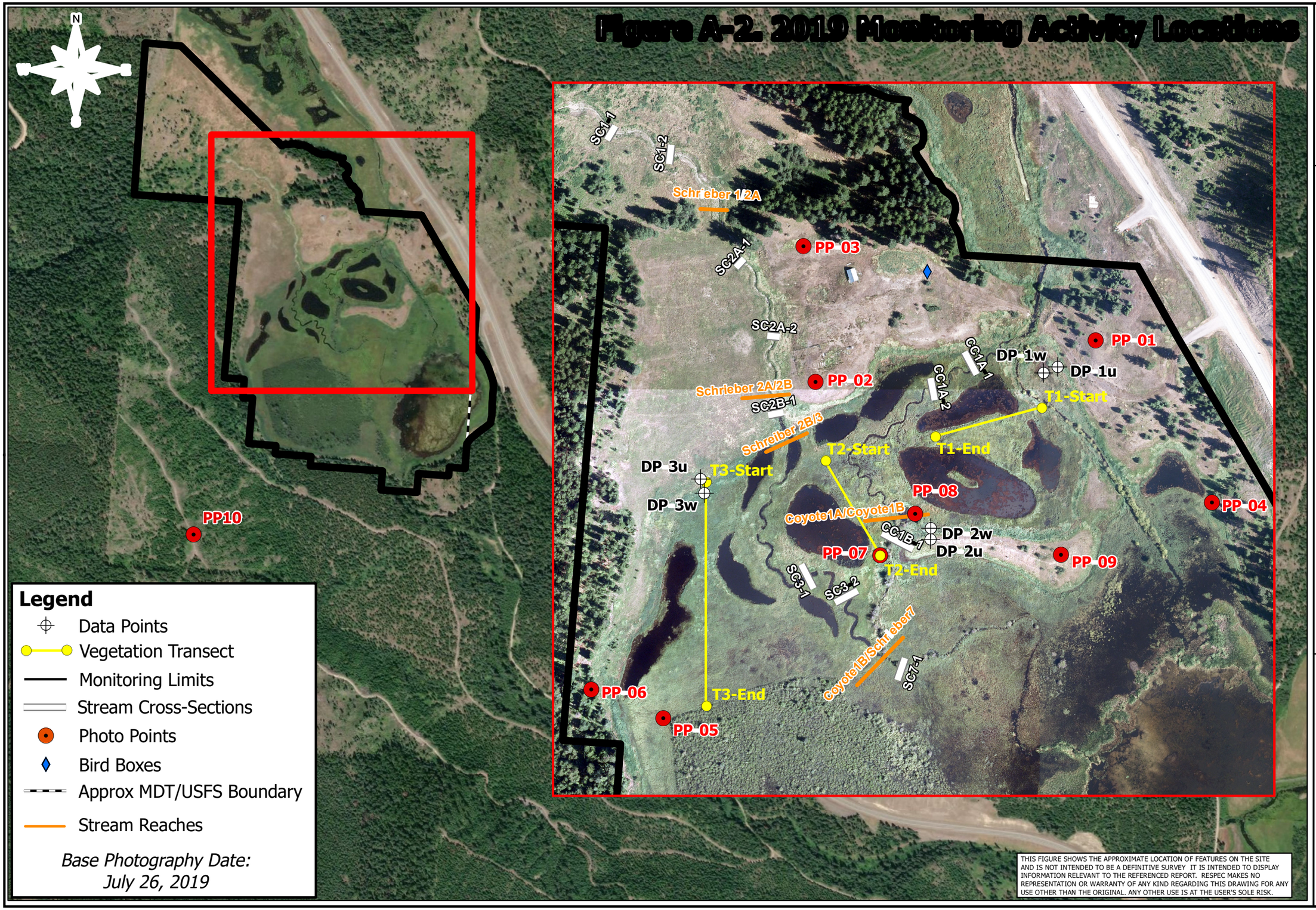
1. Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years.
2. Bank Restoration Success (only along Reach SC-1).

Woody plantings survival is not trending toward meeting this performance standard. MDT's botanist will assess the potential for revegetation in riparian buffer areas within the site that are not inundated by high water levels. Reach SC-1 along Schrieber Creek is an ephemeral reach that is taking longer for woody plantings to establish but is trending in the right direction. No remedial actions are recommended at this time.

APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

Figure A-2. 2019 Monitoring Activity Locations



Legend

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

Base Photography Date: July 26, 2019

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

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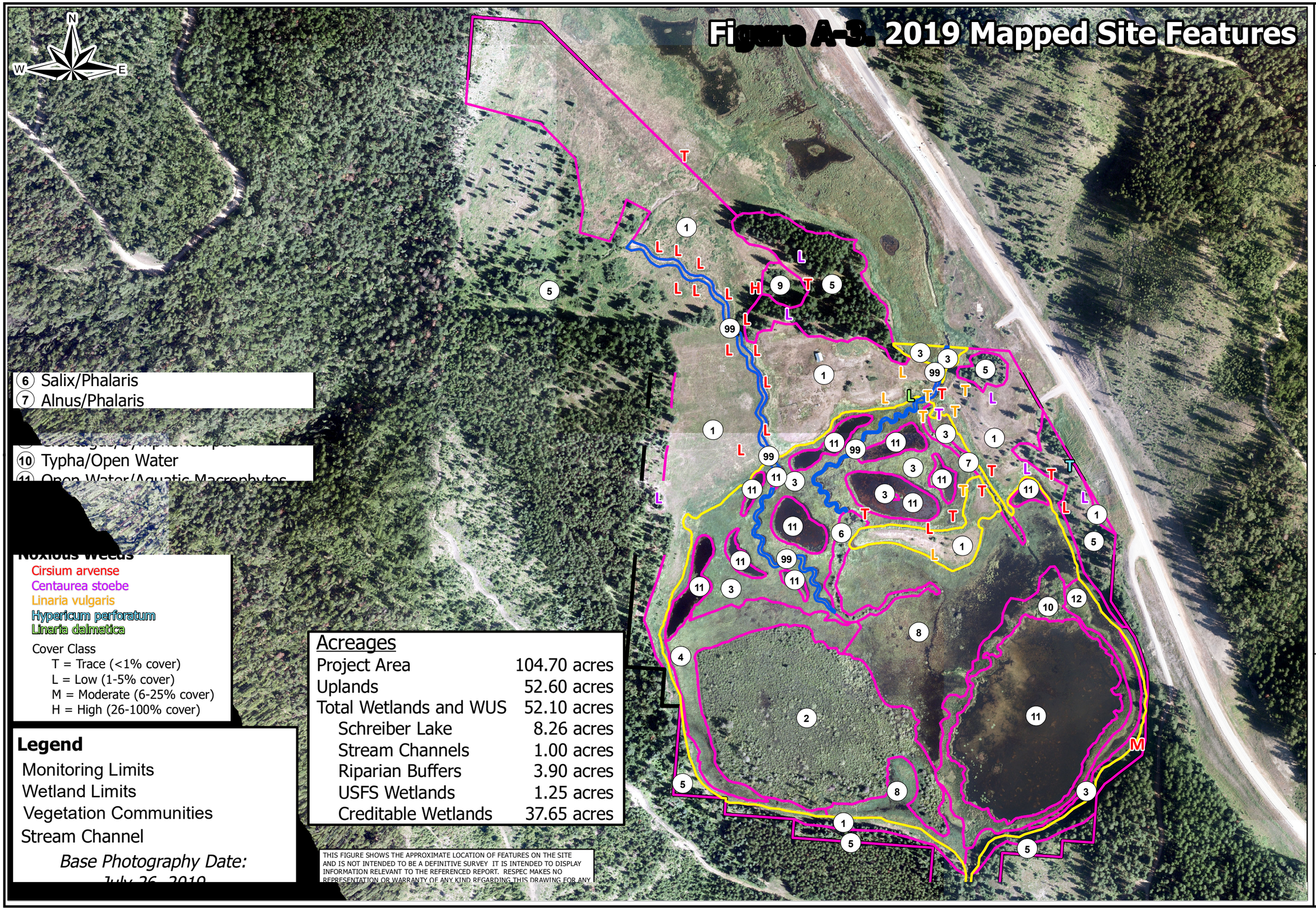
Schrieber Lake Mitigation Site
2019 Monitoring Activity Locations

0 100 200 400 600 800 1,000 Feet

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

File: R:\Projects\02895 MDT Monitoring 2016-2019\WS #3 Schrieber Lake\GPS Data\Wains\Monitor2019.mxd

Figure A-3. 2019 Mapped Site Features



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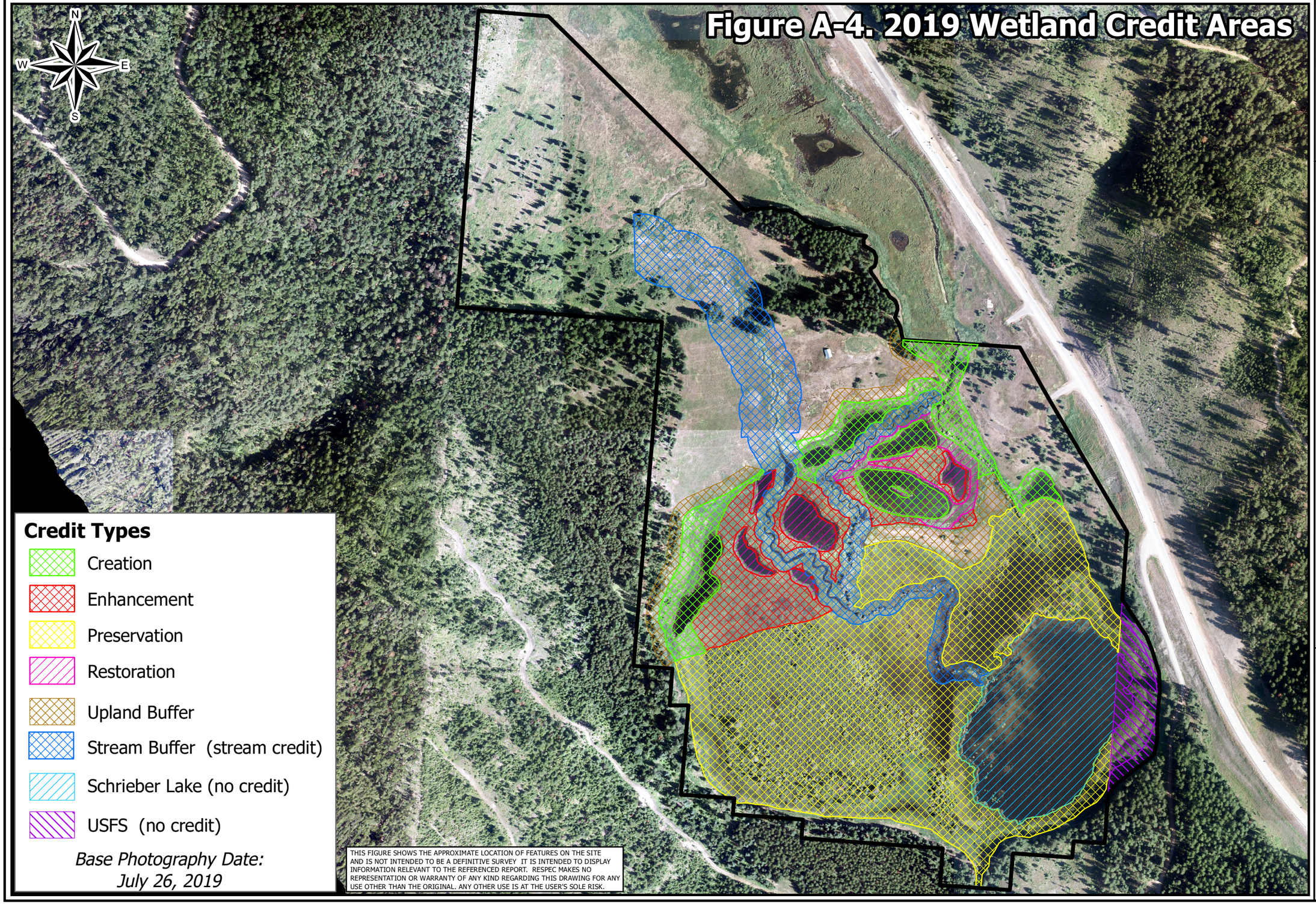
Schrieber Lake Mitigation Site
2019 Mapped Site Features

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

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

File: R:\Projects\02895 MDT Monitoring 2016-2019\WS #3 Schrieber Lake\GPS Data\Mains\Veg2019.mxd

Figure A-4. 2019 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 26, 2019

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

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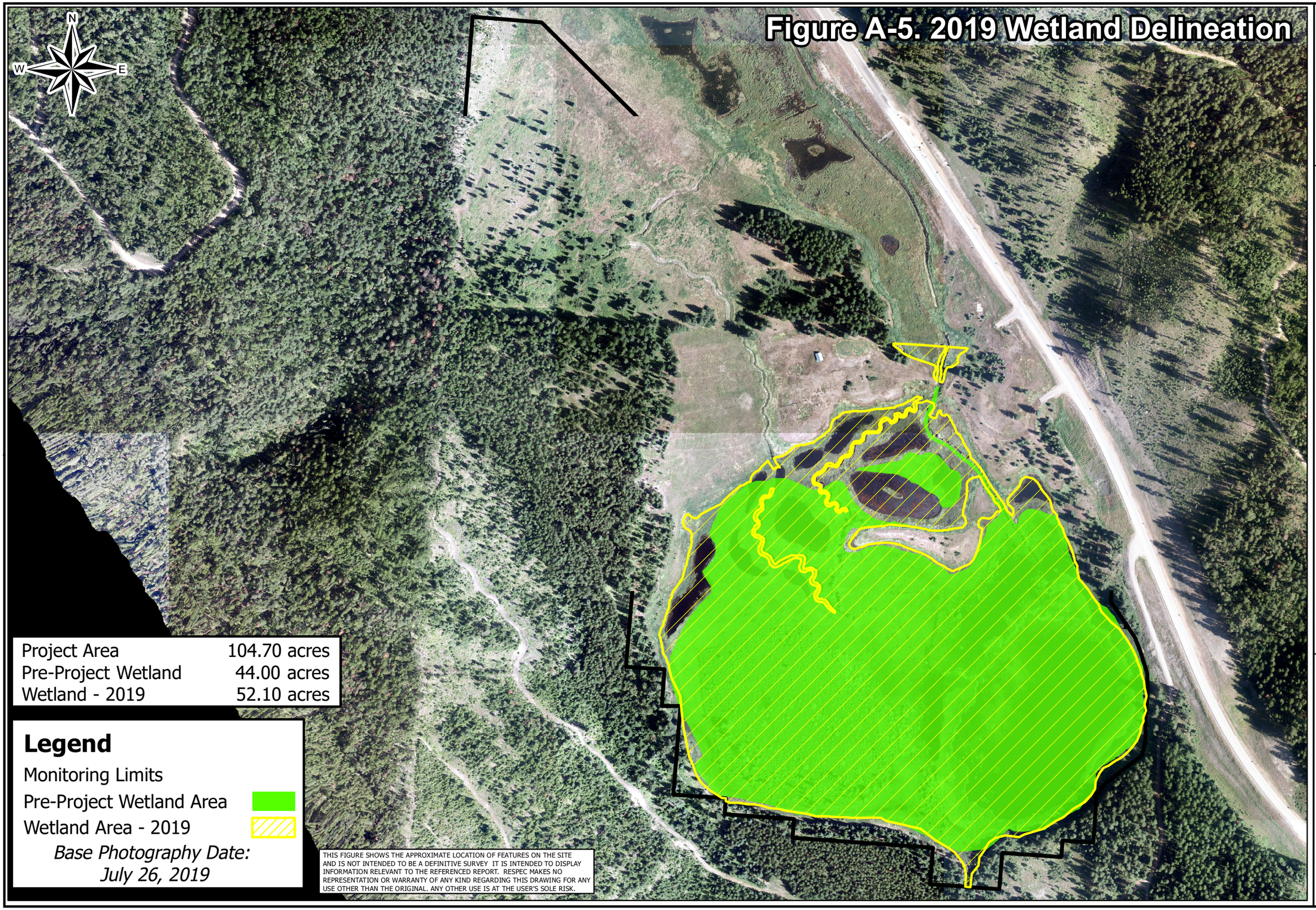
Schrieber Lake Mitigation Site
2019 Wetland Credit Areas

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

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

File: R:\Projects\02895 MDT Monitoring 2016-2019\WS #3 Schrieber Lake\GPS Data\Mains\2019CreditAcres.mxd

Figure A-5. 2019 Wetland Delineation



Project Area	104.70 acres
Pre-Project Wetland	44.00 acres
Wetland - 2019	52.10 acres

Legend

Monitoring Limits

Pre-Project Wetland Area

Wetland Area - 2019

Base Photography Date: July 26, 2019

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

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Schrieber Lake Mitigation Site
2019 Wetland Delineation

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

Project: NH 27(021)

Location: Lincoln Co., Montana

Date: October 2019

Project Manager: M. Traxler

Drawn By: JR/MP

File: R:\Projects\02895 MDT Monitoring 2016-2019\WS #3 Schrieber Lake\GPS Data\Mains\Delin2019.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Schrieber Lake** Project Number: **NH 27(021)**
Assessment Date: **July 30-31, 2019** Person(s) conducting the assessment: **M. Traxler, T. Traxler**
Location: **Highway 2, Swamp Creek East** MDT District: **Missoula**
Milepost: **53.8 on US 2**
Legal Description: T **27N** R **30W** Section **13** **T** **27N** **R** **30W**
Weather Conditions: **sunny, 85 degrees** Time of Day: **12-5 pm**
Initial Evaluation Date: **May 18, 2015** Monitoring Year: **5** # 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: **Present** Average Depth: **2 feet** Range of Depths: **0.5-4 feet**
Percent of assessment area under inundation: **90%**
Depth at emergent vegetation-open water boundary: **2.0 feet**
If assessment area is not inundated then are the soils saturated within 12 inches of surface: _
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):

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

Well Number	Depth	Well Number	Depth	Well Number	Depth

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

COMMENTS / PROBLEMS:
Water depth refers to wetland cells, not including Schreiber Lake. 90% innundation does not include the extensive uplands in the northern "panhandle" of the project area. Beaver dam at outlet of Schrieber Lake new in 2019 - having significant impact on water depths across site. Depths ranged from 6"-48". Deepest water in channels, excavated depressions, and Schrieber Lake.

VEGETATION COMMUNITIES

Community Number: **1** Community Title (main spp): **Elymus repens / Bromus inermis**

Dominant Species	% Cover	Dominant Species	% Cover
Elymus repens	4 = 21-50%	Agrostis stolonifera	1 = 1-5%
Bromus inermis	3 = 11-20%	Alopecurus pratensis	1 = 1-5%
Pascopyrum smithii	3 = 11-20%	Phalaris arundinacea	1 = 1-5%
Phleum pratense	3 = 11-20%	Poa pratensis	1 = 1-5%
Poa compressa	3 = 11-20%	Pseudotsuga menziesii	1 = 1-5%
Achillea millefolium	1 = 1-5%	Pseudoroegneria spicata	1 = 1-5%

Comments / Problems: _____

Community Number: **2** Community Title (main spp): **Betula pumila / Rhamnus alnifolia**

Dominant Species	% Cover	Dominant Species	% Cover
Betula pumila	5 = > 50%	Salix boothii	1 = 1-5%
Moss	5 = > 50%	Salix candida	1 = 1-5%
Rhamnus alnifolia	2 = 6-10%	Phalaris arundinacea	+ = < 1%
Carex sp.	2 = 6-10%	Symphyotrichum spathulatum	+ = < 1%
Comarum palustre	1 = 1-5%		
Persicaria amphibia	1 = 1-5%		

Comments / Problems: _____

Community Number: **3** Community Title (main spp): **Phalaris arundinacea / Carex sp.**

Dominant Species	% Cover	Dominant Species	% Cover
Carex simulata	5 = > 50%	Persicaria amphibia	1 = 1-5%
Phalaris arundinacea	5 = > 50%	Symphyotrichum spathulatum	1 = 1-5%
Agrostis scabra	2 = 6-10%	Comarum palustre	+ = < 1%
Alopecurus pratensis	1 = 1-5%	Deschampsia caespitosa	+ = < 1%
Carex aquatilis	1 = 1-5%	Geum macrophyllum	+ = < 1%
Lemna minor	1 = 1-5%	Juncus tenuis	+ = < 1%

Comments / Problems: _____

Community Number: **4** Community Title (main spp): **Carex simulata / Persicaria amphibia**

Dominant Species	% Cover	Dominant Species	% Cover
Carex simulata	5 = > 50%	Comarum palustre	1 = 1-5%
Carex aquatilis	3 = 11-20%	Geum macrophyllum	1 = 1-5%
Persicaria amphibia	3 = 11-20%	Potentilla norvegica	1 = 1-5%
Carex utriculata	2 = 6-10%	Phalaris arundinacea	1 = 1-5%
Moss	2 = 6-10%	Symphyotrichum spathulatum	1 = 1-5%
Carex nebrascensis	1 = 1-5%		

Comments / Problems: _____

VEGETATION COMMUNITIES (continued)

Community Number: **5** Community Title (main spp): **Pseudotsuga menziesii / Larix occidentalis**

Dominant Species	% Cover	Dominant Species	% Cover
Larix occidentalis	4 = 21-50%	Bromus inermis	2 = 6-10%
Pseudotsuga menziesii	4 = 21-50%	Centaurea stoebe	2 = 6-10%
Pinus contorta	4 = 21-50%	Elymus glaucus	2 = 6-10%
Carex geyeri	3 = 11-20%	Symphoricarpos albus	2 = 6-10%
Abies grandis	2 = 6-10%	Bereberis repens	1 = 1-5%
Arcostaphylos uva-ursi	2 = 6-10%	Calamagrostis rubescens	1 = 1-5%

Comments / Problems: _____

Community Number: **6** Community Title (main spp): **Salix bebbiana / Phalaris arundinacea**

Dominant Species	% Cover	Dominant Species	% Cover
Salix bebbiana	5 = > 50%		
Phalaris arundinacea	5 = > 50%		
Alnus incana	1 = 1-5%		
Crataegus douglasii	1 = 1-5%		
Persicaria amphibia	1 = 1-5%		

Comments / Problems: _____

Community Number: **7** Community Title (main spp): **Alnus incana / Phalaris arundinacea**

Dominant Species	% Cover	Dominant Species	% Cover
Alnus incana	5 = > 50%		
Phalaris arundinacea	5 = > 50%		
Persicaria amphibia	1 = 1-5%		
Cirsium arvense	+ = < 1%		

Comments / Problems: _____

Community Number: **8** Community Title (main spp): **Carex utriculata**

Dominant Species	% Cover	Dominant Species	% Cover
Carex utriculata	4 = 21-50%		
Carex aquatilis	1 = 1-5%		
Persicaria amphibia	1 = 1-5%		
Phalaris arundinacea	1 = 1-5%		
Salix bebbiana	1 = 1-5%		
Salix candida	1 = 1-5%		

Comments / Problems: _____

VEGETATION COMMUNITIES (continued)

Community Number: **9** Community Title (main spp): **Crataegus douglasii / Symphoricarpos albus**

Dominant Species	% Cover	Dominant Species	% Cover
Crataegus douglasii	5 = > 50%	Achillea millefolium	+ = < 1%
Symphoricarpos albus	4 = 21-50%	Cynoglossum officinale	+ = < 1%
Cirsium arvense	2 = 6-10%	Dactylis glomerata	+ = < 1%
Phalaris arundinacea	2 = 6-10%	Galium triflorum	+ = < 1%
Alopecurus pratensis	1 = 1-5%	Taraxacum officinale	+ = < 1%
Elymus trachycaulus	1 = 1-5%	Urtica dioica	+ = < 1%

Comments / Problems: _____

Community Number: **10** Community Title (main spp): **Typha latifolia / Open Water**

Dominant Species	% Cover	Dominant Species	% Cover
Typha latifolia	5 = > 50%		
Comarum palustre	4 = 21-50%		
Open Water	4 = 21-50%		

Comments / Problems: _____

Community Number: **11** Community Title (main spp): **Open Water / Aquatic macrophytes**

Dominant Species	% Cover	Dominant Species	% Cover
Open Water	5 = > 50%		
Aquatic macrophytes	4 = 21-50%		
Persicaria amphibia	3 = 11-20%		

Comments / Problems: _____

Community Number: **12** Community Title (main spp): **Carex lasiocarpa**

Dominant Species	% Cover	Dominant Species	% Cover
Carex lasiocarpa	5 = > 50%		
Carex aquatilis	2 = 6-10%		
Phalaris arundinacea	2 = 6-10%		
Carex utriculata	1 = 1-5%		
Typha latifolia	1 = 1-5%		

Comments / Problems: _____

Additional Activities Checklist:

☒ Record and map vegetative communities on aerial photograph.

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes
Various Species	1500		

Comments / Problems: **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 plantings survival was estimated to be below the required 50% survival. For many 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 have likely been adversely affected by weed spraying activities at the site. Weeds, primarliy Canada thistle and spotted knapweed, continue to be problematic along the Schrieber Creek channel. Deer, elk, and to a lesser extent moose, have been browsing heavily on the willow in 2019.**

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Lake** Date: **July 31, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **1** Approximate Transect Length: **284 feet** Compass Direction from Start: **251**° Note: _____

Transect Interval Length: **20 feet (Station 0-20)**	
Vegetation Community Type: Alnus incana / Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Total Vegetative Cover:	100%

Transect Interval Length: **73 feet (Station 20-93)**	
Vegetation Community Type: Phalaris arundinacea / Carex sp.	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex simulata	5 = > 50%
Persicaria amphibia	2 = 6-10%
Carex utriculata	2 = 6-10%
Total Vegetative Cover:	100%

Transect Interval Length: **8 feet (Station 93-101)**	
Vegetation Community Type: Open Water / Aquatic macrophytes	
Plant Species	**Cover**
Open Water	5 = > 50%
Persicaria amphibia	3 = 11-20%
Aquatic macrophytes	+ = < 1%
Typha latifolia	1 = 1-5%
Total Vegetative Cover:	50%

Transect Interval Length: **183 feet (Station 101-284)**	
Vegetation Community Type: Phalaris arundinacea / Carex sp.	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex simulata	5 = > 50%
Persicaria amphibia	3 = 11-20%
Typha latifolia	1 = 1-5%
Carex utriculata	4 = 21-50%
Lemna minor	+ = < 1%
Total Vegetative Cover:	100%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Lake** Date: **July 31, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **2** Approximate Transect Length: **280 feet** Compass Direction from Start: **152˚** Note: _____

Transect Interval Length: **253 feet (Station 0-253)**	
Vegetation Community Type: Phalaris arundinacea / Carex sp.	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex simulata	5 = > 50%
Carex utriculata	5 = > 50%
Persicaria amphibia	4 = 21-50%
Carex vesicaria	2 = 6-10%
Open Water	1 = 1-5%
Total Vegetative Cover:	100%

Transect Interval Length: **27 feet (Station 253-280)**	
Vegetation Community Type: Salix bebbiana / Phalaris arundinacea	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Persicaria amphibia	1 = 1-5%
Salix bebbiana	+ = < 1%
Total Vegetative Cover:	100%

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

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

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Schrieber Lake** Date: **July 30, 2019** Examiner: **M. Traxler, T. Traxler**
Transect Number: **3** Approximate Transect Length: **584 feet** Compass Direction from Start: **175**° Note: _____

Transect Interval Length: **15 feet (Station 0-15)**	
Vegetation Community Type: Elymus repens / Bromus inermis	
Plant Species	**Cover**
Bromus inermis	5 = > 50%
Phalaris arundinacea	5 = > 50%
Phleum pratense	1 = 1-5%
Total Vegetative Cover:	100%

Transect Interval Length: **469 feet (Station 15-484)**	
Vegetation Community Type: Phalaris arundinacea / Carex sp.	
Plant Species	**Cover**
Phalaris arundinacea	5 = > 50%
Carex simulata	5 = > 50%
Carex aquatilis	5 = > 50%
Persicaria amphibia	2 = 6-10%
Typha latifolia	+ = < 1%
Total Vegetative Cover:	100%

Transect Interval Length: **100 feet (Station 484-584)**	
Vegetation Community Type: Carex simulata / Persicaria amphibia	
Plant Species	**Cover**
Carex simulata	5 = > 50%
Persicaria amphibia	4 = 21-50%
Carex nebrascensis	4 = 21-50%
Phalaris arundinacea	2 = 6-10%
Total Vegetative Cover:	100%

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

MDT WETLAND MONITORING – VEGETATION TRANSECT

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

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

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

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

Comments: _____

PHOTOGRAPHS

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

Photograph Checklist:

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

Location	Photograph Frame #	Photograph Description & Lat/Long	Compass Reading (°)
PP-1		Photo Point 1, Photo 1: 48.107033 / -115.409592	242
PP-1		Photo Point 1, Photo 2: 48.107033 / -115.409592	197
PP-1		Photo Point 1, Photo 3: 48.107033 / -115.409592	164
PP-2		Photo Point 2, Photo 1: 48.106591 / -115.412511	323
PP-2		Photo Point 2, Photo 2: 48.106591 / -115.412511	205
PP-2		Photo Point 2, Photo 3: 48.106591 / -115.412511	162
PP-2		Photo Point 2, Photo 4: 48.106591 / -115.412511	104
PP-2		Photo Point 2, Photo 5: 48.106591 / -115.412511	69
PP-3		Photo Point 3: 48.10754 / -115.412747	183
PP-4		Photo Point 4: 48.105948 / -115.408236	287
PP-5		Photo Point 5, Photo 1: 48.104136 / -115.413847	173
PP-5		Photo Point 5, Photo 2: 48.104136 / -115.413847	35
PP-5		Photo Point 5, Photo 3: 48.104136 / -115.413847	359
PP-6		Photo Point 6, Photo 1: 48.104297 / -115.414628	150
PP-6		Photo Point 6, Photo 2: 48.104297 / -115.414628	103
PP-6		Photo Point 6, Photo 3: 48.104297 / -115.414628	52
PP-7		Photo Point 7, Photo 1: 48.105398 / -115.411691	228
PP-7		Photo Point 7, Photo 2: 48.105398 / -115.411691	299
PP-7		Photo Point 7, Photo 3: 48.105398 / -115.411691	355
PP-8		Photo Point 8, Photo 1: 48.105714 / -115.411356	320
PP-8		Photo Point 8, Photo 2: 48.105714 / -115.411356	49
PP-8		Photo Point 8, Photo 3: 48.105714 / -115.411356	79
PP-9		Photo Point 9, Photo 1: 48.105502 / -115.409787	323
PP-9		Photo Point 9, Photo 2: 48.105502 / -115.409787	120
PP-10		Photo Point 10: 48.100529 / -115.415406	39
T-1 start		Transect 1 start: 48.106526 / -115.410102	251
T-1 end		Transect 1 end: 48.106268 / -115.411205	71
T-2 start		Transect 2 start: 48.106037 / -115.412335	152
T-2 end		Transect 2 end: 48.105398 / -115.411692	332
T-3 start		Transect 3 start: 48.105866 / -115.413539	175
T-3 end		Transect 3 end: 48.104242 / -115.413401	355
DP-1W		Wetland soil pit #1: 48.106783 / -115.4101126	

DP-1U		Upland soil pit #1: 48.106833 / -115.409964	
DP-2W		Wetland soil pit #2: 48.105621 / -115.411179	
DP-2U		Upland soil pit #2: 48.105542 / -115.411173	
DP-3W		Wetland soil pit #3: 48.105745 / -115.413595	
DP-3U		Upland soil pit #3: 48.105843 / -115.413644	
SC1-1		SC1-1 upstream: 48.10823599 / -115.4148624	300
SC1-1		SC1-1 left bank: 48.108236 / -115.414862	30
SC1-2		SC1-2 upstream: 48.108116 / -115.414221	280
SC1-2		SC1-2 left bank: 48.108116 / -115.414221	10
SC2A-1		SC2A-1 downstream: 48.107386 / -115.413401	315
SC2A-1		SC2A-1 left bank: 48.107386 / -115.413401	45
SC2A-2		SC2A-2 downstream: 48.106889 / -115.412990	185
SC2A-2		SC2A-2 right bank: 48.106889 / -115.412990	275
SC2B-1		SC2B-1 downstream: 48.106342 / -115.412902	175
SC2B-1		SC2B-1 right bank: 48.106342 / -115.412902	265
SC3-1		SC3-1 upstream: 48.105212 / -115.412439	240
SC3-1		SC3-1 left bank: 48.105212 / -115.412439	330
SC3-2		SC3-2 downstream: 48.105090 / -115.412014	160
SC3-2		SC3-2 left bank: 48.105090 / -115.412014	70
SC7-1		SC7-1 downstream: 48.104608 / -115.411380	110
SC7-1		SC7-1 left bank: 48.104608 / -115.411380	20
CC1A-1		CC1A-1 upstream: 48.106803 / -115.410891	50
CC1A-1		CC1A-1 right bank: 48.106803 / -115.410891	320
CC1A-2		CC1A-2 upstream: 48.106600 / -115.411270	85
CC1A-2		CC1A-2 left bank: 48.106600 / -115.411270	175
CC1B-1		CC1B-1 downstream: 48.105509 / -115.411518	200
CC1B-1		CC1B-1 left bank: 48.105509 / -115.411518	110

Comments / Problems: _____

GPS SURVEYING

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

GPS Checklist:

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

Comments / Problems: _____

WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

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

Comments / Problems: _____

FUNCTIONAL ASSESSMENT

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

Comments / Problems: _____

MAINTENANCE

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

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

Comments / Problems: _____

WILDLIFE

Birds

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

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
Columbia spotted frog	1	☐	☐	☐	
Pumpkinseed		☐	☐	☐	
White-tailed deer		☐	☒	☐	
Ground squirrel sp.		☐	☐	☒	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: _____

BIRD SURVEY – FIELD DATA SHEET

Site: **Schrieber Lake** Date: **7/30/19**
Survey Time: **12:00 pm** to **5:00 pm**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Canada goose	10	F L	OW				
Mallard	1	F L	OW				
Great blue heron	1	L	MA				
Tree swallow	10	L F	MA				
Red-winged blackbird	10	F L	MA				
Yellow Warbler	1	L	UP				
Sparrow sp.	6	FO	MA				

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

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

Weather: **85 degrees, sunny**

Notes: _____

Schrieber Lake Plant List (2015-2019)

Scientific Names	Common Names	WMVC Indicator Status[(a)]
Abies grandis	Grand Fir	FACU
Achillea millefolium	Common Yarrow	FACU
Agrostis scabra	Rough Bent	FAC
Agrostis stolonifera	Spreading Bent	FACW
Algae, green	Algae, green	NL
Alnus incana	Speckled Alder	FACW
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Amelanchier alnifolia	Saskatoon Service-Berry	FACU
Antennaria sp.	Pussytoes	NL
Apocynum androsaemifolium	Spreading Dogbane	FACU
Aquatic macrophytes	Aquatic macrophytes	NL
Arctostaphylos uva-ursi	Red Bearberry	FACU
Berberis repens	Creeping Oregon-grape	NL
Betula pumila	Bog Birch	OBL
Bromus carinatus	Mountain Brome	NL
Bromus inermis	Smooth Brome	UPL
Calamagrostis rubescens	Pinegrass	NL
Campanula rotundifolia	Bluebell-of-Scotland	FACU
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex bebbii	Bebb's Sedge	OBL
Carex geyeri	Geyer's Sedge	NL
Carex inops	Long-stolon Sedge	NL
Carex lasiocarpa	Woolly-Fruit Sedge	OBL
Carex nebrascensis	Nebraska Sedge	OBL
Carex simulata	Analogue Sedge	OBL
Carex sp.	Sedge	NL
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	Lesser Bladder Sedge	OBL
Centaurea stoebe	Spotted Knapweed	NL
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

Scientific Names	Common Names	WMVC Indicator Status[a]
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	NL
Leucanthemum vulgare	Ox-Eye Daisy	FACU
Linaria dalmatica	Dalmatian Toadflax	NL
Linaria vulgaris	Butter-and-eggs	NL
Maianthemum stellatum	Starry False Solomon's-Seal	FAC
Moss	Sphagnum/Aulacomnium moss	NL
Pascopyrum smithii	Western-Wheat Grass	FACU
Penstemon sp.	Beardtongue	NL
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	NL
Poa compressa	Flat-Stem Blue Grass	FACU
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Poa sp.	Blue Grass	NL
Potentilla anserina	Silverweed	OBL
Potentilla norvegica	Norwegian Cinquefoil	FAC
Pseudoroegneria spicata	Bluebunch Wheatgrass	NL
Pseudotsuga menziesii	Douglas-Fir	FACU

Scientific Names	Common Names	WMVC Indicator Status[(a)]
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	NL
Scutellaria galericulata	Hooded Skullcap	OBL
Shepherdia canadensis	Russet Buffalo-Berry	UPL
Stipa viridula	Green Needlegrass	NL
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	NL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Vaccinium sp.	Blueberry	NL
Verbascum thapsus	Great Mullein	FACU

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

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

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

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

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

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** convex **Slope:** 2.0 % / 1.1 °

Subregion (LRR): LRR E **Lat.:** 48.106833 **Long.:** -115.409964 **Datum:** NAD 83

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

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

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

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

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

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:
Upland sample point.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 Foot Radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Elymus repens	50	☑ 62.5%	FAC
2. Bromus inermis	20	☑ 25.0%	UPL
3. Alopecurus pratensis	5	☐ 6.3%	FAC
4. Phleum pratense	5	☐ 6.3%	FAC
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 20

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species	20	x 5 =	100
Column Totals:	80 (A)		280 (B)

Prevalence Index = B/A = 3.500

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:
Dominance Test =50%. Prevalence Index >3.0.

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

Soil

Sampling Point: DP-1U

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100						Silt Loam	Rocks at 10", dry

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present. Gravel in profile.

Hydrology

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators present.

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

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

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

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

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 2.0 **% /** 1.1 **°**

Subregion (LRR): LRR E **Lat.:** 48.106783 **Long.:** -115.4101126 **Datum:** NAD 83

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

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

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

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Wetland sample point. Wetland area dominated by emergent vegetation type.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Phalaris arundinacea	80	☑ 79.2%	FACW
2. Alopecurus pratensis	20	☐ 19.8%	FAC
3. Bromus inermis	1	☐ 1.0%	UPL
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	101	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	1	x 5 =	5
Column Totals:	101 (A)		225 (B)

Prevalence Index = B/A = 2.228

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Dominance Test =100%. Prevalence Index <3.0.

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

Soil

Sampling Point: DP-1W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR	2/1	100						Loam	
9-20	10YR	2/1	95	10YR	5/8	5	D	M	Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicators present with distinct redox features noted below 9".

Hydrology

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

No surface water in pit, but water table and saturation at the surface. Elevated surface water near pit due to beaver damming.

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

Project/Site: Schrieber Lake **City/County:** Lincoln **Sampling Date:** 31-Jul-19

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

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

Landform (hillslope, terrace, etc.): Slope **Local relief (concave, convex, none):** concave **Slope:** 2.0 % / 1.1 °

Subregion (LRR): LRR E **Lat.:** 48.105542 **Long.:** -115.411173 **Datum:** NAD 83

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

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

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

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

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

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

Remarks:
Man-made berm in middle of site - very rocky/gravelly.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Phleum pratense	60	☑ 63.2%	FAC
2. Achillea millefolium	20	☑ 21.1%	FACU
3. Elymus repens	10	☐ 10.5%	FAC
4. Cirsium arvense	5	☐ 5.3%	FAC
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 5

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: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	75	x 3 =	225
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	95 (A)		305 (B)

Prevalence Index = B/A = 3.211

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:
Dominance Test =50%. Prevalence Index >3.0.

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

Soil

Sampling Point: DP-2U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					Loam	heavy roots/small gravel
4+	rock							

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present.

Hydrology

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators present.

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

Project/Site: Schrieber Lake **City/County:** Lincoln **Sampling Date:** 31-Jul-19

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

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

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

Subregion (LRR): LRR E **Lat.:** 48.105621 **Long.:** -115.411179 **Datum:** NAD 83

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

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

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

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

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

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

Remarks:
Wetland sample point.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Phalaris arundinacea	100	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Monoculture of Phalaris.

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

Soil

Sampling Point: DP-2W

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR	3/1	100						Peat	

[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)
- [ ] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except in MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks:

Histosol soil encountered to 20".

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)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes (●)	No ( )	Depth (inches):	4
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, monitor well, aerial photos, previous inspections), if available:

Remarks:

Very wet data point. Surface water 4" deep.

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

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

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

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

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

Subregion (LRR): LRR E **Lat.:** 48.105843 **Long.:** -115.413644 **Datum:** NAD 83

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

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

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

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

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

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

Remarks:
Upland pit adjacent to well and start of Transect 3.

VEGETATION - Use scientific names of plants.

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

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:
Dominance Test =50%. Prevalence Index >3.0.

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

Soil

Sampling Point: DP-3U

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

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

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present. Soil very dry.

Hydrology

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators present.

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

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

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

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

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

Subregion (LRR): LRR E **Lat.:** 48.105745 **Long.:** -115.413595 **Datum:** NAD 83

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

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

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

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Wetland sample point.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Phalaris arundinacea	100	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Phalaris dominated within data plot near wetland edge. Other FACW and OBL species occur in wetland.

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

Soil

Sampling Point: DP-3W

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

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

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

70% organics in upper 10" of profile.

Hydrology

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	1
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, monitor well, aerial photos, previous inspections), if available:

Remarks:

One inch of standing water at this data point in 2019.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Schrieber Lake **2. MDT Project #:** NH 27(29) **3. Control #:** 1027007

3. Evaluation Date: July 30-31, 2019 **4. Evaluator(s):** Mark Traxler, Tanner Traxler **5. Wetland/Site #(s):** Schrieber Lake

6. Wetland Location(s): Township 27 N, Range 30 W, Section 13; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: Approximately Milepost 53.8

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

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

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

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

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 52.1 (measured, e.g. GPS)

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

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Depressional	Aquatic Bed		Permanent / Perennial	20
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		Seasonal / Intermittent	25

Comments: _____

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

12. GENERAL CONDITION OF AA

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

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

Comments (types of disturbance, intensity, season, etc.)**:** Highway 2 and USFS roads are adjacent to the AA.

ii. Prominent noxious, aquatic nuisance, and other exotic vegetation species: Spotted knapweed and Canada thistle infestations in the uplands surrounding the AA.

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: Site is in a realtively flat valley bottom that has historically been used for agriculture and hay production. The valley sides are heavily forested with secondary growth coniferous forest. The entire AA is very wet and is dominated primarily by emergent vegetation. PSS wetlands occur immediately along the pre-existing creek channels and in the southwest corner of the site where a "carr" fen occurs. The fen supports bog birch and other SOC including 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 one is forested) classes	high	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises ≥90% of total cover)	---	NA	NA	NA

Comments: aquatic bed, emergent, scrub-shrub

Wetland/Site #(s): Schrieber Lake

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

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

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

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

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

Sources for documented use (e.g. observations, records): 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 PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

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

Primary or critical habitat (**list species**) ☒ D ☐ S 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 cuthoat trout (S2), fisher (S3)
No usable habitat ☐ S

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

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

Sources for documented use (e.g. observations, records): MDT BRR. USFS, MNHP, and MFWP databases and discussions with regional wildlife and fisheries biologists. Western toads were observed by MDT and Kootenai Natioal 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:*** Based on any of the following [check].
- ☒ observations of abundant wildlife #s or high species diversity (during any period)
- ☒ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☒ interview with local biologist with knowledge of the AA

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

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

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

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

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

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

Comments: Good habitat diversity with substantial wildlife evidence.

Wetland/Site #(s): Schrieber Lake

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

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

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

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

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

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

Sources used for identifying fish spp. potentially found in AA: Brook Trout documented in Schrieber Creek immediately up and downstream of Schrieber Lake by FWP in 2011 (MFISH queery). Westslope Cutthroat documented immediately upstream from confluence with Fisher River but outside project area.

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

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

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

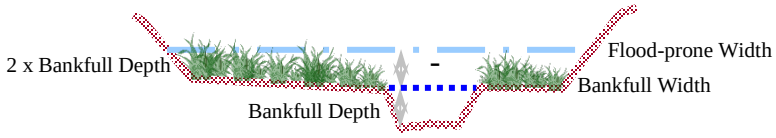
iii. Final Score and Rating: .5M **Comments:** Salmonids observed in creek during monitoring. Assumed to be brook trout, but is unverified.

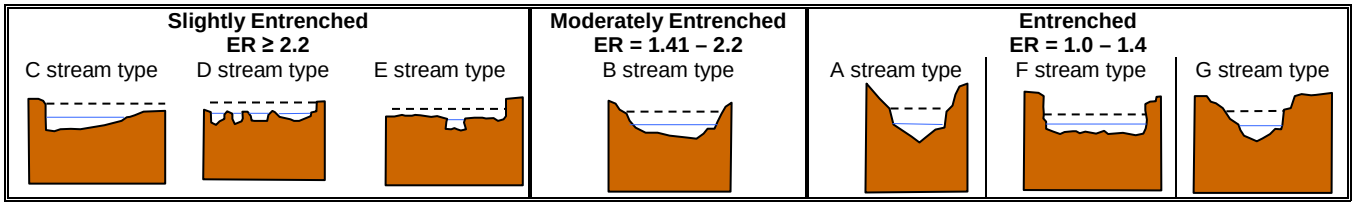
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

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

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

25 / 10 = 2.5
flood prone width / bankfull width = entrenchment ratio





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

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

ii. Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA? ☐ YES ☒ NO **Comments:** The stream channels in the AA have free access to their floodplains. The floodplains are dominated by herbaceous vegetation.

Wetland/Site #(s): Schrieber Lake

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

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

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

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

Comments: Extensive areas of inundation were observed.

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

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

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

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

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

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

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

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

Comments: Shorelines and banks are well vegetated.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

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

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

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

Wetland/Site #(s): Schrieber Lake

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

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

Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, AND that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
Is there an average ≥ 50-foot wide vegetated upland buffer around ≥ 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 1.00 ☐ **NO**

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

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

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

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

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

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

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

14K. UNIQUENESS

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

Replacement Potential	**AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland** OR **plant association listed as "S1" by the MTNHP**			**AA does not contain previously cited rare types** AND **structural diversity (#13) is high** OR **contains plant association listed as "S2" by the MTNHP**			**AA does not contain previously cited rare types** OR **associations** AND **structural diversity (#13) is low-moderate**		
Estimated Relative Abundance (#11)	☐ Rare	☒ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant	☐ Rare	☐ Common	☐ Abundant
☒ **Low Disturbance** at AA (#12i)	---	.9H	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

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

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

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

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

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

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

Comments: 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.

15. GENERAL SITE NOTES: _____

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	mod 0.80	1.00	41.7	*
B. MT Natural Heritage Program Species Habitat	high 0.90	1.00	46.9	
C. General Wildlife Habitat	exc 1.00	1.00	52.1	*
D. General Fish Habitat	mod 0.50	1.00	26.1	
E. Flood Attenuation	mod 0.60	1.00	31.3	
F. Short and Long Term Surface Water Storage	high 1.00	1.00	52.1	*
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	52.1	
H. Sediment / Shoreline Stabilization	high 1.00	1.00	52.1	
I. Production Export / Food Chain Support	high 1.00	1.00	52.1	*
J. Groundwater Discharge / Recharge	high 1.00	1.00	52.1	
K. Uniqueness	high 0.90	1.00	46.9	
L. Recreation / Education Potential (bonus point)	high 0.20		10.4	
Total Points	**9.9**	**11**	**515.9 Total Functional Units**	
Percent of Possible Score 90% (round to nearest whole number)				

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

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

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

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

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

☒ **I** ☐ **II** ☐ **III** ☐ **IV**

APPENDIX C
PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

Schrieber Lake: Photo Point Photographs

	
Photo Point: 1 – Photo 1 Bearing: 242 degrees Location: Northwest Boundary Year: 2015	Photo Point: 1 – Photo 1 Bearing: 242 degrees Location: Northwest Boundary Year: 2019
	
Photo Point: 1 – Photo 2 Bearing: 200 degrees Location: Northwest Boundary Year: 2015	Photo Point: 1 – Photo 2 Bearing: 200 degrees Location: Northwest Boundary Year: 2019
	
Photo Point: 1 – Photo 3 Bearing: 164 degrees Location: Northwest Boundary Year: 2015	Photo Point: 1 – Photo 3 Bearing: 164 degrees Location: Northwest Boundary Year: 2019

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: 2019



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: 2019



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: 2019

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: 2019



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: 2019



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



Photo Point: 3 Location: West of Corrals
Bearing: 183 degrees Year: 2019

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: 2019



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: 2019



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: 2019

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: 2019



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: 2019



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: 2019

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: 2019



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: 2019



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: 2019

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: 2019



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: 2019



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: 2019

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: 2019



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: 2019



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: 2019

Schrieber Lake: Photo Point Photographs

	
Photo Point: 10 Location: Overlook Bearing: 39 degrees Year: 2015	Photo Point: 10 Location: Overlook Bearing: 39 degrees Year: 2019

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: 2019



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



Transect 1: End Location: T-1
Bearing: 71 degrees Year: 2019



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



Transect 2: Start Location: T-2
Bearing: 152 degrees Year: 2019

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: 2019



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



Transect 3: Start Location: T-3
Bearing: 175 degrees Year: 2019



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



Transect 3: End Location: T-3
Bearing: 355 degrees Year: 2019

Schrieber Lake: Data Point Photographs



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



Data Point: DP-1U Location: Veg Com 1
Year: 2019



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



Data Point: DP-2U Location: Veg Com 1
Year: 2019



Data Point: DP-3W Location: Veg Com 3; T-3 Start
Year: 2019



Data Point: DP-3U Location: Veg Com 1; T-3 Start
Year: 2019

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: 2019



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: 2019



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



Cross-Section: SC1-2 Location: Schrieber Creek
Bearing: 280˚ – upstream Year: 2019

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: 2019



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



Cross-Section: SC2A-1 Location: Schrieber Creek
Bearing: 315° – downstream Year: 2019



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: 2019

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: 2019



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: 2019



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



Cross-Section: SC2B-1 Location: Schrieber Creek
Bearing: 175° – downstream Year: 2019

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: 2019



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



Cross-Section: SC3-1 Location: Schrieber Creek
Bearing: 240° – Upstream Year: 2019



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: 2019

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: 2019



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: 2019



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



Cross-Section: SC7-1 Location: Schrieber Creek
Bearing: 110° – downstream Year: 2019

Schrieber Lake: Cross-Section Photographs



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



Cross-Section: SC7-1
Bearing: 20° – Left Bank
Location: Schrieber Creek
Year: 2019



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



Cross-Section: CC1A-1
Bearing: 50° – Upstream
Location: Coyote Creek
Year: 2019



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



Cross-Section: CC1A-1
Bearing: 320° – Right Bank
Location: Coyote Creek
Year: 2019

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: 2019



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: 2019



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



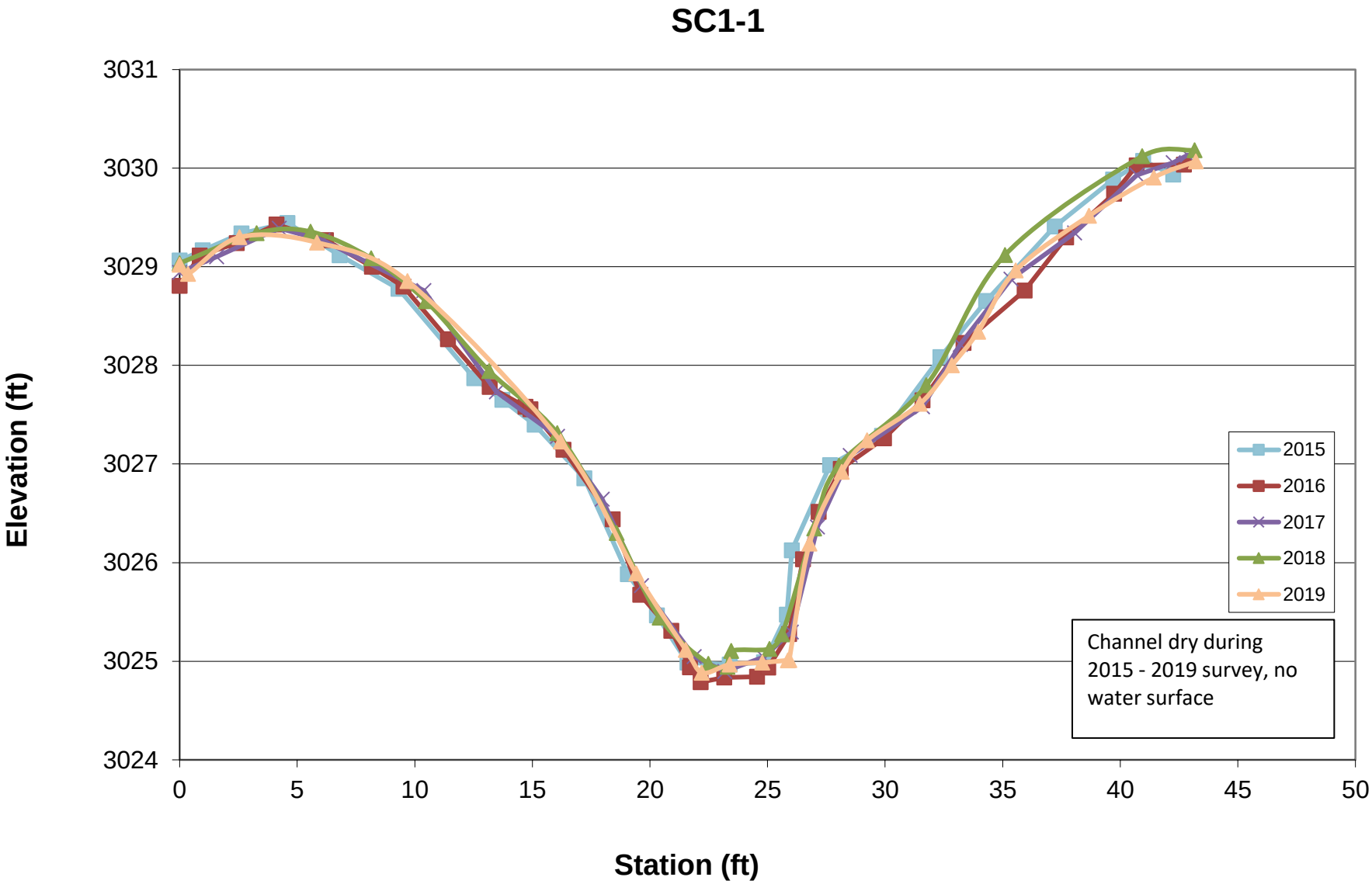
Cross-Section: CC1B-1 Location: Coyote Creek
Bearing: 200° – Downstream Year: 2019

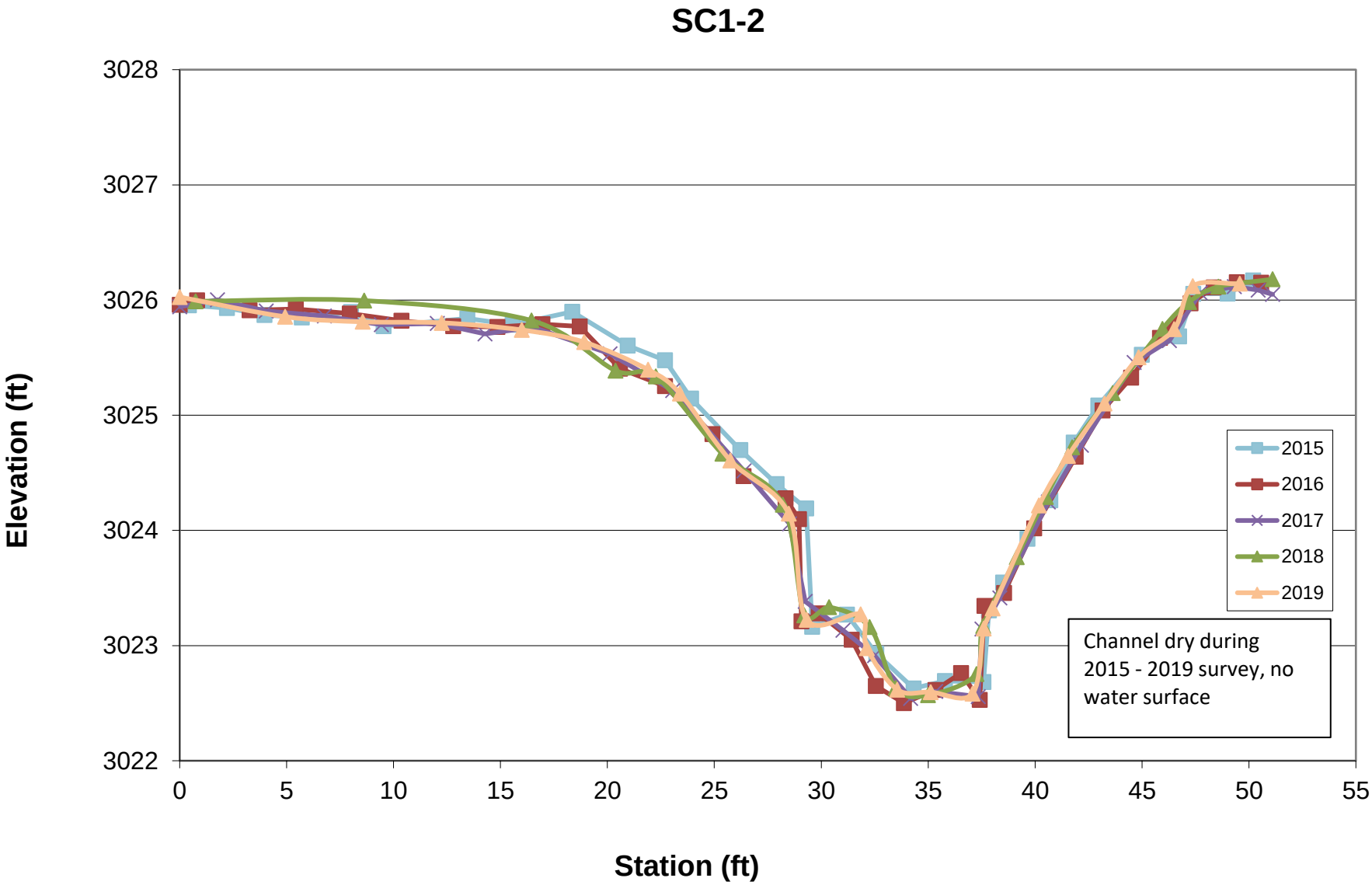
Schrieber Lake: Cross-Section Photographs

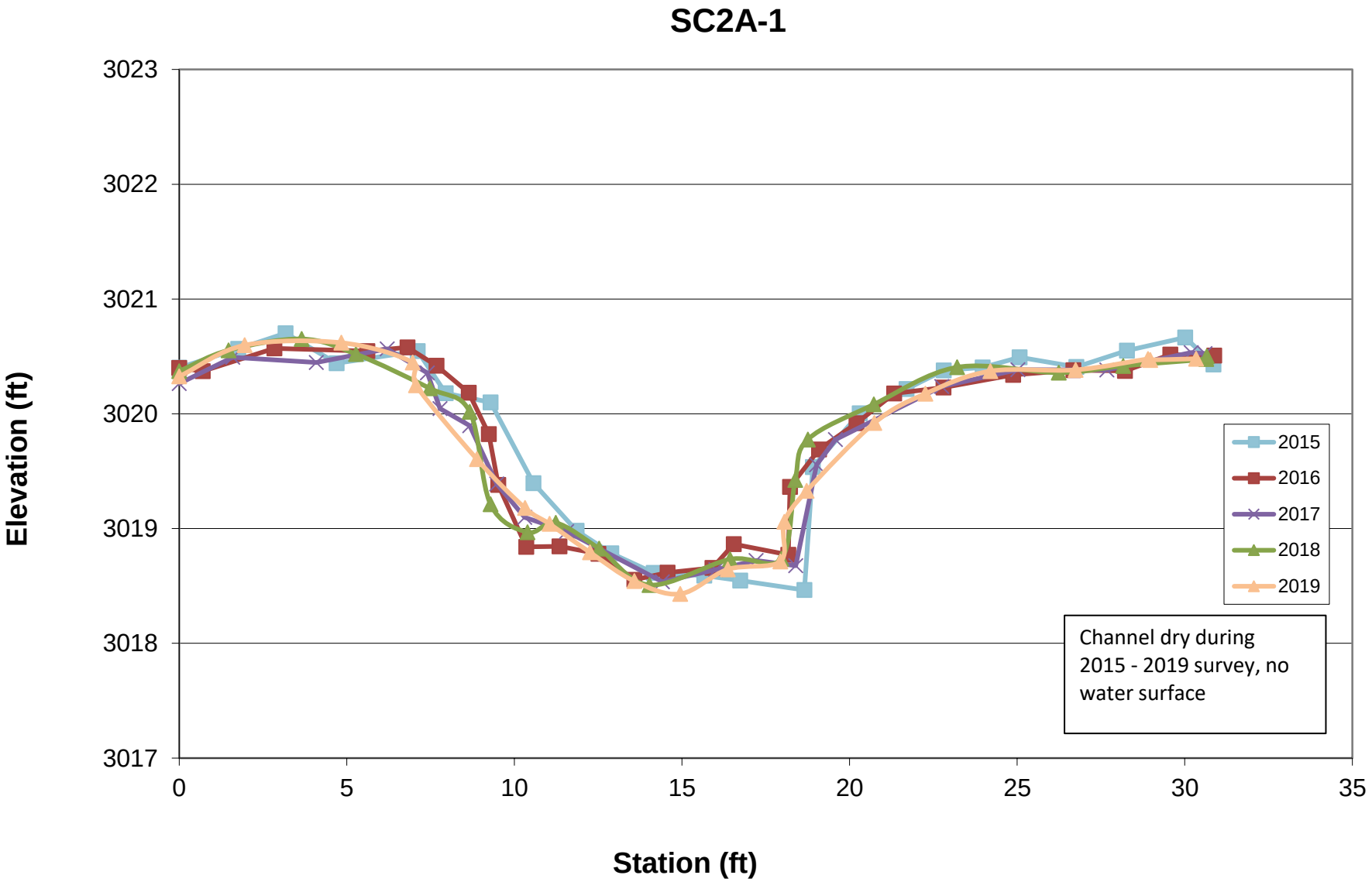
	
Cross-Section: CC1B-1 Location: Coyote Creek Bearing: 110° – Left Bank Year: 2016	Cross-Section: CC1B-1 Location: Coyote Creek Bearing: 110° – Left Bank Year: 2019

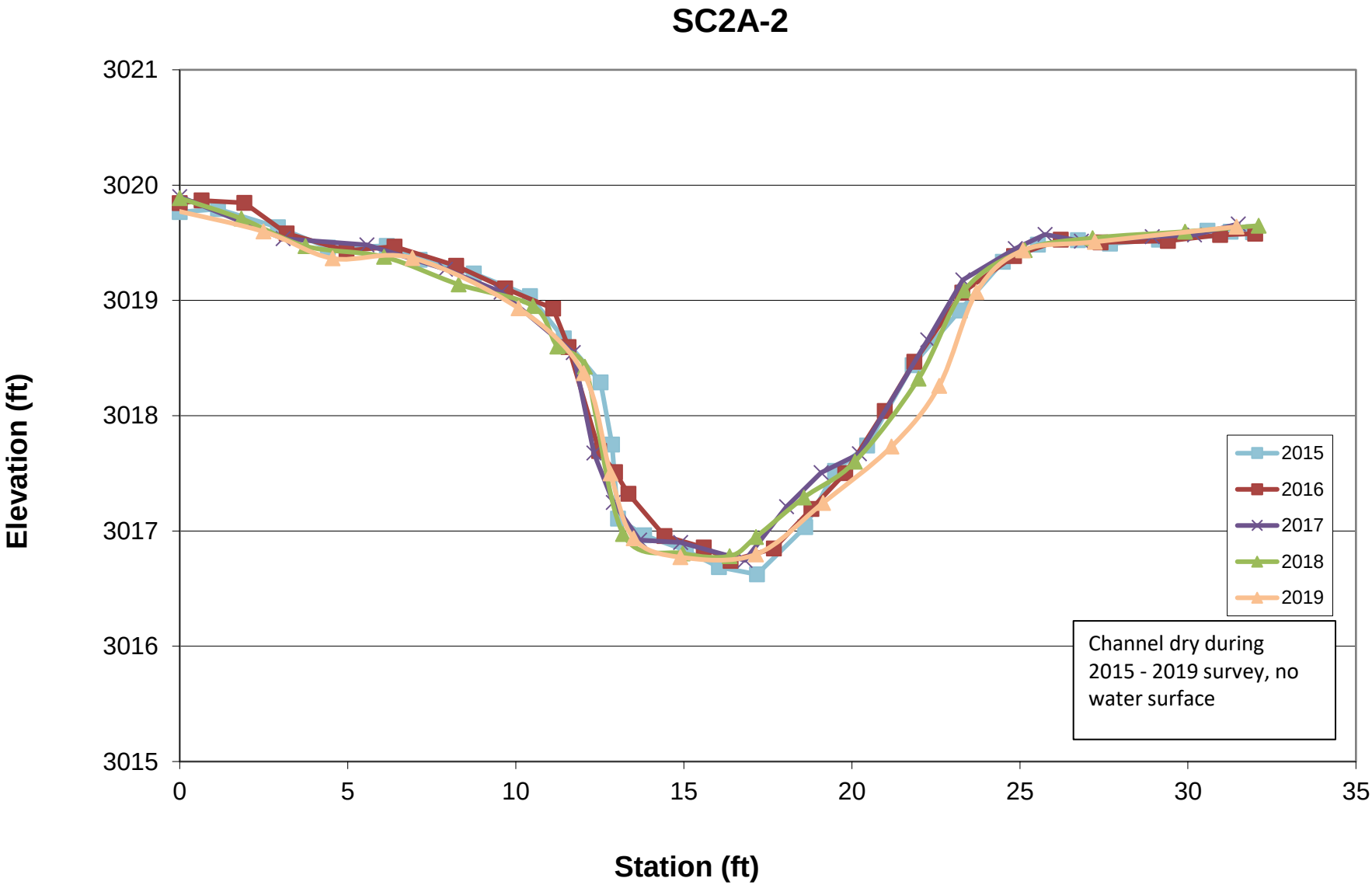
APPENDIX D
SURVEYED STREAM CROSS SECTIONS

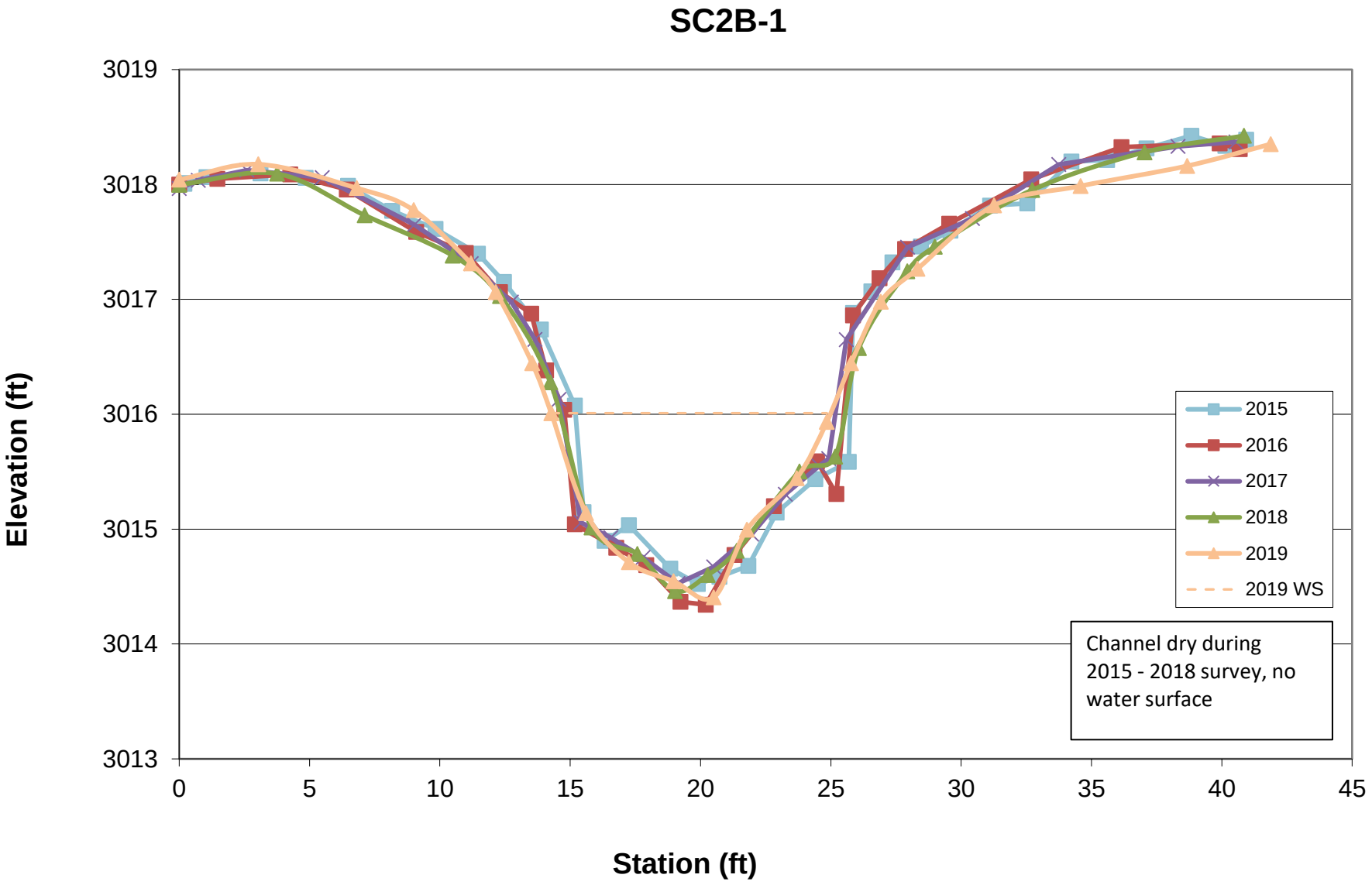
MDT Wetland Mitigation Monitoring
Schrieber Lake
Lincoln County, Montana

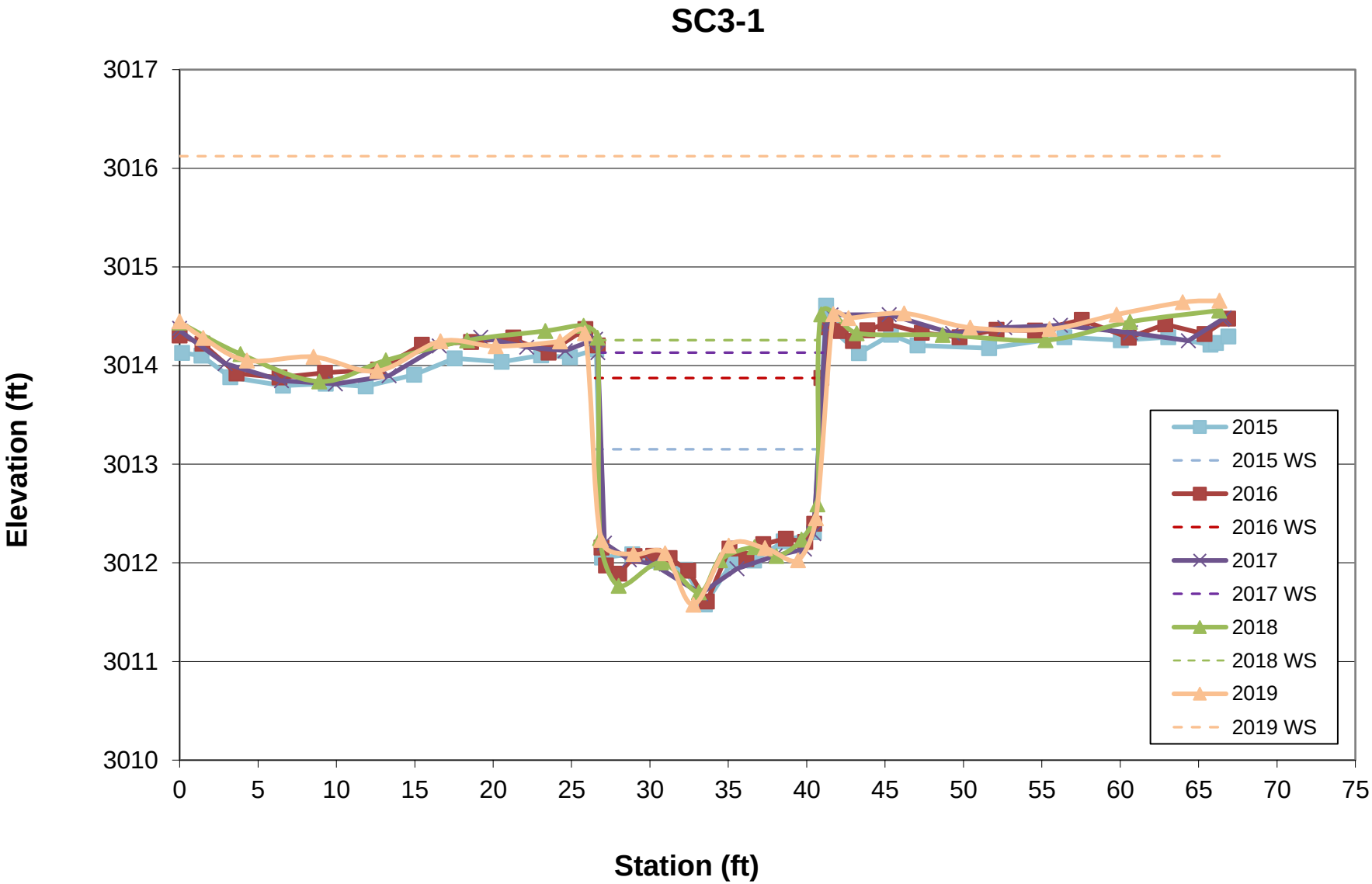

SC1-1
Elevation (ft)
3031
3030
3029
3028
3027
3026
3025
3024
0
5
10
15
20
25
30
35
40
45
50
Station (ft)
2015
2016
2017
2018
2019
Channel dry during 2015 - 2019 survey, no water surface

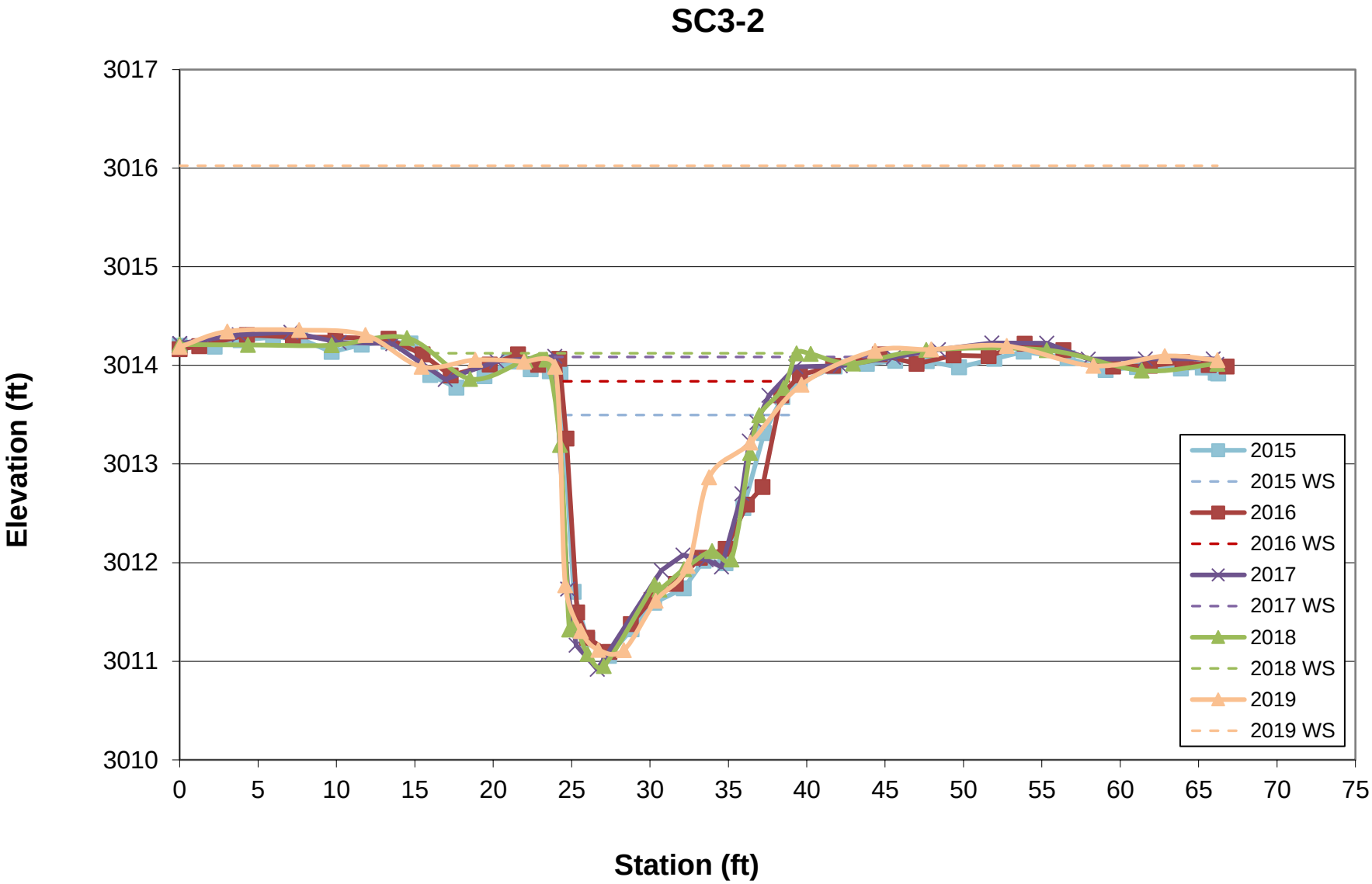

SC1-2
Elevation (ft)
3028
3027
3026
3025
3024
3023
3022
0
5
10
15
20
25
30
35
40
45
50
55
Station (ft)
2015
2016
2017
2018
2019
Channel dry during 2015 - 2019 survey, no water surface

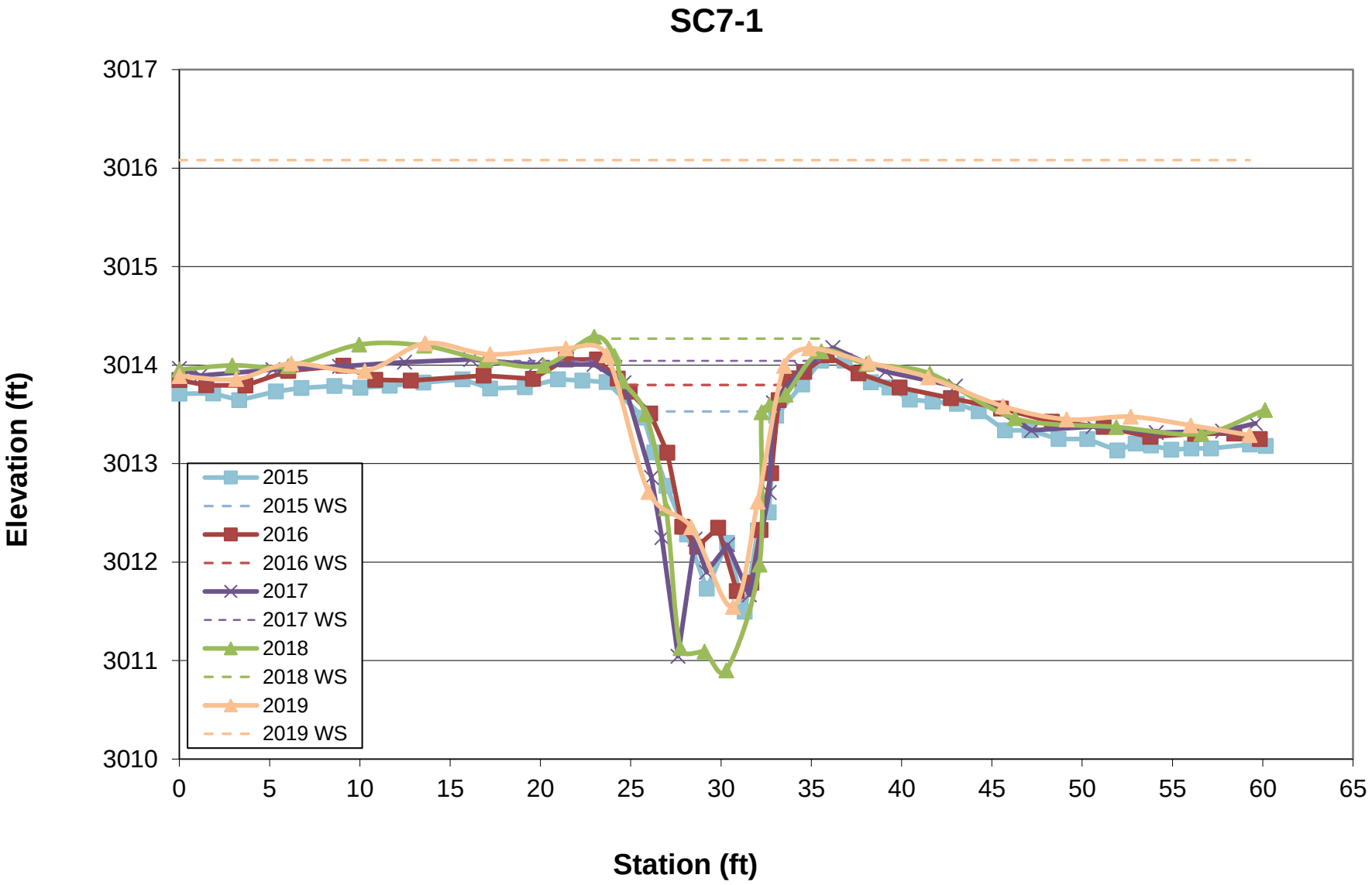

SC2A-1
Elevation (ft)
3023
3022
3021
3020
3019
3018
3017
0
5
10
15
20
25
30
35
Station (ft)
2015
2016
2017
2018
2019
Channel dry during 2015 - 2019 survey, no water surface

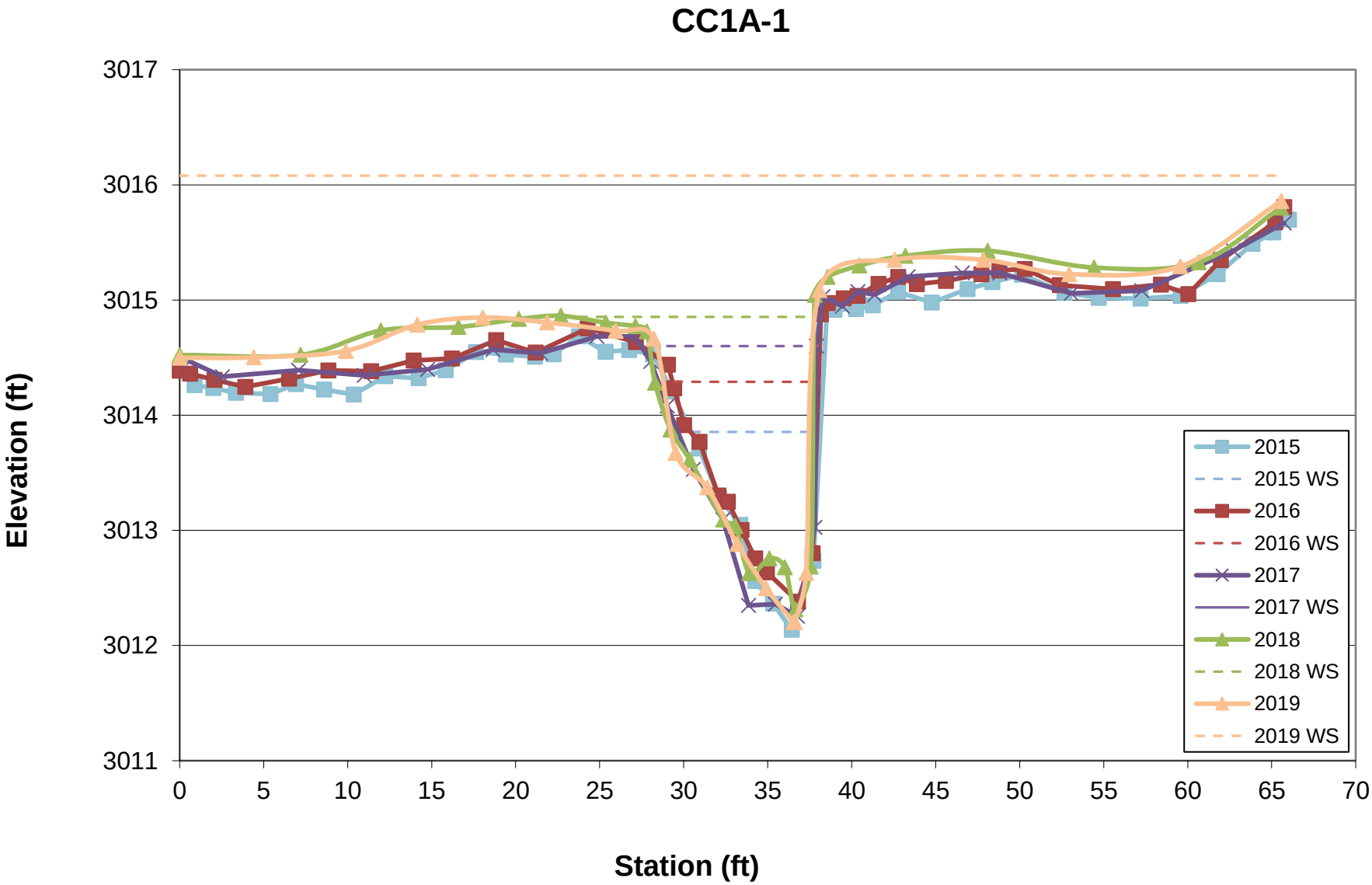

SC2A-2
Elevation (ft)
3021
3020
3019
3018
3017
3016
3015
0
5
10
15
20
25
30
35
Station (ft)
2015
2016
2017
2018
2019
Channel dry during 2015 - 2019 survey, no water surface

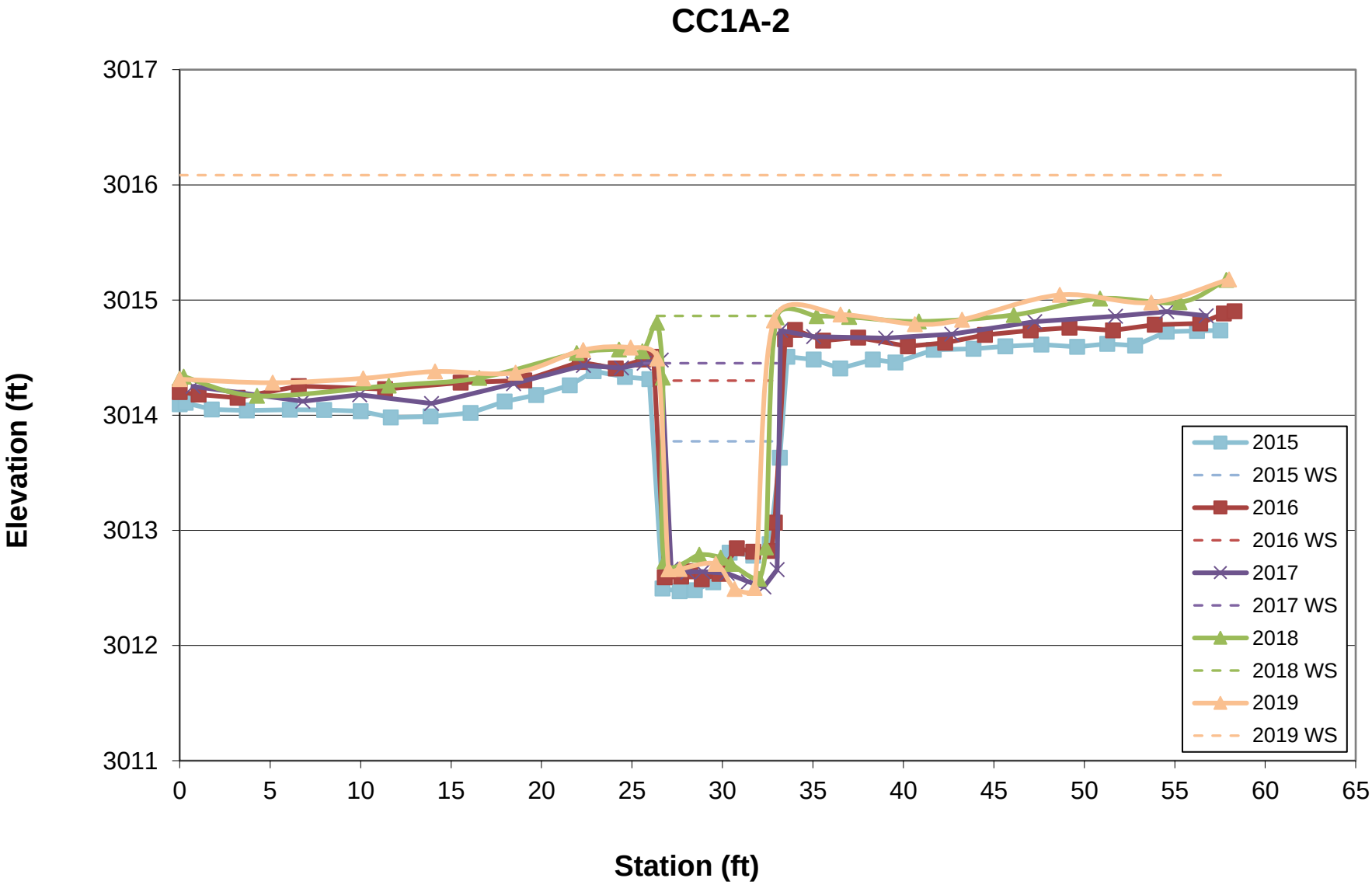

SC2B-1
Elevation (ft)
3019
3018
3017
3016
3015
3014
3013
0
5
10
15
20
25
30
35
40
45
Station (ft)
2015
2016
2017
2018
2019
2019 WS
Channel dry during 2015 - 2018 survey, no water surface

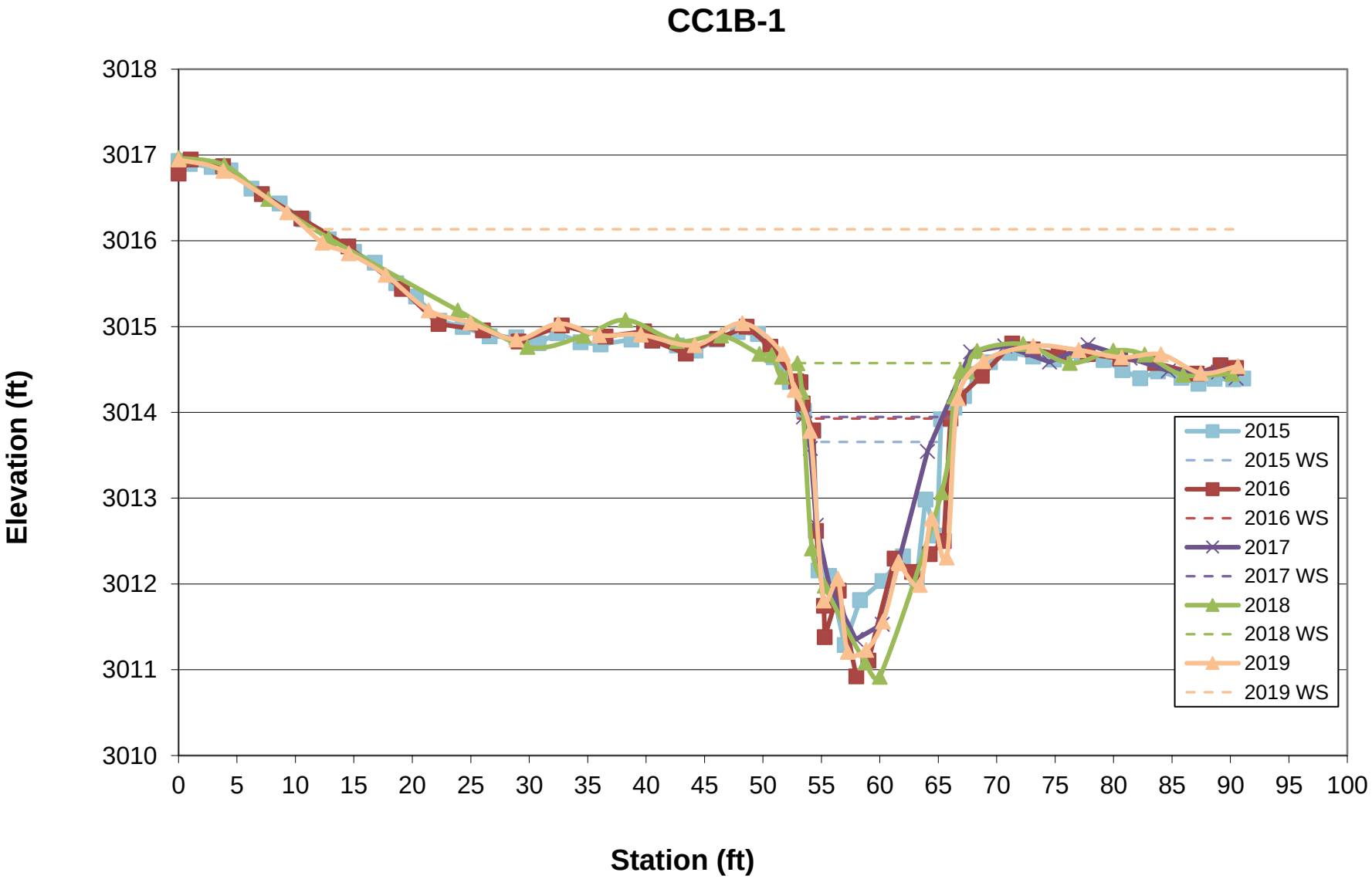

SC3-1
Elevation (ft)
3017
3016
3015
3014
3013
3012
3011
3010
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
Station (ft)
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


SC3-2
Elevation (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
Station (ft)
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


SC7-1
Elevation (ft)
3017
3016
3015
3014
3013
3012
3011
3010
0
5
10
15
20
25
30
35
40
45
50
55
60
65
Station (ft)
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


CC1A-1
Elevation (ft)
3017
3016
3015
3014
3013
3012
3011
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Station (ft)
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


CC1A-2
Elevation (ft)
3017
3016
3015
3014
3013
3012
3011
0
5
10
15
20
25
30
35
40
45
50
55
60
65
Station (ft)
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS


CC1B-1
Elevation (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
Station (ft)
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS

Monitoring Cross Section	Bankfull Width (ft)						Maximum Depth (ft)						XS Area (ft^2)						Mean Depth (ft)						W/D Ratio					
	2015	2016	2017	2018	2019	%Δ	2015	2016	2017	2018	2019	%Δ	2015	2016	2017	2018	2019	%Δ	2015	2016	2017	2018	2019	%Δ	2015	2016	2017	2018	2019	%Δ
SC1-1	11.0	11.7	11.4	11.3	11.7	4%	2.0	2.2	2.1	2.1	2.1	3%	14.3	17.0	16.3	15.7	18.2	16%	1.3	1.5	1.4	1.4	1.6	12%	8.4	8.0	8.0	8.1	7.5	-8%
SC1-2	11.2	11.9	12.6	12.0	12.0	0%	1.6	1.7	1.7	1.6	1.6	-1%	12.1	12.8	14.1	13.5	13.2	-2%	1.1	1.1	1.1	1.1	1.1	-2%	10.4	11.1	11.3	10.8	10.9	1%
SC2A-1	11.6	12.2	14.1	12.7	14.3	13%	1.6	1.5	1.6	1.6	1.7	5%	12.4	11.4	12.5	11.3	15.4	37%	1.1	0.9	0.9	0.9	1.1	21%	11.0	13.0	15.8	14.3	13.3	-7%
SC2A-2	13.2	12.6	13.1	13.3	14.0	6%	2.4	2.3	2.3	2.2	2.2	0%	18.5	17.8	19.5	17.6	19.4	10%	1.4	1.4	1.5	1.3	1.4	4%	9.4	8.9	8.8	10.0	10.1	2%
SC2B-1	12.5	12.6	13.4	14.3	14.2	-1%	2.4	2.6	2.4	2.4	2.5	2%	20.8	18.8	20.1	23.0	21.3	-8%	1.7	1.5	1.5	1.6	1.5	-7%	7.5	8.5	8.9	8.9	9.5	7%
SC3-1	14.5	14.6	14.5	14.2	15.6	10%	2.6	2.6	2.5	2.5	2.6	5%	29.9	31.2	28.0	30.0	32.8	9%	2.1	2.1	1.9	2.1	2.1	0%	7.0	6.9	7.6	6.7	7.4	10%
SC3-2	16.6	15.3	14.8	15.3	17.0	11%	2.9	2.8	3.0	2.9	2.8	-5%	27.8	27.6	24.3	26.8	30.8	15%	1.7	1.8	1.6	1.8	1.8	3%	9.8	8.5	9.0	8.7	9.4	7%
SC7-1	7.4	7.0	7.7	6.4	8.3	30%	2.0	1.8	2.5	2.6	2.0	-25%	8.5	8.2	10.8	12.6	9.9	-21%	1.1	1.2	1.4	2.0	1.2	-39%	6.5	6.0	5.5	3.2	7.0	114%
CC1A-1	10.2	9.6	10.0	9.7	9.5	-2%	2.4	2.1	2.2	2.2	2.3	5%	13.6	11.4	13.6	13.6	16.3	20%	1.3	1.2	1.4	1.4	1.7	23%	7.7	8.1	7.4	6.9	5.5	-20%
CC1A-2	7.5	7.1	6.5	6.2	6.2	0%	1.8	1.8	1.9	1.8	1.9	5%	11.3	11.9	11.7	8.9	11.2	25%	1.5	1.7	1.8	1.4	1.8	25%	5.0	4.3	3.7	4.3	3.5	-20%
CC1B-1	11.4	12.0	11.7	12.6	12.8	2%	2.6	3.0	2.5	3.0	2.7	-10%	19.5	22.0	16.9	25.3	23.0	-9%	1.7	1.8	1.5	2.0	1.8	-11%	6.7	6.6	8.0	6.3	7.2	14%