

## Montana Department of Transportation Wetland Mitigation Monitoring Report

### SILICON MOUNTAIN MITIGATION SITE

#### **Project Overview**

**MDT Project Number:** STPX 47 (024) 56 UPN# 6044

**Watershed:** Watershed #2 – Upper Clark Fork of the Columbia River

**Monitoring Year:** 2022

**Years Monitored:** 8<sup>th</sup> year of monitoring

**Corps Permit Number:** NWO-2012-01822-MTH

**Stream Protection Act (SPA) Number:** MDT-R2-74-2012

**Monitoring Conducted By:** Confluence Consulting Inc

**Dates Monitoring Was Conducted:** June 13th-14th, 2022

#### **Purpose of the Approved Project:**

The Silicon Mountain wetland mitigation project was developed cooperatively by the Montana Department of Transportation (MDT) and Butte – Silver Bow County (BSBC). The project was intended to provide MDT with 11.45 acres of compensatory wetland mitigation credits and 12,369 stream mitigation credits. The credits generated by the project will be used to offset wetland and stream impacts associated with Butte Silver Bow County's Silicon Tech Park, the Port bridge/road realignment project, and impacts associated with future Montana Department of Transportation (MDT) project-related wetland and stream impacts in Watershed #2 – Upper Clark Fork River. The Silicon Mountain mitigation site was designed to: (a) create 7.84 acres of emergent and scrub/shrub wetland by excavating six wetland cells; (b) protect 10.06 acres of existing emergent and scrub/shrub wetland; (c) restore upland, wetland, and riparian areas that were impacted by the new bridge/roadway alignment by seeding and planting graminoids, shrubs, and trees; (d) restore and reconstruct approximately 3,250 linear feet of the Sand Creek channel to its historic natural condition; and (e) relocate and restore approximately 650 linear feet of the Sand Creek channel on 2.04 acres of privately owned property south of the MDT bridge/road realignment project. The project was expected to generate 11.45 wetland mitigation credit acres, 4.33 of which would be credited to BSBC and the remaining 7.12 credits would be held in reserved by MDT.

#### **Site Location:**

**Latitude:** 45.998489 **Longitude:** –112.662948

**County:** Butte Silver Bow **Nearest Town:** Rucker, MT

**Map Included:** Figure 1 on page #10

**Mitigation Site Construction Started:** 2013 **Construction Ended:** 2015

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

**Activity:** NA **Date:** NA **Specific recommendations for any additional corrective actions:** Weed treatment will continue in 2023.

**Anticipated Wetland Credit Acres:** 11.45

**Wetland Credit Acres Generated to Date:** 14.29 total, 4.33 assigned to Butte Silver Bow County; 9.96 assigned MDT

**Anticipated Stream Credits:** 12,369.50

**Stream Credits Generated to Date:** 12,369.50

#### **Previous Monitoring Reports:**

<https://www.mdt.mt.gov/publications/brochures/wetland-mitigation.aspx>

**Monitoring Period:** 5 years from construction completion or until concurrence by the US Army Corps of Engineers (USACE).

**Requirements** (from approved mitigation plan, banking instrument, or Department of Army (DA) permit conditions)

**Performance Standards:** A summary of performance standards, associated success criteria, and 2022 achievement status for the Silicon Mountain site is provided in Table 1.

**Table 1. Summary of Performance Standards**

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	Criteria for the three wetland parameters (hydrology, vegetation, and soils) are met as outlined in the 1987 Wetland Manual and 2010 Regional Supplement.	Y	Areas that are identified as wetland within the mitigation site meet the criteria for all three parameters.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	Areas identified as wetland within the mitigation site exhibit soil saturation for at least 12.5 percent of the growing season.
Hydric Soil	Hydric soil conditions are present or appear to be forming.	Y	Hydric soil characteristics have developed throughout all constructed wetlands.
	Soil is sufficiently stable to prevent erosion.	Y	Disturbed soil is stable and generally does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover is establishing well within developed wetlands.
Hydrophytic Vegetation	Success is achieved where combined absolute cover of facultative or wetter species is $\geq 70$ percent.	Y	Established wetland cells support 70 percent or greater cover of hydrophytic vegetation (OBL, FACW, and FAC).
	State-listed noxious weeds do not exceed 10 percent absolute cover.	Y	Montana state-listed noxious weeds are estimated at 2 percent absolute cover within wetland areas in 2022.
Channel-Restoration Success	Revegetation along the new Sand Creek channel corridor will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland herbaceous and woody plant species.	Y	The majority of stream bank vegetation along the constructed Sand Creek channel corridor is dominated by vegetation communities with stability ratings greater than or equal to 6.
	The intent of the stream restoration is to allow for the stream to naturally migrate within the floodplain and to allow it to freely move and stabilize itself within the site.	Y	The stream has plenty of space within the floodplain for natural migration. The stream currently appears to be stable with no lateral adjustment observed after construction.
Stream Bank Vegetation	Banks are vegetated with a majority of deep-rooting riparian plant species that have root-stability indexes $\geq 6$ .	Y	The majority of stream bank vegetation along the constructed Sand Creek channel corridor is dominated by vegetation communities with stability ratings greater than or equal to 6.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Open Water	The project is intended to provide seasonal open water during the spring and early summer within excavated depressions. As the growing season progresses and the groundwater levels recede, vegetation is expected to germinate within the majority of the depressions. Open water with submerged and/or floating vegetation will, therefore, be considered successful and creditable.	Y	In 2022, wetland Cells 2, 3, and portions of cells 4, 5, and wetland 13 exhibited rooted hydrophytic vegetation in inundated areas and these areas were included in the wetland acreage. Wetland Cells 1, 5, portion of cell 4, and wetland 13 appear to support perennial inundation and exhibited open water and an aquatic macrophyte community. These areas were delineated as open water.
Upland Buffer	Noxious weeds do not exceed 10 percent cover within upland buffer area.	Y	Noxious weed cover is approximately 2 percent within the upland buffer.
	Any area that was disturbed within the creditable buffer zone must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.	Y	Disturbed areas have established greater than 50 percent cover by non-weed weed species.
Weed Control	Control measures will be based on annual monitoring of the site to determine weed species and the degree of infestation within the site; control measures will be implemented by MDT to minimize and/or eliminate the intrusion of state-listed noxious weed species within the site.	Y	State-listed noxious weed species across the site have been monitored and mapped during each year since construction. MDT has implemented weed-control efforts. Absolute cover from Montana state-listed noxious weeds was estimated at 5 percent across the entire site.

### **Summary Data**

***Wetland Delineation*** –The total wetland acreage delineated within the project area in 2022 was 17.93 acres (Table 2; Appendix A). As of the 2022 monitoring event, 8.62 new wetland acres have become established, and 9.31 acres of pre-existing wetland have been preserved (Table 2). The total number of wetland acres delineated decreased by 0.14 acres since 2021. Even though wetland expansion was observed in a few portions of the site, the total wetland acreage still displayed a net loss due to open water expansion and a wetland acreage reduction within cell 6. Open water, as defined by recent USACE guidance (N. Green, personal communication, May 6, 2020), accounted for 3.51 acres of the mitigation site in 2022, which was an increase of 0.27 acres since 2021. Of this open water, 0.66 acres are associated with the preservation wetlands in the eastern portion of the site, and 2.86 acres are associated with created wetlands (Table 2). Uplands accounted for approximately 26.83 acres of the mitigation site and 1.70 acres are represented by the restored Sand Creek channel (Figure A-3, Appendix A). No mudflats were observed at this site in 2022. Wetland delineation data forms can be found in Appendix B, and Photos or data points in Appendix C.

**Table 2.** Upland, Wetland & Aquatic Habitat Acreage Delineated at the Silicon Mountain Site from 2016 to 2022.

Habitat Type	2016 Acreage	2017 Acreage	2018 Acreage	2019 Acreage	2020 Acreage	2021 Acreage	2022 Acreage
Uplands	31.80	31.30	30.50	30.10	28.96	26.85	26.83
Establishment (Creation) Wetland	6.30	6.30	7.10	7.50	6.04	8.42	8.62
Establishment Open Water <sup>(a)</sup>	NA	NA	NA	NA	2.92	2.65	2.86
Preservation Wetland	10.30	10.80	10.80	10.80	9.65	9.65	9.31
Preservation Open Water <sup>(a)</sup>	NA	NA	NA	NA	0.84	0.60	0.66
Mudflat <sup>(a)</sup>	NA	NA	NA	NA	0.00	0.24	0.00
Stream Channel	1.70	1.70	1.70	1.70	1.70	1.70	1.70
<b>Total Wetland &amp; Aquatic Habitat</b>	<b>18.30</b>	<b>18.80</b>	<b>19.60</b>	<b>20.00</b>	<b>21.14</b>	<b>23.25</b>	<b>23.27</b>

<sup>(a)</sup> Open water and mudflats were only mapped separately from wetlands beginning in 2020.

**Vegetation** – A total of 178 plant species have been identified at the site from 2015 through 2022; no new species were identified 2022. The following eight wetland and six upland community types were identified and mapped at the mitigation site in 2022 based on species composition and dominance:

- Upland Type 2 – *Descurainia sophia*/*Thlaspi arvense*
- Upland Type 3 – *Bromus inermis*/*Poa pratensis*
- Upland Type 5 – *Elymus repens*/*Bromus inermis*
- Upland Type 10 – *Artemisia tridentata*/*Poa* spp.
- Upland Type 13 – *Leymus cinereus*/*Elymus trachycaulus*
- Upland Type 15 – *Poa pratensis*/*Elymus repens*
- Wetland Type 4 – *Carex* spp./*Juncus balticus*
- Wetland Type 7 – Open Water/Aquatic Macrophytes
- Wetland Type 8 – *Salix exigua*/*Juncus balticus*
- Wetland Type 9 – *Juncus balticus*/*Elymus repens*
- Wetland Type 11 – *Typha latifolia*
- Wetland Type 14 – *Eleocharis palustris*/*Deschampsia caespitosa*
- Wetland Type 16 – *Juncus balticus*/*Eleocharis palustris*
- Wetland Type 17 – *Salix* spp.

The plant composition for each dominant vegetation community type is provided in full detail on the Wetland Mitigation Site Monitoring form (Appendix B), and the community boundaries shown on Figure A-3 (Appendix A).

Dominant vegetation community types and their boundaries remained very similar to those mapped in 2021, with two exceptions. Two large areas, located in the middle of the site, which had previously been identified as Upland Type (UT) 3 were mapped as Wetland Type (WT) 9 in 2022 due to large increases in *Juncus balticus* and *Elymus repens*. This transition signifies a shift in dominance from upland species to



facultative species, which may indicate that the wetlands are continuing to expand in the middle of the site.

Vegetation cover was estimated along two belt transects (T-1 and T-2) in 2022 (Figure A-2, Appendix A). T-1 is 564 feet long and intersects UT3, WT11, UT13, and WT16. There were no changes in transect intervals, total cover, and only minimal changes in the species observed and their associated cover classes between 2021 and 2022 (Table 3). Hydrophytic vegetation accounted for 86 percent of the transect in 2022, which is a 1 percent increase since 2021. An increase in inundation was observed along T-1 in 2022, primarily in areas that were saturated to the ground surface in 2021.

**Table 3.** Data Summary for T-1 From 2016 Through 2022 at the Silicon Mountain Site.

Monitoring Year	2016	2017	2018	2019	2020	2021	2022
<b>Transect Length (feet)</b>	<b>564</b>	<b>564</b>	<b>564</b>	<b>564</b>	<b>564</b>	<b>564</b>	<b>564</b>
Vegetation Community Transitions Along Transect	6	6	6	6	6	6	6
Vegetation Communities Along Transect	4	4	5	5	4	4	4
Hydrophytic Vegetation Communities Along Transect	2	2	2	2	2	2	2
Total Vegetative Species	48	54	42	43	47	46	46
Total Hydrophytic Species	26	33	28	31	35	35	36
Total Upland Species	22	21	14	12	12	11	10
Estimated % Total Vegetative Cover	90	90	90	93	93	93	93
Estimated % Unvegetated	10	10	10	7	7	7	7
% Transect Length Comprising Hydrophytic Vegetation Communities	81.3	86.0	86.0	86.0	86.0	86.0	86.0
% Transect Length Comprising Upland Vegetation Communities	18.7	14.0	14.0	14.0	14.0	14.0	14.0
% Transect Length Comprising Open Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0	0.0	0.0

T-2 is 219 feet long and intersects vegetation communities UT3, WT11, WT14, and UT15. Hydrophytic vegetation has provided 90 percent of the plant cover along the transect for the last four years, and this was the case again in 2022. The number of hydrophytic species observed remained the same as in the previous two years and the number of upland species observed decreased by 1. Total cover increased by 2 percent in 2022.

Priority 2B noxious weeds identified within the Silicon Mountain mitigation site included spotted knapweed (*Centaurea stoebe*), leafy spurge (*Euphorbia esula*), and Canada thistle (*Cirsium arvense*). Leafy spurge and Canada thistle populations sizes were similar to those observed in 2021, but spotted knapweed expanded on the site between the 2021 and 2022 monitoring events. The number of spotted knapweed patches mapped nearly doubled from 5 to 9, with two new patches occurring in the uplands northwest of wetland cell 6, one new patch near photo point 10, and one new patch in the southeast corner of wetland cell 4. Common tansy (*Tanacetum vulgare*), butter-and-eggs (*Linaria vulgaris*), and Russian knapweed (*Acroptilon repens*), were also observed as isolated individuals in several locations across the site, but were not mapped (Figure A-3, Appendix A). The site is currently achieving the success criteria established for noxious weed cover within both the wetland and upland buffer areas.

MDT planted an estimated 30,000 willow cuttings and 350 containerized shrubs and trees along the stream banks of the Sand Creek channel, in riparian areas, and in small clusters around the perimeter of the excavated wetland cells. An estimated 17 percent of the containerized woody plantings had survived through the 2022 survey, consistent with that observed in 2021. An estimated 85 percent of the installed willow cuttings had survived; young shoots arising from the installed cuttings ranged from 12 to 80 inches

in length. The willow cuttings were healthy and robust, with no signs of insect damage or disease observed. Woody species are also volunteering in several places along the stream channel.

**Table 4.** Data Summary for T-2 From 2016 Through 2022 at the Silicon Mountain Site

Monitoring Year	2016	2017	2018	2019	2020	2021	2022
Transect Length (feet)	219	219	219	219	219	219	219
Vegetation Community Transitions Along Transect	2	2	2	3	3	3	3
Vegetation Communities Along Transect	3	3	3	4	4	4	4
Hydrophytic Vegetation Communities Along Transect	1	1	1	2	2	2	2
Total Vegetative Species	21	47	27	35	37	35	34
Total Hydrophytic Species	10	24	17	19	26	26	26
Total Upland Species	11	23	10	16	11	9	8
Estimated % Total Vegetative Cover	45	55	72	87.5	85	87	89
Estimated % Unvegetated	55	45	28	12.5	15	13	11
% Transect Length Comprising Hydrophytic Vegetation Communities	88	88	91	90	90	90	90
% Transect Length Comprising Upland Vegetation Communities	11.9	11.9	9.1	9.6	10.5	10.5	10.5
% Transect Length Comprising Open Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Hydrology** – Wetland hydrology was observed in numerous places across the Silicon Mountain mitigation site in 2022. Approximately 3.51 acres of surface water were observed in constructed wetland cells 1, 2, 4, and 5 and preserved wetland cell 13 (0.66 acres). The estimated average surface water depth was 0.5 feet with depths ranging 0.1-4 feet. Flowing water was present in the entire length of the Sand Creek channel. A high water table and soil saturation was observed in nearly every wetland soil pit and along Sand Creek (Appendix B). The only constructed wetland that showed a reduction in wetland hydrology over previous year was Cell 6.

US Geological Survey (USGS) groundwater monitoring data indicates that groundwater levels at this site experience interannual fluctuation. From 2016 to 2020, groundwater levels gradually increased with the highest water levels recorded May 2019 and 2020 (0.63-ft and 0.85-ft below land surface respectively). Groundwater monitoring data from 2022 indicates that groundwater levels in a portion of the site varied between 1.5- 3.2 feet below the land surface elevation of 5,347 feet from May through September (Table 5; USGS, 2022).

**Table 5.** 2022 USGS Groundwater Well Data for the Silicon Mountain Mitigation Site.

Date	Water Table Depth (feet below land surface)
5/4/2022	1.55
7/28/2022	3.22
9/22/2022	2.87

**Soils** – Soil pits were excavated at 20 sample points (10 sets of paired points) to determine the extent of hydric and upland soil development across the site in 2022 (Appendices A and B). Soil textures within wetland test pits ranged from coarse sand to muck to clay. Hydric soil indicators were observed in all but four wetland test pits and included depleted matrix, and hydrogen sulfide. The wetland test pits (i.e., DP04w, DP05w, DP09w, DP10w) that lacked hydric soil indicators exhibited hydrologic indicators,

including surface water, soil saturation, high water table, oxidized rhizospheres on living roots, geomorphic position, and passing the FAC-neutral test; all dominant plant species were OBL and FACW.

Soil textures within upland test pits ranged from loamy sand to sandy clay. No hydric soil indicators were observed in any of the upland test pits. Additional field observations for data points are provided in the USACE wetland determination data forms in Appendix B.

**Wildlife** – Sixteen bird species were identified in 2022 at the Silicon Mountain site and included several wetland-dependent species. In addition to the bird observations, one white-tailed deer, and a rabbit, were also observed (Appendix B).

**Stream Channel Monitoring**– The annual cross section survey of the reconstructed Sand Creek channel indicates that the Sand Creek channel form is continuing to evolve (Appendix D). Cross section 1 downcut by approximately 1 foot in the first several years of monitoring but has remained relatively stable for the last three years.

Similarly, the depth profile of cross section 2 changed so that the thalweg shifted away from the left bank and onto the right bank in the early years of monitoring, but in the last two years remained mostly stable. However, in 2022, the channel showed additional but minor amounts of aggradation on the left side and approximately 0.5-1 feet of lateral migration.

Cross sections 3 and 4 have been gradually aggrading since 2016 and the deepest parts of the channel have become narrower. This trend continued in 2022 and the average channel depth is now approximately 1.5 feet higher at both cross sections than it was in 2015.

Over the monitoring period, the deepest portion of the channel at cross section 5 has been gradually downcutting and the depths on the sides of the channel have been gradually increasing. Between 2021 and 2022, the deepest portion of the channel downcut by approximately 0.3 feet.

Cross section 6 has experienced the most change over the monitoring period and exhibited a biennial cut-and-fill pattern between 2018 and 2021. In 2022, the channel morphology at cross section 6 remained similar to that in 2021, though slight amounts of aggradation were observed.

The channel form at cross section 7 has displayed minor fluctuations over the monitoring periods, generally retaining the same dimensions from 2016-2020. However, in 2021, the center of the channel downcut by approximately 0.5 feet and aggraded on the right bank. In 2022, the channel depth was maintained but the thalweg shifted more to the center of the channel, widened, and deposition was observed again on either side of the thalweg. Finally, the channel form at cross section 8 has remained relatively stable across all monitoring years.

Although seven of the 8 channel monitoring transects have exhibited evidence of evolution in channel form, none of the cross-section data has indicated that the channel has migrated laterally. Almost all observed change has occurred between the streambanks, and the top of bank locations have remained mostly static.

**Riparian Vegetation Monitoring** - In 2022, all 16 belt transects monitored along Sand Creek exhibited vegetation communities with stability ratings of 6 or greater, which meets the site's performance criterion. Willow species, including yellow willow (*Salix lutea*), narrow-leaf willow (*Salix exigua*), and Pacific willow (*Salix lasiandra*), represent the dominant community type identified along the stream bank transects. Dominant herbaceous species observed within the willow dominated communities included red-tinge bulrush (*Scirpus microcarpus*), Nebraska sedge (*Carex nebrascensis*), and Northwest Territory sedge (*Carex utriculata*). The willows continue to increase in height and width along the stream banks, with minor shifts in species dominance due to changes in relative cover of some plant species observed during the 2022 monitoring event.

**Photographs** – Seven wetland and ten stream repeat photo points were established in the project area in 2015 (PP-1 to PP-17; Figure A-2, Appendix A). Photographs of all surveyed channel cross sections, wetland determination data points, and vegetation transect endpoints (T-1 and T-2) are provided in Appendix C, with comparison between 2022 and the first year of monitoring. The locations of these photographs are illustrated on Figure A-2 (Appendix A). Refer to previous years’ monitoring reports for all previous annual photographs: <https://www.mdt.mt.gov/publications/brochures/wetland-mitigation.aspx>

**Functional Assessment** – The 2008 Montana Wetland Assessment Method (MWAM; Berglund and McEldowney, 2008) was used to evaluate the functionality of the site in 2022. Five distinct Assessment Areas (AA) were evaluated at the site in 2022; AA1 – Established Wetland Cells 2, 3, and 4; AA2 – Established Wetland Cells 1 and 5; AA3 – Preservation Wetlands; AA4 – Established Wetland Cell 6; and AA5 – Establishment wetlands adjacent to Sand Creek and Preservation Wetlands.

**Table 6.** Montana Wetland Assessment Method Summary for the Silicon Mountain Site

Function and Value Parameters From the 2008 Montana Wetland Assessment Method	2022 AA1 (Established Wetland Cells 2, 3, and 4)	2022 AA2 (Established Wetland Cells 1 and 5)	2022 AA3 (Preservation Wetlands)	2022 AA4 (Established Wetland Cell 6)	2022 AA5 (Wetlands Established along Sand Creek and adjacent to preservation wetlands)
Listed/Proposed Threatened & Endangered (T&E) Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
Montana Natural Heritage Program Species (MTNHP) Habitat	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
General Wildlife Habitat	High (0.9)	High (0.9)	High (0.9)	Mod (0.4)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA	Mod (0.6)
Flood Attenuation	NA	NA	NA	NA	High (0.9)
Short- and Long-Term, Surface-Water Storage	Mod (0.6)	High (0.8)	High (1.0)	Low (0.2)	Mod (0.7)
Sediment/Nutrient/Toxicant Removal	High (1.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Sediment/Shoreline Stabilization	Mod (0.6)	High (1.0)	Mod (0.7)	Low (0.2)	High (1.0)
Production Export/Food Chain Support	High (0.9)	Exceptional (1.0)	Mod (0.6)	Mod (0.4)	High (0.8)
Groundwater Discharge/Recharge	Mod (0.7)	High (1.0)	High (1.0)	Mod (0.7)	High (1.0)
Uniqueness	Mod (0.5)	Mod (0.6)	Mod (0.6)	Low (0.3)	Mod (0.6)
Recreation/Education Potential (bonus points)	High (0.2)	High (0.2)	High (0.2)	NA	High (0.2)
<b>Actual Points/Possible Points</b>	<b>5.9/9</b>	<b>6.7/9</b>	<b>6.2/9</b>	<b>3.4/9</b>	<b>7.9/11</b>
<b>% of Possible Score Achieved</b>	<b>66%</b>	<b>74%</b>	<b>69%</b>	<b>38%</b>	<b>72%</b>
<b>Overall Category</b>	<b>II</b>	<b>II</b>	<b>II</b>	<b>III</b>	<b>II</b>

AA1 – Established Wetland Cells 2, 3, and 4 are classified as Category II wetlands and received high ratings for General Wildlife Habitat, Sediment/Shoreline Stabilization, Production Export/Food Chain Support, and Recreation/Education Potential. AA2 – Established Wetland Cells 1 and 5 are classified as Category II wetlands and received an exceptional rating for Production Export/Food Chain Support and high ratings for General Wildlife Habitat, Short- and Long-Term Surface-Water Storage, Sediment/Shoreline

Stabilization, Groundwater Discharge/Recharge, and Recreation/Education Potential. AA3 – Preservation Wetlands were also classified as Category II wetlands and received high ratings for General Wildlife Habitat, Short- and Long-Term Surface-Water Storage, and Groundwater Discharge/Recharge, and Recreation/Education Potential. The ecological function provided by AA4 is generally lower than the other AAs and it was rated as a Category III wetland. AA5 encompasses a few different habitat types that were classified as Category II wetlands and received high ratings for General Wildlife Habitat, Flood Attenuation, Sediment and Shoreline Stabilization, and Groundwater Discharge/Recharge (Table 6; Appendix B).

#### **Credit Summary:**

##### ***Stream Mitigation Credits***

The stream mitigation component of the Silicon Mountain project included restoring approximately 4,300 linear feet of Sand Creek, with 3,900 linear feet considered creditable based on location and design. The project is expected to generate a total of 12,369.50 stream mitigation credits (Table 7).

**Table 7.** Stream Mitigation Credits<sup>a</sup> for the Silicon Mountain Site.

<b>Mitigation Reach</b>	<b>Linear Feet</b>	<b>Sum of Mitigation Factors<sup>(a)</sup></b>	<b>Mitigation Credits</b>
Reach 1	3,250	3.20	10,400.00
Reach 2	650	3.03	1,969.50
<b>Total</b>	<b>3,900</b>		<b>12,369.50</b>

(a) From *Silicon Mountain Aquatic Resource Mitigation Plan, Watershed #2 – Upper Clark Fork of the Columbia River, Butte-Silver Bow County, MT* (Confluence Consulting, Inc., 2013).

##### ***Wetland Mitigation Credits***

In 2022, 17.93 acres of wetland were delineated at the Silicon Mountain site. Comprising these acres were 8.62 acres of establishment wetlands, 9.31 acres of preservation wetlands, and 3.51 acres of open water. Applying the USACE-approved ratios to these wetland acreages results in an estimated total of 10.95 wetland mitigation credit acres for the site in 2022, given that mitigation ratios for open water have not yet to be approved by the USACE (Tables 8 and 9). Additionally, the 50-foot upland buffer surrounding the aquatic resources comprised 16.72 acres of the site, which generated an additional 3.34 credit acres at a mitigation ratio of 5:1 (Table 8). With the wetland and upland credit acres combined, the site generated a total of 14.29 mitigation credit acres. This value constitutes 2.84 more credit acres than the 11.45 anticipated mitigation credit acres. This is the second year the site has exceeded the anticipated mitigation credit acres.

##### ***Functional Unit Credits***

Silicon Mountain Mitigation site scored a total of 69.89 functional unit credits in 2022. This score represents an increase of 4.71 points over 2021, even though the MWAM functional unit scores for some individual wetland cells (e.g. Cell 6) decreased in the same timeframe (Tables 8 and 9). The primary reason for this increase is that the wetland acreage on the site has increased. Functional credits are based on the MWAM scores associated with specific wetland polygons (Table 6; Appendix B). Note that upland areas are not evaluated in MWAM assessments and thus the credit acres associated with the upland buffer do not contribute to the functional unit credits.

**Table 8.** Summary of Mitigation Credits at the Silicon Mountain Site from 2015 (1<sup>st</sup> year of monitoring) compared to monitoring from 2020 through 2022\*\*

Compensatory Mitigation Type	Mitigation Area Description	Wetland Type <sup>(b)</sup>	Anticipated Mitigation Surface Area Acres	USACE-Approved Mitigation Ratios	Anticipated Mitigation Credit Acres	2015 Delineated Acres	2015 Mitigation Credit Acres	2020 Delineated Acres	2020 Mitigation Credit Acres	2021 Delineated Acres	2021 Mitigation Credit Acres	2022 Delineated Acres	2022 Mitigation Credit Acres
Establishment (Creation)	Wetland Cells 1, 2, 3, 4, 5 & 6	Palustrine Emergent, Aquatic Bed	7.84	1:1	7.84	6.19	6.19	6.04	6.04	8.42	8.42	6.36	6.36
Establishment (Creation)	Additional wetlands surrounding preservation and riparian zone	Palustrine Emergent, Palustrine Scrub-shrub	0.00	1:1	0.00	-	-	-	-	-	-	2.26	2.26
Preservation	Existing Wetland Areas	Palustrine Emergent, Scrub-Shrub	10.06	4:1	2.52	10.24	2.56	9.65	2.41	9.65	2.41	9.31	2.33
Upland Buffer <sup>(c)</sup>	50-Foot-Wide Upland Buffer	N/A	10.80	5:1	2.16	10.80	2.16	10.80	2.16	10.80	2.16	16.72	3.34
Open Water <sup>(a)</sup>	Wetland Cells 1, 4, 5, & 13	Lacustrine/ Palustrine Aquatic Bed	TBD	TBD	TBD	N/A	N/A	3.75	TBD	3.24	TBD	3.51	TBD
Mudflat <sup>(a)</sup>	Preserved Wetland Cell 13	Palustrine Aquatic Bed	TBD	TBD	TBD	N/A	N/A	0.00	TBD	0.24	TBD	0.00	N/A
Total Acreage			28.70	NA	11.45	27.23	10.91	30.24	10.61	32.35	12.99	38.16	14.29
Butte Silver Bow County Credit Acres			2.16	2:1	4.33		4.33		4.33		4.33		4.33
Credit Acres Assigned to MDT			26.54		7.12		6.83		6.28		8.66		9.96

(a) Mitigation ratios and crediting for Open Water and Mudflat are To Be Determined (TBD) by the US Army Corps of Engineers.

(b) FGDC, 2013

(c) In years prior to 2022, upland buffer credits have been reported for the anticipated delineated acres. In 2022, the reporting method switched to actual upland buffer acreages delineated.

\*\* Additional year’s monitoring reports can be found at the MDT website

**Table 9.** 2022 Wetland Functional Credits at the Silicon Mountain Site

Mitigation Area Description	AA	2022 Delineated Acres*	Ratio	2022 Wetland Mitigation Credit Acres	MWAM Actual Points (see Table 6)	Functional Credits (Mitigation Credit Acres × Actual Points)
Wetland Cell 1 (Establishment)	AA2	2.20	1:1	2.20	6.1	13.42
Wetland Cell 2 (Establishment)	AA1	1.59	1:1	1.59	5.9	9.38
Wetland Cell 3 (Establishment)	AA1	0.68	1:1	0.68	5.9	4.01
Wetland Cell 4 (Establishment)	AA1	1.27	1:1	1.27	5.9	7.49
Wetland Cell 5 (Establishment)	AA2	0.44	1:1	0.44	6.1	2.68
Wetland Cell 6 (Establishment)	AA3	0.18	1:1	0.18	3.4	0.61
Riparian and Expansion Wetlands (Establishment)	AA5	2.26	1:1	2.26	7.9	17.85
Preservation	AA4	9.31	4:1	2.33	6.2	14.45
<b>Total</b>		<b>17.93*</b>		10.95	NA	<b>69.89</b>

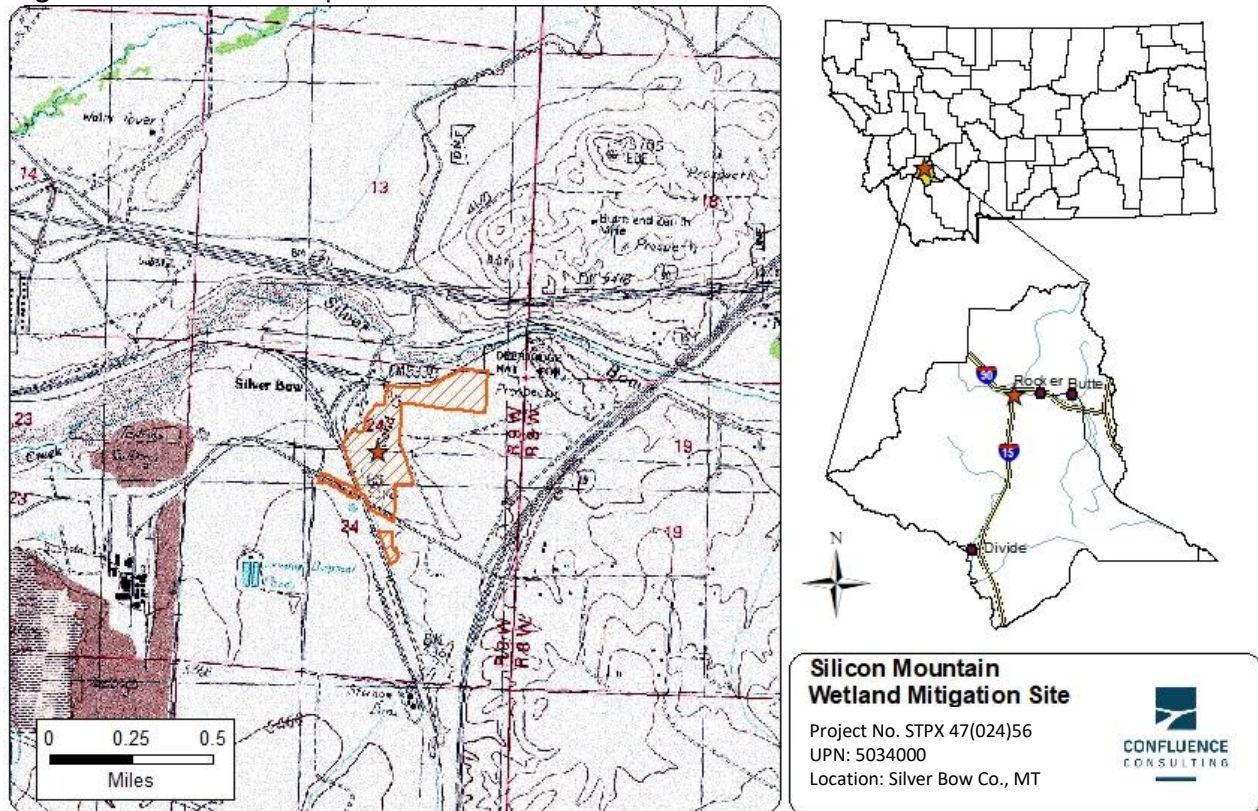
\*Does not include Open Water Areas

### **Conclusions**

The Silicon Mountain Mitigation site is continuing to develop into a diverse stream and wetland ecosystem. The site is meeting all established performance criteria and has exceeded the anticipated mitigation credit acreage. All wetland cells, except cell 6, are functioning as intended and wetland acreage continues to increase with each successive monitoring event. The Sand Creek channel form continues to evolve, though the location of the channel has remained static. Willow cuttings installed along the banks of Sand Creek are doing well and streambanks are stable with thriving woody vegetation communities. At this time, no remedial actions are necessary within the stream and wetland areas because the site has continued to develop as intended and the mitigation targets are being achieved. Weed control efforts will continue in 2023 to ensure that the site continues to meet the performance criteria related to noxious weed cover.

## Maps, Plans, Photos

**Figure 1. Site Location Map**



**Project Area Maps/Figures:** See Appendix A (Figure A-2 – 2022 Monitoring Activity Locations; Figure A-3 – 2022 Mapped Site Features; Figure A-4 – 2022 Wetland Credit Areas; and Figure A-5 – 2022 Wetland Delineation)

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

**Plant List:** See Appendix B (Table B-1)

**Photos:** See Appendix C

**Channel Cross Sections:** See Appendix D

**Plans:** See Appendix D of 2015 Monitoring Report

<https://www.mdt.mt.gov/publications/brochures/wetland-mitigation.aspx>



## **References**

- Berglund, J. and R. McEldowney. 2008.** *MDT Montana Wetland Assessment Method*, PBS&J Project B43072.00, prepared by Post, Buckley, Schuh, & Jernigan, Helena, MT, for the Montana Department of Transportation, Helena, MT.
- Confluence Consulting, Inc., 2013.** *Silicon Mountain Aquatic Resource Mitigation Plan, Watershed #2 – Upper Clark Fork of the Columbia River, Silver Bow County, MT*, CCI Project No. MDT.006, prepared by Confluence Consulting, Inc., Bozeman, MT, for the Montana Department of Transportation, Helena, MT.
- Environmental Laboratory. 1987.** *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers. Washington, DC.
- Federal Geographic Data Committee (FGDC). 2013.** *Classification of wetlands and deepwater habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
- Lesica, P. 2012.** *Manual of Montana Vascular Plants*, Brit Press, Fort Worth, TX.
- Montana Natural Heritage Program. 2022.** *Montana Species of Concern Report*. Montana Natural Heritage Program. Accessed on 1 October 2022 at <http://mtnhp.org/SpeciesOfConcern/?AorP=p>
- Natural Resources Conservation Service (NRCS). 2018.** *Field Indicators of Hydric Soils in the United States*, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils. 55 p.
- Natural Resources Conservation Service (NRCS). 2021.** *Soil Survey (SSURGO) Database for [Silver Bow County Area, Montana]*. Accessed on 1 October 2021 at <http://websoilsurvey.nrcs.usda.gov/>
- US Army Corps of Engineers (USACE). 2005.** *Montana Mitigation Information*. Accessed on 10 October 2016 at <http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/Mitigation/>
- U.S. Army Corps of Engineers (USACE). 2010.** *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, Coasts Region* (Version 2.0), prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Environmental Laboratory, Vicksburg, MS.
- U.S. Army Corps of Engineers (USACE). 2018.** *National Wetland Plant List (Version 3.4)*, prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.
- U.S. Fish and Wildlife Service (USFWS). 2022.** *IPaC Resource List*. Environmental Conservation Online System (ECOS). Accessed on 1 October 2022 at <https://ecos.fws.gov/ipac/>
- U.S. Geological Survey (USGS). 2021.** *National Water Information System, USGS Water Resources, Groundwater Levels for USA: Water Levels*. USGS Site No. 455959112394201, 02No8W24DDCC01 SIL-01. Silver Bow County, Montana. Accessed on 24 September 2022 at [https://nwis.waterdata.usgs.gov/nwis/gwlevels/?site\\_no=455959112394201](https://nwis.waterdata.usgs.gov/nwis/gwlevels/?site_no=455959112394201).



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## APPENDIX A

### PROJECT AREA MAPS

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MDT Wetland Mitigation Monitoring  
Silicon Mountain  
Butte Silver Bow County, Montana

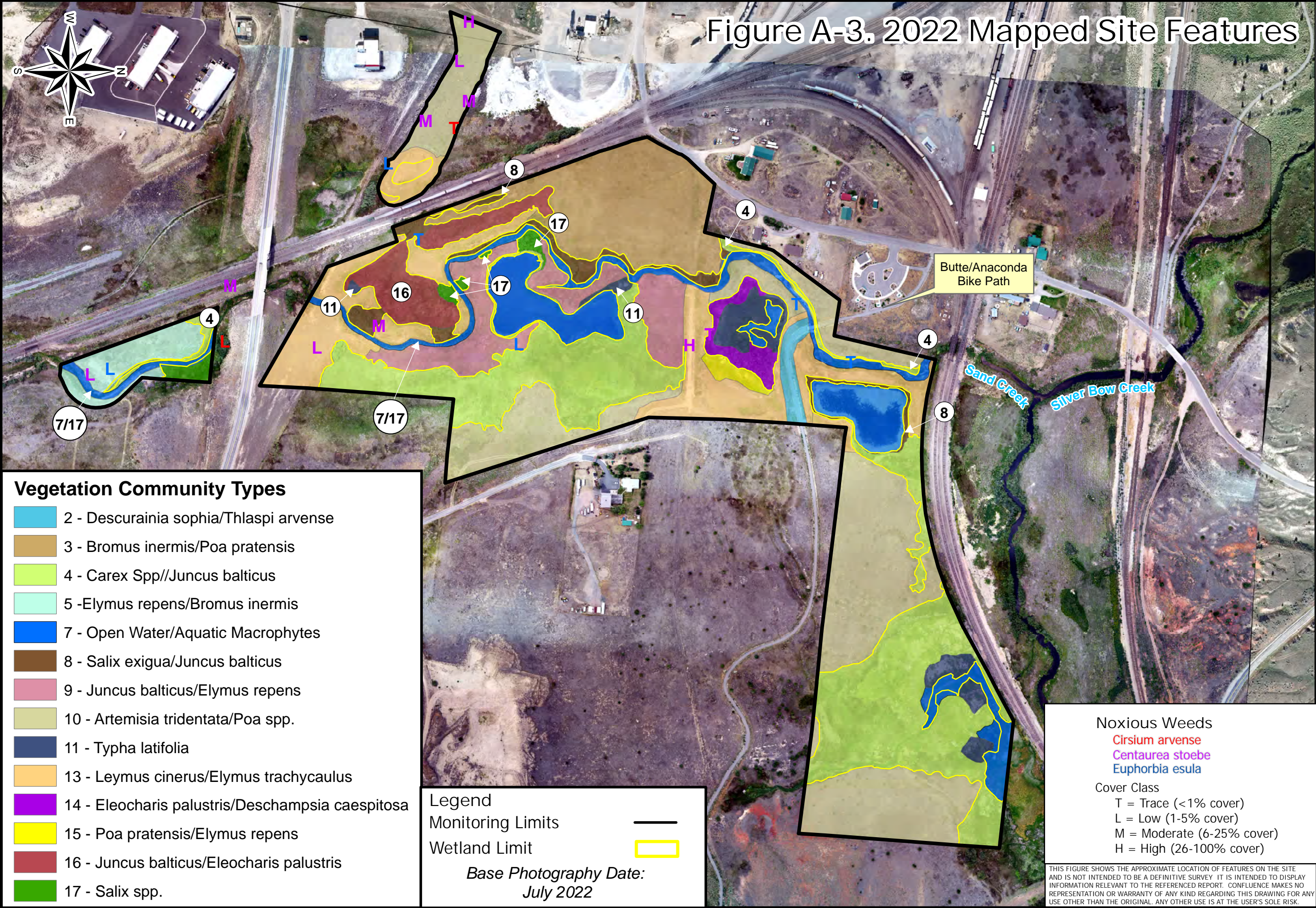









Figure A-3. 2022 Mapped Site Features





**Silicon Mountain Mitigation Site**

**2022 Mapped Site Features**

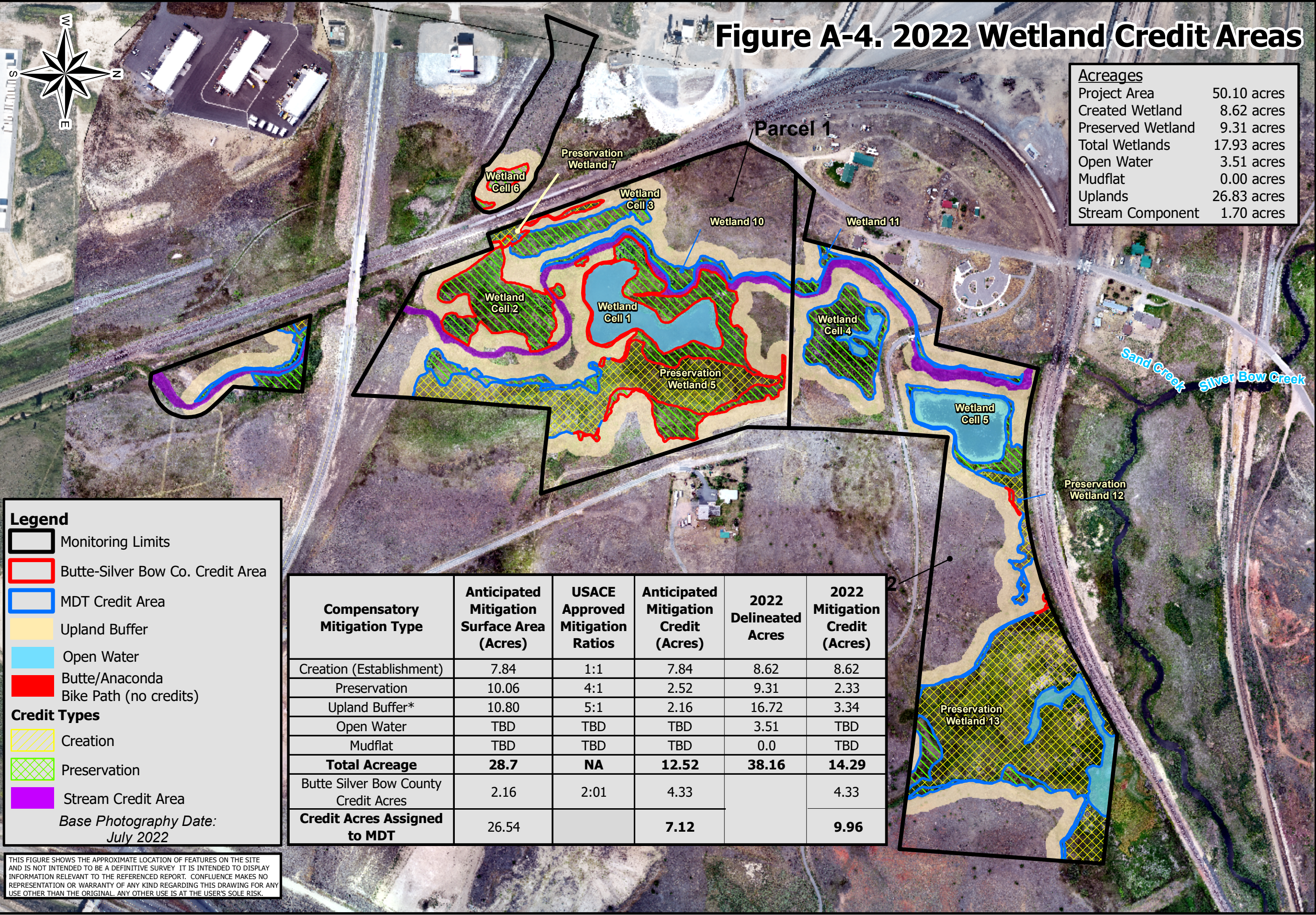
0 125 250 500 750 1,000 1,250 Feet

Project: STPX STWD (813)
Location: Silver Bow Co., Montana
Map Creation Date: 1/13/2023
Project Manager: R McEldowney
Drawn By: RJ

File: X:\Project\MDT Wetland Mitigation 2\Main\Silicon Mountain\2022\Veg2022\_MDT.mxd



Figure A-4. 2022 Wetland Credit Areas



Acreages	
Project Area	50.10 acres
Created Wetland	8.62 acres
Preserved Wetland	9.31 acres
Total Wetlands	17.93 acres
Open Water	3.51 acres
Mudflat	0.00 acres
Uplands	26.83 acres
Stream Component	1.70 acres



Silicon Mountain Mitigation Site  
2022 Wetland Credit Areas



Project: STPX-STWD (813)

Location: Silver Bow Co., Montana

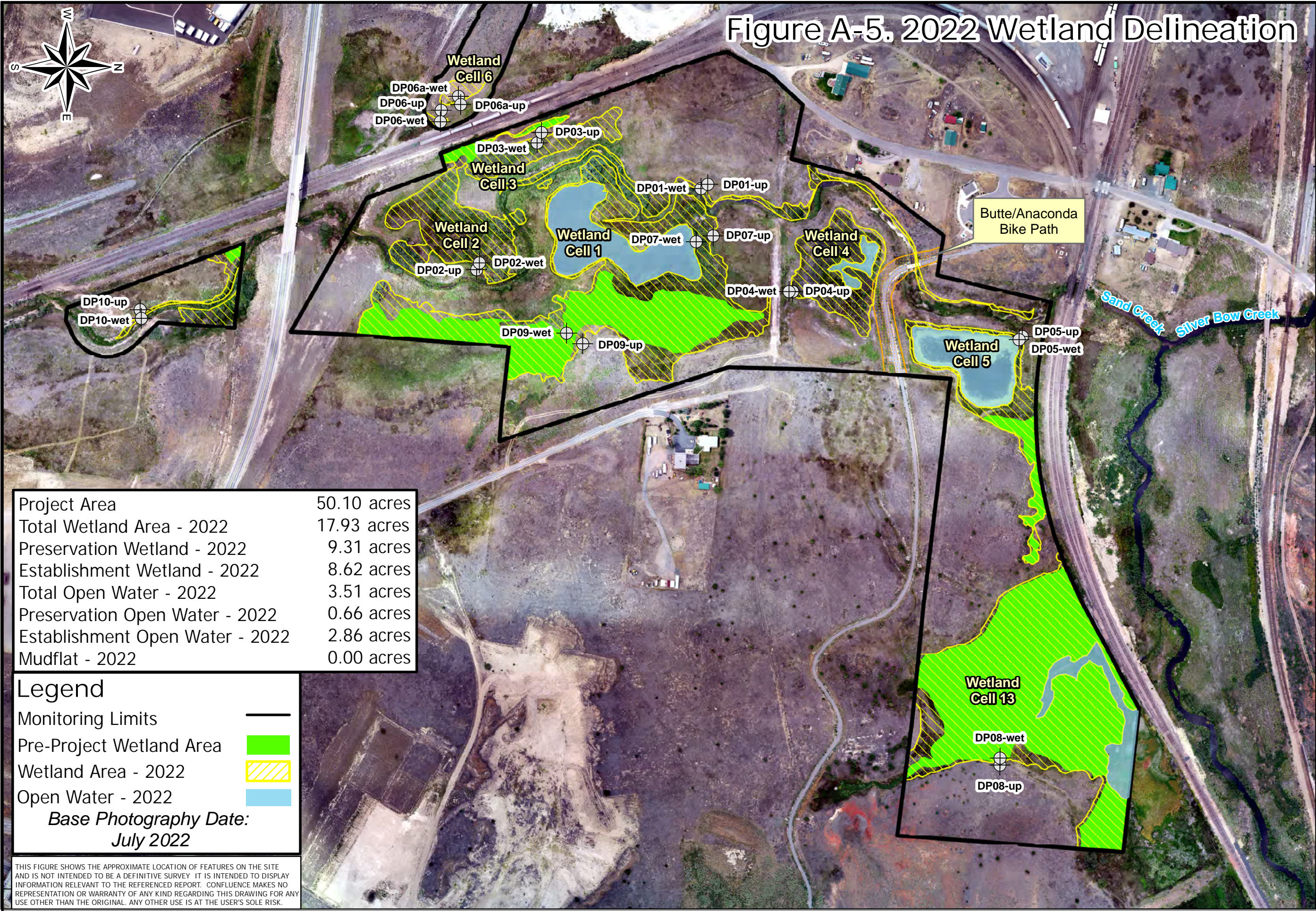
Map Creation Date: 2/4/2023

Project Manager: R McElowney

Drawn By: RCJ

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. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.





CONFLUENCE  
CONSULTING

Silicon Mountain Mitigation Site

2022 Wetland Delineation

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

Project: STPX STWD (813)

Location: Silver Bow Co., Montana

Date: 10/28/2022

Project Manager: R McEldowney

Drawn By: RJ



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## APPENDIX B

# MONITORING FORMS

---

MDT Wetland Mitigation Monitoring  
Silicon Mountain  
Butte Silver Bow County, Montana



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP01-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): flat Slope (%): 2  
 Subregion (LRR): LRR E Lat: 46.00008 Long: -112.662871 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

### Remarks:

Non-wetland sample point located five feet above DP01-wet to the north of wetland cell 1.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="1"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="4"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="25"/> % (A/B)														
<u>Artemisia cana</u>	3	<input checked="" type="checkbox"/>	FACU																
<b>Sapling/Shrub Stratum</b> Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 6 X 2</td> <td><input type="text" value="12"/></td> </tr> <tr> <td>FAC species 40 X 3</td> <td><input type="text" value="120"/></td> </tr> <tr> <td>FACU species 29 X 4</td> <td><input type="text" value="116"/></td> </tr> <tr> <td>UPL species 23 X 5</td> <td><input type="text" value="115"/></td> </tr> <tr> <td>Column Totals <input type="text" value="98"/> (A)</td> <td><input type="text" value="363"/> (B)</td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 6 X 2	<input type="text" value="12"/>	FAC species 40 X 3	<input type="text" value="120"/>	FACU species 29 X 4	<input type="text" value="116"/>	UPL species 23 X 5	<input type="text" value="115"/>	Column Totals <input type="text" value="98"/> (A)	<input type="text" value="363"/> (B)
Total % Cover of:	Multiply by:																		
OBL species 0 X 1	<input type="text" value="0"/>																		
FACW species 6 X 2	<input type="text" value="12"/>																		
FAC species 40 X 3	<input type="text" value="120"/>																		
FACU species 29 X 4	<input type="text" value="116"/>																		
UPL species 23 X 5	<input type="text" value="115"/>																		
Column Totals <input type="text" value="98"/> (A)	<input type="text" value="363"/> (B)																		
<b>Herbaceous Stratum</b> Plot size ( 5 Foot Radius)																			
Bromus inermis	20	<input checked="" type="checkbox"/>	UPL																
Elymus repens	30	<input checked="" type="checkbox"/>	FAC																
Elymus trachycaulus	10	<input type="checkbox"/>	FAC																
Euphorbia esula	1	<input type="checkbox"/>	UPL																
Juncus balticus	5	<input type="checkbox"/>	FACW																
Lupinus sericeus	2	<input type="checkbox"/>	UPL																
Poa compressa	25	<input checked="" type="checkbox"/>	FACU																
Solidago canadensis	1	<input type="checkbox"/>	FACU																
Solidago gigantea	1	<input type="checkbox"/>	FACW																
<b>Woody Vine Stratum</b> Plot size ( 30 Foot Radius)					<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.														
<b>Percent Bare Ground</b> <input type="text" value="5"/>																			
<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/>																			

### Remarks:

Data point is dominated by upland and facultative vegetation.

**SOIL**

Sampling Point: DP01-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-03	10YR	3/2	100				Sandy Loam	Many fine roots.
03-16	10YR	3/2	100				Sandy Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- |   |
|---|
| <input type="checkbox"/> 2 cm Muck (A10)                  |
| <input type="checkbox"/> Red Parent Material (TF2)        |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks)       |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

**HYDROLOGY****Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

- |  |
|--|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Drainage Patterns (B10)                           |
| <input type="checkbox"/> Dry-Season Water Table (C2)                       |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)         |
| <input type="checkbox"/> Geomorphic Position (D2)                          |
| <input type="checkbox"/> Shallow Aquitard (D3)                             |
| <input type="checkbox"/> FAC-Neutral Test (D5)                             |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)                    |
| <input type="checkbox"/> Frost-Heave Hummocks (D7)                         |

**Field Observations:**Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

Soil was observed to be moist, but no evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP01-wet  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Floodplain/fringe Local relief (concave, convex, none): concave Slope (%): 0  
 Subregion (LRR): LRR E Lat: 46.000026 Long: -112.662819 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

### Remarks:

PEM riverine wetland. Sample point located on the fringe of Sand Creek to the north of wetland cell 1.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="3"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="3"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)
<u>Salix lutea</u>	20	<input checked="" type="checkbox"/>	OBL		

<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)		
<u>Salix lutea</u>	20	<input checked="" type="checkbox"/>	OBL

<u>Herbaceous Stratum</u>	Plot size ( 5 Foot Radius)		
<u>Carex nebrascensis</u>	25	<input checked="" type="checkbox"/>	OBL
<u>Carex pellita</u>	45	<input checked="" type="checkbox"/>	OBL
<u>Cicuta douglasii</u>	1	<input type="checkbox"/>	OBL
<u>Cirsium arvense</u>	3	<input type="checkbox"/>	FAC
<u>Descurainia sophia</u>	1	<input type="checkbox"/>	UPL
<u>Juncus balticus</u>	6	<input type="checkbox"/>	FACW
<u>Lactuca serriola</u>	1	<input type="checkbox"/>	FACU
<u>Lepidium draba</u>	2	<input type="checkbox"/>	UPL
<u>Mentha arvensis</u>	2	<input type="checkbox"/>	FACW
<u>Scirpus microcarpus</u>	10	<input type="checkbox"/>	OBL
<u>Solidago canadensis</u>	1	<input type="checkbox"/>	FACU
<u>Typha latifolia</u>	3	<input type="checkbox"/>	OBL

<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)		

<b>Percent Bare Ground</b>	<u>0</u>
----------------------------	----------

<b>Prevalence Index worksheet</b>	
Total % Cover of:	Multiply by:
OBL species 104 X 1	<input type="text" value="104"/>
FACW species 8 X 2	<input type="text" value="16"/>
FAC species 3 X 3	<input type="text" value="9"/>
FACU species 2 X 4	<input type="text" value="8"/>
UPL species 3 X 5	<input type="text" value="15"/>
Column Totals <input type="text" value="120"/> (A)	<input type="text" value="152"/> (B)
<b>Prevalence Index = B/A = 1.26667</b>	

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

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

<b>Hydrophytic Vegetation Present?</b>	Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>
--	---

### Remarks:

Evidence of hydrophytic vegetation includes a positive dominance test and a prevalence index less than or equal to 3.0.



## SOIL

Sampling Point: DP01-wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-05	10YR	4/3	100				Coarse Sand	2mm gravels, coarse sand.
05-08	10YR	4/3	100				Coarse Sand	5mm gravels, coarse sand.
08-16	10Y	2.5/0	60	N	2.5/0	40	Fibric-mucky Mineral	High organic matter content.

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histic Solonchale (A1)            | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input checked="" type="checkbox"/> Hydrogen Sulfide (A4)  | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>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 indicator of sulfidic odor was observed. Organic matter content observed in the lowest horizon was very high.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☒ No ☐ Depth (inches): 8Saturation Present? Yes ☒ No ☐ Depth (inches): 0  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology present in a positive FAC-neutral test, a sulfidic odor, saturation to the surface, and a depth to the water table of 8".

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP02-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): convex Slope (%): 2  
 Subregion (LRR): LRR E Lat: 45.998243 Long: -112.661776 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

### Remarks:

Upland sample point located on a berm of excavated wetland cell 2.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="1"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="2"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="50"/> % (A/B)																								
<b>Sapling/Shrub Stratum</b>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 5 X 2</td> <td><input type="text" value="10"/></td> </tr> <tr> <td>FAC species 40 X 3</td> <td><input type="text" value="120"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 55 X 5</td> <td><input type="text" value="275"/></td> </tr> <tr> <td>Column Totals <input type="text" value="100"/> (A)</td> <td><input type="text" value="405"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>4.05</b>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 5 X 2	<input type="text" value="10"/>	FAC species 40 X 3	<input type="text" value="120"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 55 X 5	<input type="text" value="275"/>	Column Totals <input type="text" value="100"/> (A)	<input type="text" value="405"/> (B)									
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<b>Herbaceous Stratum</b>	Plot size ( 5 Foot Radius)				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.																								
<table border="1"> <tbody> <tr> <td>Astragalus cicer</td> <td>2</td> <td><input type="checkbox"/></td> <td>UPL</td> </tr> <tr> <td>Bromus inermis</td> <td>50</td> <td><input checked="" type="checkbox"/></td> <td>UPL</td> </tr> <tr> <td>Elymus repens</td> <td>10</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Juncus balticus</td> <td>5</td> <td><input type="checkbox"/></td> <td>FACW</td> </tr> <tr> <td>Lepidium draba</td> <td>3</td> <td><input type="checkbox"/></td> <td>UPL</td> </tr> <tr> <td>Leymus cinereus</td> <td>30</td> <td><input checked="" type="checkbox"/></td> <td>FAC</td> </tr> </tbody> </table>	Astragalus cicer	2	<input type="checkbox"/>	UPL		Bromus inermis	50	<input checked="" type="checkbox"/>	UPL	Elymus repens	10	<input type="checkbox"/>	FAC	Juncus balticus	5	<input type="checkbox"/>	FACW	Lepidium draba	3	<input type="checkbox"/>	UPL	Leymus cinereus	30	<input checked="" type="checkbox"/>	FAC				
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Lepidium draba	3	<input type="checkbox"/>	UPL																										
Leymus cinereus	30	<input checked="" type="checkbox"/>	FAC																										
<b>Woody Vine Stratum</b>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/>																								
<b>Percent Bare Ground</b>	<input type="text" value="0"/>																												

### Remarks:

Juncus balticus observed creeping up slope and onto bench. An upland vegetation community was present at this data point.

# SOIL

Sampling Point: DP02-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-05	10YR	4/3	100				Loamy Sand	Many fine roots
05-16	10YR	4/3	100				Loamy Sand	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

# HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

**Secondary Indicators (2 or more required)**

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

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP02-wet  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): LRR E Lat: 45.998263 Long: -112.661854 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

### Remarks:

PEM depressional wetland. Sample point in excavated wetland cell 2 at the toe of the slope on which DP02-up was located.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="2"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="2"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																												
<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 25 X 1</td> <td><input type="text" value="25"/></td> </tr> <tr> <td>FACW species 55 X 2</td> <td><input type="text" value="110"/></td> </tr> <tr> <td>FAC species 20 X 3</td> <td><input type="text" value="60"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals <input type="text" value="100"/> (A)</td> <td><input type="text" value="195"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>1.95</b>	Total % Cover of:	Multiply by:	OBL species 25 X 1	<input type="text" value="25"/>	FACW species 55 X 2	<input type="text" value="110"/>	FAC species 20 X 3	<input type="text" value="60"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 0 X 5	<input type="text" value="0"/>	Column Totals <input type="text" value="100"/> (A)	<input type="text" value="195"/> (B)													
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<table border="1"> <tbody> <tr> <td>Alopecurus pratensis</td> <td>15</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Carex nebrascensis</td> <td>10</td> <td><input type="checkbox"/></td> <td>OBL</td> </tr> <tr> <td>Carex pellita</td> <td>10</td> <td><input type="checkbox"/></td> <td>OBL</td> </tr> <tr> <td>Eleocharis palustris</td> <td>5</td> <td><input type="checkbox"/></td> <td>OBL</td> </tr> <tr> <td>Elymus repens</td> <td>5</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Juncus balticus</td> <td>30</td> <td><input checked="" type="checkbox"/></td> <td>FACW</td> </tr> <tr> <td>Juncus effusus</td> <td>25</td> <td><input checked="" type="checkbox"/></td> <td>FACW</td> </tr> </tbody> </table>	Alopecurus pratensis	15	<input type="checkbox"/>	FAC		Carex nebrascensis	10	<input type="checkbox"/>	OBL	Carex pellita	10	<input type="checkbox"/>	OBL	Eleocharis palustris	5	<input type="checkbox"/>	OBL	Elymus repens	5	<input type="checkbox"/>	FAC	Juncus balticus	30	<input checked="" type="checkbox"/>	FACW	Juncus effusus	25	<input checked="" type="checkbox"/>	FACW				
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<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)																																
<b>Percent Bare Ground</b>	<b>0</b>																																

### Remarks:

Evidence of hydrophytic vegetation included a positive dominance test and a prevalence index less than or equal to 3.0.

## SOIL

Sampling Point: DP02-wet

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

Depth (inches)	Matrix		Redox Features						Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>				
0-02	10YR	3/2	100						Sandy Loam	Roots
02-09	10YR	4/2	100						Sandy Loam	
06-16	10YR	5/1	95	5YR	4/6	5	C	PL	Sandy Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Depleted Matrix (F3)          |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Prominent redoximorphic concentrations common along pore linings within the depleted matrix.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 4  
 Water Table Present? Yes ☒ No ☐ Depth (inches): 0  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 0  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology includes surface water, high water table, saturation to the soil surface, oxidized rhizospheres along living roots, geomorphic position, and a positive FAC-Neutral test.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP03-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): flat Slope (%): 1  
 Subregion (LRR): LRR E Lat: 45.998721 Long: -112.663393 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

### Remarks:

Non-wetland sample point located on a bench between the arms of cell 3 and roughly 3 feet higher than DP03-w.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="0"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="1"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="0"/> % (A/B)															
<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 1 X 2</td> <td><input type="text" value="2"/></td> </tr> <tr> <td>FAC species 2 X 3</td> <td><input type="text" value="6"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 97 X 5</td> <td><input type="text" value="485"/></td> </tr> <tr> <td>Column Totals <input type="text" value="100"/> (A)</td> <td><input type="text" value="493"/> (B)</td> </tr> </tbody> </table> <b>Prevalence Index = B/A = 4.93</b>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 1 X 2	<input type="text" value="2"/>	FAC species 2 X 3	<input type="text" value="6"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 97 X 5	<input type="text" value="485"/>	Column Totals <input type="text" value="100"/> (A)	<input type="text" value="493"/> (B)
Total % Cover of:	Multiply by:																			
OBL species 0 X 1	<input type="text" value="0"/>																			
FACW species 1 X 2	<input type="text" value="2"/>																			
FAC species 2 X 3	<input type="text" value="6"/>																			
FACU species 0 X 4	<input type="text" value="0"/>																			
UPL species 97 X 5	<input type="text" value="485"/>																			
Column Totals <input type="text" value="100"/> (A)	<input type="text" value="493"/> (B)																			
<u>Herbaceous Stratum</u>	Plot size ( 5 Foot Radius)				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.															
<table border="1"> <tbody> <tr> <td>Bromus inermis</td> <td>92</td> <td><input checked="" type="checkbox"/></td> <td>UPL</td> </tr> <tr> <td>Festuca ovina</td> <td>5</td> <td><input type="checkbox"/></td> <td>UPL</td> </tr> <tr> <td>Juncus balticus</td> <td>1</td> <td><input type="checkbox"/></td> <td>FACW</td> </tr> <tr> <td>Poa pratensis</td> <td>2</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> </tbody> </table>	Bromus inermis	92	<input checked="" type="checkbox"/>	UPL		Festuca ovina	5	<input type="checkbox"/>	UPL	Juncus balticus	1	<input type="checkbox"/>	FACW	Poa pratensis	2	<input type="checkbox"/>	FAC			
Bromus inermis	92	<input checked="" type="checkbox"/>	UPL																	
Festuca ovina	5	<input type="checkbox"/>	UPL																	
Juncus balticus	1	<input type="checkbox"/>	FACW																	
Poa pratensis	2	<input type="checkbox"/>	FAC																	
<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/>															
<b>Percent Bare Ground</b>	<b>5</b>																			

### Remarks:

This data point is dominated by upland vegetation.



## SOIL

Sampling Point: DP03-up

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

Depth (inches)	Matrix		Redox Features						Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>				
0-04	10YR	3/2	100						Clay Loam	Many fine roots.
04-11	2.5Y	4/2	92	10YR	5/6	8	C	M,	Loamy Sand	
11-16	10YR	4/3	60	N	2.5/0	40			Sandy Clay Loam	Mixed matrix

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

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

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

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Prominent redoximorphic concentrations common in mottles and along pore linings within the depleted matrix, but vegetation is dominated by upland species and there is no evidence of wetland hydrology. Redoximorphic features appear to be relict.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site:	Silicon Mountain Wetland Mitigation Site	City/County:	Silverbow	Sampling Date:	6/13/2022
Applicant/Owner:	MDT and Butte-Silver Bow County	State:	Montana	Sampling Point:	DP03-wet
Investigator(s):	S Weyant, W Fouts	Section, Township, Range:	S 24 T 3N R 9W		
Landform (hillslope, terrace, etc.):	Depression	Local relief (concave, convex, none):	undulating	Slope (%):	0
Subregion (LRR):	LRR E	Lat:	45.998689	Long:	-112.66327
				Datum:	NAD 83
Soil Map Unit Name:	12A: Riverrun, occasionally flooded-Mannixlee, frequently flooded			NWI classification:	PEM

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

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

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

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

Hydrophytic Vegetation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

PEM depressional wetland. Sample point located in Wetland Cell 3 in between the railroad tracks and Sand Creek channel.

**VEGETATION** - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30	Foot Radius)	Absolute % Cover:	Domiant Species?	Indicator Status
<u>Sapling/Shrub Stratum</u>	Plot size (15	Foot Radius)			
<u>Herbaceous Stratum</u>	Plot size ( 5	Foot Radius)			
Agrostis stolonifera	5	<input type="checkbox"/>	FAC		
Alopecurus pratensis	40	<input checked="" type="checkbox"/>	FAC		
Carex utriculata	7	<input type="checkbox"/>	OBL		
Cirsium arvense	5	<input type="checkbox"/>	FAC		
Juncus balticus	7	<input type="checkbox"/>	FACW		
Lepidium draba	3	<input type="checkbox"/>	UPL		
Phalaris arundinacea	20	<input checked="" type="checkbox"/>	FACW		
Poa pratensis	2	<input type="checkbox"/>	FAC		
Potentilla anserina	8	<input type="checkbox"/>	OBL		
Symphotrichum ciliatum	3	<input type="checkbox"/>	FACW		
<u>Woody Vine Stratum</u>	Plot size ( 30	Foot Radius)			

**Percent Bare Ground**      6

**Dominance Test worksheet**

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

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

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

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**Prevalence Index worksheet**

Total % Cover of:		Multiply by:	
OBL species	15 X 1		15
FACW species	30 X 2		60
FAC species	52 X 3		156
FACU species	0 X 4		0
UPL species	3 X 5		15
Column Totals	<span style="border: 1px solid black; padding: 2px 10px;">100</span> (A)		246 (B)

**Prevalence Index = B/A =      2.46**

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**Hydrophytic Vegetation Indicators**

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

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

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**Hydrophytic Vegetation Present?**      Yes ☒      NO ☐

**Remarks:**  
Evidence of hydrophytic vegetation includes a positive Dominance Test and a Prevalence Index less than or equal to 3.0.

## SOIL

Sampling Point: DP03-wet

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

Depth (inches)	Matrix		Redox Features				Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%						
0-05	10YR	2/1	100						Loam	Many fine roots
05-16+	2.5YR	4/2	93	5Y	5/1	5	D	M	Sandy Loam	
05-16+			7.5YR	4/6	2	C	C	M	Sandy Loam	

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

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

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

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Distinct redoximorphic depletions common within the depleted matrix, and prominent redoximorphic concentrations few within the depleted matrix.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☒ No ☐ Depth (inches): 6Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Soil saturation observed at 6 inches, along with geomorphic position and a positive FAC-Neutral test, indicating wetland hydrology. Additionally, a high water table was observed at 15 inches.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP04-up  
 Investigator(s): R Jones, M Hickey Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 18  
 Subregion (LRR): LRR E Lat: 46.00077 Long: -112.661668 Datum: NAD 83  
 Soil Map Unit Name: Varney-Anaconda Loams, 0 to 4 percent slopes, moderately impacted NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: Upland sample point on slope adjacent to DP04-wet.	

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="2"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="5"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="40"/> % (A/B)																											
<b>Sapling/Shrub Stratum</b>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 0 X 2</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FAC species 25 X 3</td> <td><input type="text" value="75"/></td> </tr> <tr> <td>FACU species 25 X 4</td> <td><input type="text" value="100"/></td> </tr> <tr> <td>UPL species 20 X 5</td> <td><input type="text" value="100"/></td> </tr> <tr> <td>Column Totals <input type="text" value="70"/> (A)</td> <td><input type="text" value="275"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>3.92857</b>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 0 X 2	<input type="text" value="0"/>	FAC species 25 X 3	<input type="text" value="75"/>	FACU species 25 X 4	<input type="text" value="100"/>	UPL species 20 X 5	<input type="text" value="100"/>	Column Totals <input type="text" value="70"/> (A)	<input type="text" value="275"/> (B)												
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Column Totals <input type="text" value="70"/> (A)	<input type="text" value="275"/> (B)																															
<b>Herbaceous Stratum</b>	Plot size ( 5 Foot Radius)				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.																											
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Pascopyrum smithii	10	<input checked="" type="checkbox"/>	FACU																													
Poa compressa	5	<input type="checkbox"/>	FACU																													
<b>Woody Vine Stratum</b>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/>																											
<b>Percent Bare Ground</b>	30																															

Remarks:  
Data point is dominated by upland vegetation.

## SOIL

Sampling Point: DP04-up

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

Depth (inches)	Matrix		%	Redox Features			Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)			Color (moist)	%					
0-08	10YR	3/2	97	7.5YR	4/4	3	C	M	Sandy Clay Loam	
08-20	10YR	4/2	100						Sandy Clay Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>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 were observed. Although there are redoximorphic features in the first horizon, they are not present at a high enough percentage to qualify as a hydric indicator given the color of the matrix. Upland vegetation is present and there is no evidence of wetland hydrology at this data point.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☒ No ☐ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☒ No ☐ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP04-wet  
 Investigator(s): R Jones, M Hickey Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): undulating Slope (%): 0  
 Subregion (LRR): LRR E Lat: 46.000799 Long: -112.661669 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			

### Remarks:

PEM, depressional sample point located on the south side of cell 4.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="4"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="4"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																																												
<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 22 X 1</td> <td><input type="text" value="22"/></td> </tr> <tr> <td>FACW species 30 X 2</td> <td><input type="text" value="60"/></td> </tr> <tr> <td>FAC species 21 X 3</td> <td><input type="text" value="63"/></td> </tr> <tr> <td>FACU species 7 X 4</td> <td><input type="text" value="28"/></td> </tr> <tr> <td>UPL species 0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals <input type="text" value="80"/> (A)</td> <td><input type="text" value="173"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>2.1625</b>	Total % Cover of:	Multiply by:	OBL species 22 X 1	<input type="text" value="22"/>	FACW species 30 X 2	<input type="text" value="60"/>	FAC species 21 X 3	<input type="text" value="63"/>	FACU species 7 X 4	<input type="text" value="28"/>	UPL species 0 X 5	<input type="text" value="0"/>	Column Totals <input type="text" value="80"/> (A)	<input type="text" value="173"/> (B)																													
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<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>																																												
<b>Percent Bare Ground</b>	<b>20</b>																																																

### Remarks:

Evidence of hydrophytic vegetation includes a positive dominance test and a prevalence index below 3.0.

## SOIL

Sampling Point: DP04-wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-04	10YR	3/2	100				Clay Loam	
04-18	10YR	4/3	10				Sand	Mixed due to construction.
04-18	10YR	4/4	40				Clay	Mixed due to construction.
04-18	10YR	3/3	50				Clay	Mixed due to construction.

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☒ Other (Explain in Remarks)

<sup>3</sup>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:

The soil matrix is mixed, potentially from the construction of the wetlands. Hydric soil indicators have not yet developed in this non-native soil, but the presence of wetland hydrology and hydrophytic vegetation qualifies the point as wetland.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☒ No ☐ Depth (inches): 10  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 0  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology included a high water table, saturated soils, geomorphic position and a positive FAC-neutral test.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP05-up  
 Investigator(s): R Jones, M Hickey Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Knob Local relief (concave, convex, none): flat Slope (%): 9  
 Subregion (LRR): LRR E Lat: 46.002666 Long: -112.661258 Datum: NAD 83  
 Soil Map Unit Name: Varney-Anaconda Loams, 0 to 4 percent slopes, moderately impacted NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

### Remarks:

Upland sample point located on a berm between cell 5 and Sand Creek.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status
<b>Sapling/Shrub Stratum</b> Plot size (15 Foot Radius)				
<b>Herbaceous Stratum</b> Plot size ( 5 Foot Radius)				
Bromus inermis	5	<input type="checkbox"/>	UPL	
Elymus lanceolatus	10	<input type="checkbox"/>	FACU	
Elymus repens	20	<input checked="" type="checkbox"/>	FAC	
Juncus balticus	15	<input type="checkbox"/>	FACW	
Leymus cinereus	30	<input checked="" type="checkbox"/>	FAC	
Poa compressa	3	<input type="checkbox"/>	FACU	
Thlaspi arvense	2	<input type="checkbox"/>	UPL	
<b>Woody Vine Stratum</b> Plot size ( 30 Foot Radius)				
<b>Percent Bare Ground</b> 20				

**Dominance Test worksheet**  
 Number of Dominant Species that are OBL, FACW or FAC:  (A)  
 Total Number of Dominant Species Across All Strata:  (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC:  % (A/B)

**Prevalence Index worksheet**  

Total % Cover of:	Multiply by:
OBL species 0 X 1	<input type="text" value="0"/>
FACW species 15 X 2	<input type="text" value="30"/>
FAC species 50 X 3	<input type="text" value="150"/>
FACU species 13 X 4	<input type="text" value="52"/>
UPL species 7 X 5	<input type="text" value="35"/>
Column Totals <input type="text" value="85"/> (A)	<input type="text" value="267"/> (B)

**Prevalence Index = B/A = 3.14118**

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

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

**Hydrophytic Vegetation Present?** Yes ☒ NO ☐

### Remarks:

Some upland species are present at this data point, and the positive dominance test may be due to the high proportion of facultative species.



## SOIL

Sampling Point: DP05-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-08	10YR	3/2	100				Sandy Loam	
08-18	10YR	3/2	100				Sandy Loam	Soils moist

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP05-wet  
 Investigator(s): R Jones, M Hickey Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): undulating Slope (%): 15  
 Subregion (LRR): LRR E Lat: 46.002641 Long: -112.661219 Datum: NAD 83  
 Soil Map Unit Name: Varney-Anaconda Loams, 0 to 4 percent slopes, moderately impacted NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks:

PEM, depressional wetland located on NW corner of cell 5.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="4"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="4"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)
<u>Salix exigua</u>	30	<input checked="" type="checkbox"/>	FACW		

Herbaceous Stratum	Plot size ( 5 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 17 X 1</td> <td><input type="text" value="17"/></td> </tr> <tr> <td>FACW species 86 X 2</td> <td><input type="text" value="172"/></td> </tr> <tr> <td>FAC species 10 X 3</td> <td><input type="text" value="30"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals</td> <td><input type="text" value="113"/> (A) <input type="text" value="219"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>1.93805</b>	Total % Cover of:	Multiply by:	OBL species 17 X 1	<input type="text" value="17"/>	FACW species 86 X 2	<input type="text" value="172"/>	FAC species 10 X 3	<input type="text" value="30"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 0 X 5	<input type="text" value="0"/>	Column Totals	<input type="text" value="113"/> (A) <input type="text" value="219"/> (B)
Total % Cover of:	Multiply by:																		
OBL species 17 X 1	<input type="text" value="17"/>																		
FACW species 86 X 2	<input type="text" value="172"/>																		
FAC species 10 X 3	<input type="text" value="30"/>																		
FACU species 0 X 4	<input type="text" value="0"/>																		
UPL species 0 X 5	<input type="text" value="0"/>																		
Column Totals	<input type="text" value="113"/> (A) <input type="text" value="219"/> (B)																		
Carex simulata	2	<input type="checkbox"/>	OBL																
Cicuta douglasii	5	<input type="checkbox"/>	OBL																
Elymus repens	5	<input type="checkbox"/>	FAC																
Juncus balticus	40	<input checked="" type="checkbox"/>	FACW																
Plantago eriopoda	1	<input type="checkbox"/>	FACW																
Poa pratensis	5	<input type="checkbox"/>	FAC																
Potentilla anserina	10	<input checked="" type="checkbox"/>	OBL																
Salix exigua	5	<input type="checkbox"/>	FACW																
Solidago gigantea	10	<input checked="" type="checkbox"/>	FACW																

Woody Vine Stratum	Plot size ( 30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Percent Bare Ground	17	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>
---------------------	----	---

Remarks:

A positive dominance test and a prevalence index below three indicate that a hydrophytic plant community is present.

## SOIL

Sampling Point: DP05-wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-05	10YR	3/2	100				Sandy Clay Loam	
05-16	10YR	4/2	100				Sand	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☒ Other (Explain in Remarks)

<sup>3</sup>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 specific hydric soil indicator is met at this data point: the lower horizon meets matrix color and depth requirements for depletion, but does not show redoximorphic features. However, soils can be considered hydric due to the presence of hydrophytic vegetation and wetland hydrology.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☒ No ☐ Depth (inches): 9Saturation Present? Yes ☒ No ☐ Depth (inches): 0  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence for wetland hydrology found in a high water table at a depth of 9 inches, saturation to the soil surface, the point's geomorphic position, and a positive FAC-neutral test. Open water is located within 10 feet of sample plot.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP06a-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): convex, flat Slope (%): 10  
 Subregion (LRR): LRR E Lat: 45.99806 Long: -112.663678 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

### Remarks:

Upland sample point located on berm in the north-central part of cell 6.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="1"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="1"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																
<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 0 X 2</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FAC species 73 X 3</td> <td><input type="text" value="219"/></td> </tr> <tr> <td>FACU species 1 X 4</td> <td><input type="text" value="4"/></td> </tr> <tr> <td>UPL species 0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals <input type="text" value="74"/> (A)</td> <td><input type="text" value="223"/> (B)</td> </tr> </tbody> </table> <b>Prevalence Index = B/A = 3.01351</b>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 0 X 2	<input type="text" value="0"/>	FAC species 73 X 3	<input type="text" value="219"/>	FACU species 1 X 4	<input type="text" value="4"/>	UPL species 0 X 5	<input type="text" value="0"/>	Column Totals <input type="text" value="74"/> (A)	<input type="text" value="223"/> (B)	
Total % Cover of:	Multiply by:																				
OBL species 0 X 1	<input type="text" value="0"/>																				
FACW species 0 X 2	<input type="text" value="0"/>																				
FAC species 73 X 3	<input type="text" value="219"/>																				
FACU species 1 X 4	<input type="text" value="4"/>																				
UPL species 0 X 5	<input type="text" value="0"/>																				
Column Totals <input type="text" value="74"/> (A)	<input type="text" value="223"/> (B)																				
<u>Herbaceous Stratum</u>	Plot size ( 5 Foot Radius)				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.																
<table border="1"> <tbody> <tr> <td>Hordeum jubatum</td> <td>10</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Leymus cinereus</td> <td>60</td> <td><input checked="" type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Sonchus arvensis</td> <td>1</td> <td><input type="checkbox"/></td> <td>FACU</td> </tr> <tr> <td>Trifolium repens</td> <td>3</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> </tbody> </table>	Hordeum jubatum	10	<input type="checkbox"/>	FAC		Leymus cinereus	60	<input checked="" type="checkbox"/>	FAC	Sonchus arvensis	1	<input type="checkbox"/>	FACU	Trifolium repens	3	<input type="checkbox"/>	FAC				
Hordeum jubatum	10	<input type="checkbox"/>	FAC																		
Leymus cinereus	60	<input checked="" type="checkbox"/>	FAC																		
Sonchus arvensis	1	<input type="checkbox"/>	FACU																		
Trifolium repens	3	<input type="checkbox"/>	FAC																		
<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>																
<b>Percent Bare Ground</b>	<b>26</b>																				

### Remarks:

The dominance test is positive, potentially because of the facultative status of the species at this data point.

## SOIL

Sampling Point: DP06a-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-03	10YR	3/1	100				Clay Loam	
03-16	10YR	4/4	100				Sandy Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.





## SOIL

Sampling Point: DP06a-wet

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

Depth (inches)	Matrix		%	Redox Features			Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	Color (moist)			Color (moist)	%					
0-04	10YR	3/2	97	N	2.5/0	3	C	M	Sandy Clay Loam	Coarse sand
04-16	2.5Y	4/3	95	10YR	4/6	5	C	M	Sandy Clay Loam	Coarse sand

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☒ Other (Explain in Remarks)

<sup>3</sup>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 specific hydric soil indicator is met at this data point: the lower horizon meets matrix color and depth requirements for depletion, but does not show redoximorphic features. However, soils can be considered hydric due to the presence of hydrophytic vegetation and wetland hydrology.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

A positive FAC-neutral test, and the point's geomorphic position provide support for wetland hydrology.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/14/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP06-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Bench Local relief (concave, convex, none): convex Slope (%): 10  
 Subregion (LRR): LRR E Lat: 45.997905 Long: -112.663603 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			

### Remarks:

Upland data point located on bench at the south side of excavated cell 6, approximately 2-3 feet above DP06-wet.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="1"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="1"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)														
<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 0 X 2</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FAC species 60 X 3</td> <td><input type="text" value="180"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals <input type="text" value="60"/> (A)</td> <td><input type="text" value="180"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <input type="text" value="3"/>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 0 X 2	<input type="text" value="0"/>	FAC species 60 X 3	<input type="text" value="180"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 0 X 5	<input type="text" value="0"/>	Column Totals <input type="text" value="60"/> (A)
Total % Cover of:	Multiply by:																		
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FAC species 60 X 3	<input type="text" value="180"/>																		
FACU species 0 X 4	<input type="text" value="0"/>																		
UPL species 0 X 5	<input type="text" value="0"/>																		
Column Totals <input type="text" value="60"/> (A)	<input type="text" value="180"/> (B)																		
<u>Herbaceous Stratum</u>	Plot size ( 5 Foot Radius)				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.														
<table border="1"> <tr> <td>Elymus repens</td> <td>10</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Leymus cinereus</td> <td>50</td> <td><input checked="" type="checkbox"/></td> <td>FAC</td> </tr> </table>	Elymus repens	10	<input type="checkbox"/>	FAC		Leymus cinereus	50	<input checked="" type="checkbox"/>	FAC					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>					
Elymus repens	10	<input type="checkbox"/>	FAC																
Leymus cinereus	50	<input checked="" type="checkbox"/>	FAC																
<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)																		
<b>Percent Bare Ground</b>	<input type="text" value="40"/>																		

### Remarks:

Vegetation at this point has facultative indicators, which leads to a positive dominance test and a prevalence index equal to three.

## SOIL

Sampling Point: DP06-up

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

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	%		Color (moist)	%	Type <sup>1</sup>		
0-16	10YR	4/4	60	10YR	3/2	40	Sandy Clay	Mixed matrix

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>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 indicator observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/14/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP06-wet  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Local depression Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): LRR E Lat: 45.998039 Long: -112.663771 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:  
 PEM, depressional wetland point located at the SE end of cell 6.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="3"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="3"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																																																
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<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)																																																				
<b>Percent Bare Ground</b>	<b>5</b>																																																				

Remarks:  
 A prevalence index below three indicates the presence of a hydrophytic plant community.

## SOIL

Sampling Point: DP06-wet

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

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-02	2.5Y	4/2	100						Clay Loam	
02-16	10YR	5/2	88	10Y	3/1	2	C	M	Sandy Clay Loam	
02-16				10YR	5/6	10	C	M	Sandy Clay Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Depleted Matrix (F3)          |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Prominent redoximorphic concentrations prominent in mottles within the depleted matrix.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☒ No ☐ Depth (inches): 10  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology present in saturation within 10 inches of the soil surface and the site's geomorphic position.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP07-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): flat Slope (%): 2  
 Subregion (LRR): LRR E Lat: 46.00014 Long: -112.662277 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

Remarks:

Upland sample point located adjacent to DP07-wet.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="0"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="1"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="0"/> % (A/B)															
<u>Sapling/Shrub Stratum</u>	Plot size (15 Foot Radius)					<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 10 X 2</td> <td><input type="text" value="20"/></td> </tr> <tr> <td>FAC species 20 X 3</td> <td><input type="text" value="60"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 50 X 5</td> <td><input type="text" value="250"/></td> </tr> <tr> <td>Column Totals <input type="text" value="80"/> (A)</td> <td><input type="text" value="330"/> (B)</td> </tr> </tbody> </table> <b>Prevalence Index = B/A = 4.125</b>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 10 X 2	<input type="text" value="20"/>	FAC species 20 X 3	<input type="text" value="60"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 50 X 5	<input type="text" value="250"/>	Column Totals <input type="text" value="80"/> (A)	<input type="text" value="330"/> (B)
Total % Cover of:	Multiply by:																			
OBL species 0 X 1	<input type="text" value="0"/>																			
FACW species 10 X 2	<input type="text" value="20"/>																			
FAC species 20 X 3	<input type="text" value="60"/>																			
FACU species 0 X 4	<input type="text" value="0"/>																			
UPL species 50 X 5	<input type="text" value="250"/>																			
Column Totals <input type="text" value="80"/> (A)	<input type="text" value="330"/> (B)																			
<u>Herbaceous Stratum</u>	Plot size ( 5 Foot Radius)				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.															
<table border="1"> <tbody> <tr> <td>Bromus inermis</td> <td>50</td> <td><input checked="" type="checkbox"/></td> <td>UPL</td> </tr> <tr> <td>Elymus repens</td> <td>15</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Hordeum jubatum</td> <td>5</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Juncus balticus</td> <td>10</td> <td><input type="checkbox"/></td> <td>FACW</td> </tr> </tbody> </table>	Bromus inermis	50	<input checked="" type="checkbox"/>	UPL		Elymus repens	15	<input type="checkbox"/>	FAC	Hordeum jubatum	5	<input type="checkbox"/>	FAC	Juncus balticus	10	<input type="checkbox"/>	FACW			
Bromus inermis	50	<input checked="" type="checkbox"/>	UPL																	
Elymus repens	15	<input type="checkbox"/>	FAC																	
Hordeum jubatum	5	<input type="checkbox"/>	FAC																	
Juncus balticus	10	<input type="checkbox"/>	FACW																	
<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/>															
<b>Percent Bare Ground</b>	<b>20</b>																			

Remarks:

An upland vegetation community is present at this data point.



## SOIL

Sampling Point: DP07-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-02	10YR	2/2	100				Silty Clay Loam	
02-16	10YR	3/2	80	10YR	4/4	20	Silty Clay Loam	Mixed matrix.

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP07-wet  
 Investigator(s): R Jones, M Hickey Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): hummocky Slope (%): 2  
 Subregion (LRR): LRR E Lat: 46.000004 Long: -112.662201 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

### Remarks:

PEM, depressional wetland located near north boundary of the wetland that surrounds cell 1.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="2"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="2"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																
<b>Sapling/Shrub Stratum</b> Plot size (15 Foot Radius)						<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 20 X 1</td> <td><input type="text" value="20"/></td> </tr> <tr> <td>FACW species 20 X 2</td> <td><input type="text" value="40"/></td> </tr> <tr> <td>FAC species 10 X 3</td> <td><input type="text" value="30"/></td> </tr> <tr> <td>FACU species 0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species 0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals <input type="text" value="50"/> (A)</td> <td><input type="text" value="90"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>1.8</b>	Total % Cover of:	Multiply by:	OBL species 20 X 1	<input type="text" value="20"/>	FACW species 20 X 2	<input type="text" value="40"/>	FAC species 10 X 3	<input type="text" value="30"/>	FACU species 0 X 4	<input type="text" value="0"/>	UPL species 0 X 5	<input type="text" value="0"/>	Column Totals <input type="text" value="50"/> (A)	<input type="text" value="90"/> (B)	
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<b>Herbaceous Stratum</b> Plot size ( 5 Foot Radius) <table border="1"> <tbody> <tr> <td>Elymus repens</td> <td>5</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Hordeum jubatum</td> <td>5</td> <td><input type="checkbox"/></td> <td>FAC</td> </tr> <tr> <td>Juncus balticus</td> <td>20</td> <td><input checked="" type="checkbox"/></td> <td>FACW</td> </tr> <tr> <td>Typha latifolia</td> <td>20</td> <td><input checked="" type="checkbox"/></td> <td>OBL</td> </tr> </tbody> </table>					Elymus repens	5	<input type="checkbox"/>	FAC	Hordeum jubatum	5	<input type="checkbox"/>	FAC	Juncus balticus	20	<input checked="" type="checkbox"/>	FACW	Typha latifolia	20	<input checked="" type="checkbox"/>	OBL	<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.
Elymus repens	5	<input type="checkbox"/>	FAC																		
Hordeum jubatum	5	<input type="checkbox"/>	FAC																		
Juncus balticus	20	<input checked="" type="checkbox"/>	FACW																		
Typha latifolia	20	<input checked="" type="checkbox"/>	OBL																		
<b>Woody Vine Stratum</b> Plot size ( 30 Foot Radius) <table border="1"> <tbody> <tr> <td colspan="4">Percent Bare Ground <input type="text" value="50"/></td> </tr> </tbody> </table>					Percent Bare Ground <input type="text" value="50"/>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>												
Percent Bare Ground <input type="text" value="50"/>																					

### Remarks:

A positive dominance test and a low prevalence index indicate the presence of a hydrophytic plant community.



## SOIL

Sampling Point: DP07-wet

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

Depth (inches)	Matrix		Redox Features							Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>					
0-02	10YR	2/2	100							Muck	
02-06	10YR	3/2	100							Sandy Loam	Too wet to texture accurately.
06-12	2.5YR	4/2	80	10YR	4/6	20	C	M		Silty Clay Loam	
12-17	2.5Y	3/1	97	7.5YR	5/8	3	C	M		Silty Clay Loam	Mg centers within concentratio

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input checked="" type="checkbox"/> Hydrogen Sulfide (A4)  | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>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:

The soil matrix in the lower horizons is mixed from construction. The hydrogen sulfide hydric soil indicator was observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☒ No ☐ Depth (inches): 10Saturation Present? Yes ☒ No ☐ Depth (inches): 0  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology present in a water table at a depth of 10 inches from the soil surface, saturation at the soil surface, a positive FAC-neutral test, and geomorphic position. A perched water table may be present.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/13/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP08-up  
 Investigator(s): R Jones, M Hickey Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): flat Slope (%): 5  
 Subregion (LRR): LRR E Lat: 46.002624 Long: -112.656288 Datum: NAD 83  
 Soil Map Unit Name: Mannixlee-Bonebasin complex, 0 to 4 percent slopes, frequently flooded NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

Remarks:

Upland sample point located near of DP-08wet.

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	Dominance Test worksheet																													
<p><u>Sapling/Shrub Stratum</u> Plot size (15 Foot Radius)</p>						Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="0"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="3"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="0"/> % (A/B)																												
<p><u>Herbaceous Stratum</u> Plot size ( 5 Foot Radius)</p> <table border="1"> <thead> <tr> <th>Species</th> <th>Absolute % Cover</th> <th>Indicator</th> </tr> </thead> <tbody> <tr> <td><i>Descurainia sophia</i></td> <td>2</td> <td><input type="checkbox"/> UPL</td> </tr> <tr> <td><i>Ericameria nauseosa</i></td> <td>15</td> <td><input checked="" type="checkbox"/> UPL</td> </tr> <tr> <td><i>Pascopyrum smithii</i></td> <td>20</td> <td><input checked="" type="checkbox"/> FACU</td> </tr> <tr> <td><i>Poa secunda</i></td> <td>10</td> <td><input checked="" type="checkbox"/> FACU</td> </tr> </tbody> </table>					Species	Absolute % Cover	Indicator	<i>Descurainia sophia</i>	2	<input type="checkbox"/> UPL	<i>Ericameria nauseosa</i>	15	<input checked="" type="checkbox"/> UPL	<i>Pascopyrum smithii</i>	20	<input checked="" type="checkbox"/> FACU	<i>Poa secunda</i>	10	<input checked="" type="checkbox"/> FACU	<p><b>Prevalence Index worksheet</b></p> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species 0 X 1</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACW species 0 X 2</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FAC species 0 X 3</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>FACU species 30 X 4</td> <td><input type="text" value="120"/></td> </tr> <tr> <td>UPL species 17 X 5</td> <td><input type="text" value="85"/></td> </tr> <tr> <td>Column Totals <input type="text" value="47"/> (A)</td> <td><input type="text" value="205"/> (B)</td> </tr> </tbody> </table> <p><b>Prevalence Index = B/A = 4.36170</b></p>	Total % Cover of:	Multiply by:	OBL species 0 X 1	<input type="text" value="0"/>	FACW species 0 X 2	<input type="text" value="0"/>	FAC species 0 X 3	<input type="text" value="0"/>	FACU species 30 X 4	<input type="text" value="120"/>	UPL species 17 X 5	<input type="text" value="85"/>	Column Totals <input type="text" value="47"/> (A)	<input type="text" value="205"/> (B)
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<p><b>Percent Bare Ground</b> 53</p>					<p><b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/></p>																													

Remarks:

This data point is dominated by upland vegetation.

## SOIL

Sampling Point: DP08-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-03	10YR	2/2	100				Sandy Loam	Charcoal present
03-12	2.5YR	3/4	100				Sandy Clay	Charcoal present
12-16	5YR	4/6	100				Sandy Clay Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/14/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP08-wet  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope (%): 5  
 Subregion (LRR): LRR E Lat: 46.002624 Long: -112.656369 Datum: NAD 83  
 Soil Map Unit Name: Mannixlee-Bonebasin complex, 0 to 4 percent slopes, frequently flooded NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

### Remarks:

PEM depressional wetland sample point located on floodplain bench next to a spring-fed channel.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="1"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="1"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																																												
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<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>																																												
<b>Percent Bare Ground</b>	<b>12</b>																																																

### Remarks:

A positive dominance test and a prevalence index below three indicate hydrophytic vegetation.



## SOIL

Sampling Point: DP08-wet

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

Depth (inches)	Matrix		Redox Features						Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>				
0-02	10YR	3/2	100						Sandy Loam	Fine roots.
02-10	10YR	4/2	90	5YR	4/6	5			Sandy Clay Loam	
10-18	2.5YR	4/6	90	10YR	2/1	5	C	M,	Sandy Clay	
10-18				2.5YR	4/8	5	C	M,	Sandy Clay	

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

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

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

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Prominent redoximorphic features common within the depleted matrix.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology observed in oxidized rhizospheres along living roots and a positive FAC-neutral test. Soil was observed to be moist throughout the profile.

Project/Site:	Silicon Mountain Wetland Mitigation Site	City/County:	Silverbow	Sampling Date:	6/14/2022
Applicant/Owner:	MDT and Butte-Silver Bow County	State:	Montana	Sampling Point:	DP09-up
Investigator(s):	S Weyant, W Fouts	Section, Township, Range:	S 24 T 3N R 9W		
Landform (hillslope, terrace, etc.):	Undulating	Local relief (concave, convex, none):	convex	Slope (%):	50
Subregion (LRR):	LRR E	Lat:	45.999122	Long:	-112.660968
		Datum:	NAD 83		
Soil Map Unit Name:	Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0	NWI classification:	Not mapped		

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

Hydrophytic Vegetation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

Upland sample point located north of excavated wetland cell 1 on a low terrace.

[illegible]

Remarks:	Sample point was dominated by upland vegetation.
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## SOIL

Sampling Point: DP09-up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-01	10YR	2/2	100				Clay Loam	
01-08	10YR	2/2	100				Sandy Clay Loam	
08-16	10YR	4/3	100				Sandy Clay Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
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| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
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| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/14/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP09-wet  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0  
 Subregion (LRR): LRR E Lat: 45.998989 Long: -112.661083 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: PEM depressional wetland point located north of excavated wetland cell 1 on a low terrace, approximately 150' from the open water.			

## VEGETATION - Use scientific names of plants

Tree Stratum	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="2"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="2"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="100"/> % (A/B)																												
<b>Sapling/Shrub Stratum</b> Plot size (15 Foot Radius)						<b>Prevalence Index worksheet</b> <table border="1"> <thead> <tr> <th colspan="2">Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>12 X 1</td> <td><input type="text" value="12"/></td> </tr> <tr> <td>FACW species</td> <td>45 X 2</td> <td><input type="text" value="90"/></td> </tr> <tr> <td>FAC species</td> <td>37 X 3</td> <td><input type="text" value="111"/></td> </tr> <tr> <td>FACU species</td> <td>0 X 4</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>UPL species</td> <td>0 X 5</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Column Totals</td> <td><input type="text" value="94"/> (A)</td> <td><input type="text" value="213"/> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <b>2.26596</b>	Total % Cover of:		Multiply by:	OBL species	12 X 1	<input type="text" value="12"/>	FACW species	45 X 2	<input type="text" value="90"/>	FAC species	37 X 3	<input type="text" value="111"/>	FACU species	0 X 4	<input type="text" value="0"/>	UPL species	0 X 5	<input type="text" value="0"/>	Column Totals	<input type="text" value="94"/> (A)	<input type="text" value="213"/> (B)						
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<b>Herbaceous Stratum</b> Plot size ( 5 Foot Radius)					<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is <= 3.0 <input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.																												
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<b>Woody Vine Stratum</b> Plot size ( 30 Foot Radius)																																	
<b>Percent Bare Ground</b> <input type="text" value="6"/>																																	

Remarks:  
Evidence of hydrophytic vegetation included a positive rapid test, a positive dominance test, and a prevalence index less than or equal to 3.0.



## SOIL

Sampling Point: DP09-wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-04	10YR	3/2	100				Silty Clay Loam	
04-14	10YR	4/3	95	7.5YR	4/6	5	Silty Clay	
14-18	10YR	2/1	100				Silty Clay Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☒ Other (Explain in Remarks)

<sup>3</sup>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:

This profile is close to meeting criteria for the depleted matrix indicator with redoximorphic concentrations, but chroma in the second horizon was slightly too high. Soils at this point can be considered hydric due to the presence of hydrophytic vegetation and wetland hydrology.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☒ No ☐ Depth (inches): 6Saturation Present? Yes ☒ No ☐ Depth (inches): 5  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology included a high water table at a depth of 6 inches and saturated at 5 inches from the soil surface.

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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/14/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP10-up  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): flat Slope (%): 3  
 Subregion (LRR): LRR E Lat: 45.995542 Long: -112.661154 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			

### Remarks:

Upland data point located 5 feet in elevation above the active Sand Creek channel.

## VEGETATION - Use scientific names of plants

<u>Tree Stratum</u>	Plot size (30 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status	<b>Dominance Test worksheet</b> Number of Dominant Species that are OBL, FACW or FAC: <input type="text" value="0"/> (A) Total Number of Dominant Species Across All Strata: <input type="text" value="1"/> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <input type="text" value="0"/> % (A/B)																				
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<u>Woody Vine Stratum</u>	Plot size ( 30 Foot Radius)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> NO <input checked="" type="checkbox"/>																				
<b>Percent Bare Ground</b>	<b>22</b>																								

### Remarks:

Sample point was dominated by upland vegetation.

## SOIL

Sampling Point: DP10-up

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

Depth (inches)	Matrix		Redox Features						Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>				
0-14	10YR	4/3	100						Sandy Loam	
14-16+	10YR	5/3	90	10YR	2/1	3	D	M	Silt Loam	
14-16+				10YR	4/6	7	C	M	Silt Loam	

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
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| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil indicators observed. Soil was dry throughout the pit.

## HYDROLOGY

Wetland Hydrology Indicators:

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

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Salt Crust (B11)   |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                              |
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| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)               |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)                  |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Other (Explain in Remarks)                               |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |   |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |   |

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No evidence of wetland hydrology observed.



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

Project/Site: Silicon Mountain Wetland Mitigation Site City/County: Silverbow Sampling Date: 6/14/2022  
 Applicant/Owner: MDT and Butte-Silver Bow County State: Montana Sampling Point: DP10-wet  
 Investigator(s): S Weyant, W Fouts Section, Township, Range: S 24 T 3N R 9W  
 Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): convex Slope (%): 5  
 Subregion (LRR): LRR E Lat: 45.995555 Long: -112.661055 Datum: NAD 83  
 Soil Map Unit Name: Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 t NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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### Remarks:

PSS riverine wetland data point located approximately one foot from the active channel of Sand Creek.

## VEGETATION - Use scientific names of plants

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

Sapling/Shrub Stratum	Plot size (15 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status
Salix lutea	35	<input checked="" type="checkbox"/>	OBL	

Herbaceous Stratum	Plot size ( 5 Foot Radius)	Absolute % Cover:	Dominant Species?	Indicator Status
Alopecurus pratensis	1	<input type="checkbox"/>	FAC	
Bromus inermis	20	<input checked="" type="checkbox"/>	UPL	
Carex pellita	15	<input checked="" type="checkbox"/>	OBL	
Carex utriculata	10	<input checked="" type="checkbox"/>	OBL	
Centaurea stoebe	5	<input type="checkbox"/>	UPL	
Juncus balticus	10	<input checked="" type="checkbox"/>	FACW	
Lepidium densiflorum	10	<input checked="" type="checkbox"/>	FACU	
Mentha arvensis	2	<input type="checkbox"/>	FACW	
Poa pratensis	10	<input checked="" type="checkbox"/>	FAC	
Scirpus microcarpus	1	<input type="checkbox"/>	OBL	
Veronica americana	1	<input type="checkbox"/>	OBL	

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

Percent Bare Ground	27
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### Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 5 (A)  
 Total Number of Dominant Species Across All Strata: 7 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4 % (A/B)

### Prevalence Index worksheet

Total % Cover of:	Multiply by:
OBL species	62 X 1 = <u>62</u>
FACW species	12 X 2 = <u>24</u>
FAC species	11 X 3 = <u>33</u>
FACU species	10 X 4 = <u>40</u>
UPL species	25 X 5 = <u>125</u>
Column Totals	<u>120</u> (A) <u>284</u> (B)

**Prevalence Index = B/A = 2.36667**

### Hydrophytic Vegetation Indicators

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

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

### Hydrophytic Vegetation Present?

Yes ☒ NO ☐

### Remarks:

Evidence of hydrophytic vegetation included a positive dominance test and a prevalence index less than or equal to 3.0.



## SOIL

Sampling Point: DP10-wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-01	10YR	3/3	100				Loamy Sand	Roots present
01-16	10YR	4/2	100				Coarse sand	Fine gravel throughout

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

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

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☒ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Soil in the lower horizon is an unconsolidated matrix of fine gravel and coarse sand that appears to be developing hydric soil indicators. Vegetation at this point is hydrophytic and wetland hydrology is present, so the soils here can be considered hydric.

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☒ No ☐ Depth (inches): 2  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 2  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Evidence of wetland hydrology included iron deposits on the water, a depth to saturation of 2", and a high water table at a depth of 2".

## MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Silicon Mountain Assessment Date/Time 6/13/2022

Person(s) conducting the assessment: R Jones, S Weyant, W Fouts, M Hickey

Weather: 50 degrees, breezy, overcast Location: 5 miles west of Butte

MDT District: Butte Milepost: MP 119 on I-15

Legal Description: T 3N R 9E Section(s) 24

Initial Evaluation Date: 6/23/2015 Monitoring Year: 8 #Visits in Year: 1

Size of Evaluation Area: 50.1 (acres)

Land use surrounding wetland:

Mix of commercial (railroad), residential, and parkland (bikeway)

### HYDROLOGY

Surface Water Source: Sand Creek and a well defined spring.

Inundation: ☒ Average Depth: 1 (ft) Range of Depths: 0.1-4 (ft)

Percent of assessment area under inundation: 14 %

Depth at emergent vegetation-open water boundary: 0.5 (ft)

If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes

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

Evidence of hydrology across the mitigation site includes high water table, saturation to the soil surface, inundation, iron deposits, surface soil cracks, a positive FAC-Neutral test, and geomorphic position.

### Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
45595911239420	2.87
45595911239420	3.22
45595911239420	1.55

Additional Activities Checklist:

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

Hydrology Notes:



Two groundwater monitoring wells remained on site after construction and are now monitored by USGS. Open water was present >90% of wetland Cells 1 and 5. Shallow ponded water was present across ~30% of Cell 4, ~15% of wetland 13, and lower areas of cells 2 and 3 were inundated with 3-4" of water. Flowing water was present in the entire length of the Sand Creek channel.

Cell 6 lost wetland area, presumably from a lack of hydrology. It appears the water source for cell 6 is a spring-fed wetland upgradient and directly north of cell 6 (outside project area) and little of that water was ending up in cell 6 in 2022, leaving the cell's hydrology dependent on overland flow.

## VEGETATION COMMUNITIES

**Site** Silicon Mountain

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

**Community #** 2 **Community Type:** Descurainia sophia / Thlaspi arvense **Acres:** 0.45

Species	Cover class	Species	Cover class
Agropyron cristatum	1	Artemisia tridentata	1
Bassia scoparia	2	Bromus tectorum	2
Camelina microcarpa	2	Descurainia sophia	2
Elymus trachycaulus	1	Lepidium perfoliatum	2
Leymus cinereus	1	Pascopyrum smithii	1
Thlaspi arvense	3		

**Comments:**

Upland community composed of mostly early successional, non-native species commonly found on disturbed landscapes. In 2021 this community type was mapped along the Butte/Anaconda bike path. Minimal change in species richness and cover were observed here between 2020 and 2021 and 2022. Thlaspi arvense remains the dominant species in this community.

**Community #** 3 **Community Type:** Bromus inermis / Poa pratensis **Acres:** 4.93

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis stolonifera	1
Alopecurus arundinaceus	0	Artemisia tridentata	1
Astragalus cicer	1	Bare Ground	1
Bromus inermis	4	Centaurea stoebe	0
Cirsium arvense	0	Deschampsia caespitosa	0
Elymus repens	3	Elymus trachycaulus	2
Juncus balticus	0	Koeleria macrantha	1
Leymus cinereus	2	Melilotus officinalis	1
Phalaris arundinacea	0	Poa palustris	1
Poa pratensis	3	Poa secunda	1
Potentilla anserina	0	Schedonorus pratensis	1
Solidago gigantea	0	Sonchus arvensis	1
Thlaspi arvense	1	Trifolium hybridum	1

**Comments:**

Upland community. In 2021, acreage decreased by almost 1 acre and in 2022, this community decreased by just over 2.5 acres. Two large areas adjacent to cell 1 had transitioned from upland type (UT) 3 to wetland type (WT) 9 between 2021 and 2022. This transition was a result of decreased coverage from Bromus inermis and Poa pratensis and increased coverage of Juncus balticus, Elymus repens, and Salix spp.



**Community #** 4 **Community Type:** Carex spp. / Juncus balticus**Acres:** 11.66

Species	Cover class	Species	Cover class
Calamagrostis canadensis	1	Carex aquatilis	2
Carex nebrascensis	3	Carex praticola	1
Carex utriculata	2	Cirsium arvense	0
Deschampsia caespitosa	2	Juncus balticus	4
Mentha arvensis	1	Poa palustris	1
Poa pratensis	2	Potentilla anserina	2
Typha latifolia	1		

**Comments:**

PEM wetland community. In 2021, WT4 and corresponding wetland boundary expanded by 0.4 acres, primarily along the northwestern project boundary, west and adjacent to Sand Creek. This expansion continued in 2022 when the wetland boundary and WT 4 expanded by 0.3 acres.

**Community #** 5 **Community Type:** Elymus repens / Bromus inermis**Acres:** 1.29

Species	Cover class	Species	Cover class
Astragalus cicer	1	Bromus inermis	3
Bromus tectorum	1	Cirsium arvense	0
Descurainia sophia	1	Elymus repens	4
Elymus trachycaulus	1	Juncus balticus	3
Leymus cinereus	1	Pascopyrum smithii	2
Poa pratensis	1	Potentilla anserina	1
Salix exigua	1		

**Comments:**

Upland community south of the road alignment and overpass. This community decreased by 0.35 acres in 2021 due to shift in species dominance from Bromus inermis to Juncus balticus and Salix spp. No additional changes were observed in this UT in 2022.

**Community #** 7 **Community Type:** Open Water / Aquatic macrophytes**Acres:** 5.41

Species	Cover class	Species	Cover class
Algae, green	3	Beckmannia syzigachne	1
Eleocharis palustris	1	Juncus balticus	1
Lemna minor	1	Mudflat	1
Open Water	5	Typha latifolia	2

**Comments:**

Open water areas within created wetland cells 1, 4, 5, preserved wetland cell 13, and the stream channel. In 2022, this area expanded by approximately 0.2 acres. Open water expansion was observed in Cells 1 and 5 and open water decreased in cells 4 and existing wetland 13. Inundation was still present in cell 4 and wetland 13, but emergent vegetation had increased beyond 5% in some areas and these areas were switched to PEM wetlands.

**Community #** 8 **Community Type:** Salix exigua / Juncus balticus**Acres:** 1.17

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alopecurus arundinaceus	2
Calamagrostis canadensis	1	Carex nebrascensis	2
Carex pellita	2	Carex utriculata	2
Cicuta douglasii	1	Eleocharis palustris	2
Glyceria striata	1	Hordeum jubatum	1
Juncus balticus	3	Mentha arvensis	1
Salix exigua	4	Salix geyeriana	1
Salix lasiandra	1	Salix lutea	1
Scirpus microcarpus	1		

**Comments:**

Existing wetland east and west of wetland cell 2, along the restored Sand Creek stream channel, and surrounding cell 5. In 2022, WT8 expanded in a few different areas, resulting in an overall increase of 0.24 acres.

**Community #** 9 **Community Type:** Juncus balticus / Elymus repens**Acres:** 3.02

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Bromus inermis	2
Cirsium arvense	0	Elymus repens	3
Elymus trachycaulus	1	Epilobium ciliatum	0
Geum macrophyllum	0	Hordeum jubatum	1
Juncus balticus	3	Leymus cinereus	1
Poa palustris	1	Poa pratensis	3
Potentilla anserina	1	Rumex crispus	0
Salix exigua	1	Solidago gigantea	1
Symphyotrichum lanceolatum	1	Thlaspi arvense	1

**Comments:**

This wetland community has been expanding over the last few years. Between 2020 and 2021, it expanded by nearly 1 acre, and between 2021 and 2022 it expanded by almost 2 acres. In 2021 and 2022, this WT replaced upland UT 3 in several different areas.

**Community #** 10 **Community Type:** Artemisia tridentata / Poa spp.

**Acres:** 11.62

Species	Cover class	Species	Cover class
Artemisia tridentata	3	Astragalus agrestis	1
Bromus inermis	1	Centaurea stoebe	1
Ericameria nauseosa	1	Hesperostipa comata	1
Juniperus scopulorum	2	Koeleria macrantha	1
Leymus cinereus	1	Pascopyrum smithii	3
Poa pratensis	2	Poa secunda	3
Pseudoroegneria spicata	0	Symphyotrichum falcatum	2

**Comments:**

Upland shrubland. In 2022, Centaurea stoebe was added to the community due to new infestations in the western portion of the project area that contains cell 6.

**Community #** 11 **Community Type:** Typha latifolia /

**Acres:** 1.32

Species	Cover class	Species	Cover class
Alisma plantago-aquatica	0	Alopecurus aequalis	0
Beckmannia syzigachne	1	Calamagrostis canadensis	1
Carex nebrascensis	1	Cyrtorhyncha cymbalaria	1
Deschampsia caespitosa	1	Eleocharis palustris	2
Glyceria grandis	1	Juncus balticus	1
Juncus bufonius	1	Juncus effusus	1
Mentha arvensis	1	Mud Flats	1
Open Water	3	Poa palustris	0
Potentilla anserina	1	Ranunculus sceleratus	0
Salix lasiandra	0	Salix lutea	1
Schoenoplectus tabernaemont	2	Scirpus microcarpus	1
Typha latifolia	5		

**Comments:**

Typha latifolia expanded in several ares of the site from 2018-2020. In 2021, CT 11 decreased by 0.12-acre in wetland cell 4, and was replaced by wetland CT 14. The acreage of this CT remained consistent from 2021 in 2022.



**Community #** 13 **Community Type:** Leymus cinereus / Elymus trachycaulus**Acres:** 6.12

Species	Cover class	Species	Cover class
Astragalus cicer	1	Bare Ground	1
Bromus inermis	1	Camelina microcarpa	0
Cirsium arvense	1	Elymus repens	1
Elymus trachycaulus	3	Epilobium ciliatum	0
Euphorbia esula	0	Festuca ovina	1
Hordeum jubatum	1	Juncus balticus	1
Lepidium draba	0	Leymus cinereus	4
Melilotus officinalis	1	Poa palustris	1
Poa pratensis	2	Poa secunda	1
Potentilla anserina	0	Silene latifolia	0
Sonchus arvensis	0	Thlaspi arvense	1
Trifolium longipes	1		

**Comments:**

Community dominated by FAC graminoids, located in upland areas around wetland cells 4 and 5. Also located in area delineated as wetland in and around cell 6. Appears to be moving into cell 6 as that cell seems to be lacking or have decreased wetland hydrology which is required to support hydrophytic vegetation.

**Community #** 14 **Community Type:** Eleocharis palustris / Deschampsia caespitosa**Acres:** 0.61

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alopecurus aequalis	1
Beckmannia syzigachne	1	Deschampsia caespitosa	3
Eleocharis palustris	3	Epilobium ciliatum	1
Hordeum jubatum	1	Juncus balticus	2
Mentha arvensis	1	Open Water	1
Persicaria amphibia	1	Poa palustris	1
Potentilla anserina	1	Sonchus arvensis	0
Typha latifolia	1		

**Comments:**

Located along the eastern, southern, and western edges of wetland cell 4.

**Community #** 15 **Community Type:** Poa pratensis / Elymus repens**Acres:** 0.28

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Astragalus cicer	1
Bare Ground	2	Bromus inermis	2
Elymus repens	3	Elymus trachycaulus	2
Epilobium ciliatum	0	Festuca ovina	1
Hordeum jubatum	0	Leymus cinereus	2
Linum lewisii	1	Poa palustris	1
Poa pratensis	4	Puccinellia nuttalliana	1
Thlaspi arvense	1	Trifolium hybridum	1

**Comments:**

Located east of wetland cell 4, on the upland slope above the cell.

**Community #** 16 **Community Type:** Juncus balticus / Eleocharis palustris**Acres:** 1.86

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alopecurus aequalis	1
Alopecurus arundinaceus	1	Alopecurus pratensis	1
Bare Ground	1	Beckmannia syzigachne	2
Carex aquatilis	1	Carex nebrascensis	1
Carex pellita	0	Cicuta douglasii	1
Cyrtorhyncha cymbalaria	1	Deschampsia caespitosa	2
Eleocharis palustris	3	Elymus repens	0
Epilobium ciliatum	1	Glyceria grandis	1
Glyceria striata	1	Hordeum jubatum	1
Juncus balticus	4	Juncus balticus	0
Juncus bufonius	1	Juncus effusus	1
Mentha arvensis	1	Open Water	2
Phalaris arundinacea	1	Plantago major	0
Poa palustris	1	Poa pratensis	0
Potentilla anserina	1	Salix bebbiana	0
Salix exigua	0	Salix lasiandra	1
Sonchus arvensis	0	Symphyotrichum ciliatum	1
Trifolium longipes	1	Typha latifolia	1

**Comments:**

Located in wetland cells 2 and 3.

**Community #** 17 **Community Type:** Salix spp. /

**Acres:** 0.45

<b>Species</b>	<b>Cover class</b>	<b>Species</b>	<b>Cover class</b>
Alnus incana	1	Carex pellita	1
Carex utriculata	1	Juncus balticus	1
Salix bebbiana	2	Salix boothii	2
Salix exigua	4	Salix geyeriana	2
Salix lutea	2	Veronica americana	1

**Comments:**

New plant community added in 2019. From 2020-2022, development of planted/volunteer willows and alder on the edges of wetland cells 1 and 3 has continued.

***Total Vegetation Community Acreage***

**50.19**



# VEGETATION TRANSECTS

Site: Silicon Mountain Date: 6/13/2022

**Transect Number:** 1 **Compass Direction from Start:** 322

## Interval Data:

**Ending Station** 15 **Community Type:** Leymus cinereus / Elymus trachycaulus

Species	Cover class	Species	Cover class
Astragalus cicer	1	Bare Ground	2
Cirsium arvense	1	Elymus repens	1
Elymus trachycaulus	3	Epilobium ciliatum	0
Festuca ovina	3	Juncus balticus	1
Leymus cinereus	4	Poa pratensis	2
Poa secunda	2	Silene latifolia	0
Sonchus arvensis	1	Thlaspi arvense	0

**Ending Station** 31 **Community Type:** Juncus balticus / Eleocharis palustris

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Bare Ground	1
Cyrtorhyncha cymbalaria	1	Deschampsia caespitosa	2
Eleocharis palustris	3	Juncus balticus	4
Juncus bufonius	0	Juncus effusus	1
Mentha arvensis	1	Poa palustris	1
Potentilla anserina	1	Sonchus arvensis	1
Typha latifolia	1		

**Ending Station** 64 **Community Type:** Typha latifolia /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	0	Cyrtorhyncha cymbalaria	0
Deschampsia caespitosa	1	Eleocharis palustris	3
Glyceria grandis	0	Juncus balticus	2
Juncus bufonius	1	Juncus effusus	2
Open Water	1	Poa palustris	1
Salix lasiandra	0	Scirpus microcarpus	1
Typha latifolia	4		

**Ending Station** 264 **Community Type:** Juncus balticus / Eleocharis palustris

<b>Species</b>	<b>Cover class</b>	<b>Species</b>	<b>Cover class</b>
Alopecurus arundinaceus	1	Alopecurus pratensis	1
Bare Ground	2	Beckmannia syzigachne	0
Carex nebrascensis	1	Carex pellita	1
Deschampsia caespitosa	1	Eleocharis palustris	3
Elymus repens	2	Glyceria grandis	1
Hordeum jubatum	1	Juncus balticus	4
Juncus effusus	2	Phalaris arundinacea	1
Plantago major	0	Poa palustris	1
Potentilla anserina	2	Salix bebbiana	0
Salix lasiandra	0	Typha latifolia	1

**Ending Station** 300 **Community Type:** Leymus cinereus / Elymus trachycaulus

<b>Species</b>	<b>Cover class</b>	<b>Species</b>	<b>Cover class</b>
		Astragalus cicer	1
Bare Ground	2	Bromus inermis	3
Camelina microcarpa	1	Elymus repens	2
Elymus trachycaulus	2	Euphorbia esula	1
Juncus balticus	1	Lepidium draba	0
Leymus cinereus	4	Poa pratensis	2
Potentilla anserina	0	Thlaspi arvense	1
Trifolium longipes	1		

**Ending Station** 535 **Community Type:** Juncus balticus / Eleocharis palustris

<b>Species</b>	<b>Cover class</b>	<b>Species</b>	<b>Cover class</b>
Agrostis stolonifera	1	Alopecurus arundinaceus	2
Bare Ground	2	Carex aquatilis	2
Carex nebrascensis	2	Cicuta douglasii	1
Cyrtorhyncha cymbalaria	1	Deschampsia caespitosa	2
Eleocharis palustris	2	Epilobium ciliatum	0
Glyceria striata	0	Hordeum jubatum	1
Juncus balticus	4	Mentha arvensis	1
Phalaris arundinacea	1	Poa palustris	1
Poa pratensis	1	Potentilla anserina	1
Salix exigua	0	Symphyotrichum ciliatum	1
Typha latifolia	0		

**Ending Station** 564 **Community Type:** Bromus inermis / Poa pratensis

<b>Species</b>	<b>Cover class</b>	<b>Species</b>	<b>Cover class</b>
Agrostis stolonifera	2	Alopecurus arundinaceus	1
Bare Ground	1	Bromus inermis	4
Elymus repens	1	Elymus trachycaulus	1
Phalaris arundinacea	0	Poa palustris	1
Poa pratensis	3	Potentilla anserina	1
Sonchus arvensis	1	Trifolium hybridum	2

**Transect Notes:**

Large increase in surface water from 2021. Inundation depth averaged 2" and ranged 0-12".  
No change in transect intervals, minimal change in species presence and cover since 2021.  
Increase in Alopecurus arundinaceus observed across wetland CTs along transect.



**Transect Number:** 2      **Compass Direction from Start:** 288

**Interval Data:**

**Ending Station** 10 **Community Type:** Poa pratensis / Elymus repens

Species	Cover class	Species	Cover class
Agrostis stolonifera	0	Astragalus cicer	2
Bare Ground	3	Bromus inermis	2
Elymus repens	2	Elymus trachycaulus	1
Festuca ovina	1	Hordeum jubatum	1
Leymus cinereus	1	Linum lewisii	0
Poa palustris	1	Poa pratensis	3
Puccinellia nuttalliana	0	Trifolium hybridum	1

**Ending Station** 42 **Community Type:** Eleocharis palustris / Deschampsia caespitosa

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alopecurus aequalis	0
Beckmannia syzigachne	0	Deschampsia caespitosa	2
Eleocharis palustris	3	Epilobium ciliatum	0
Hordeum jubatum	1	Juncus balticus	4
Mentha arvensis	1	Open Water	0
Persicaria amphibia	0	Poa palustris	2
Potentilla anserina	2	Sonchus arvensis	1
Typha latifolia	0		

**Ending Station** 206 **Community Type:** Typha latifolia /

Species	Cover class	Species	Cover class
Alopecurus aequalis	1	Beckmannia syzigachne	0
Calamagrostis canadensis	2	Carex nebrascensis	1
Deschampsia caespitosa	1	Eleocharis palustris	4
Juncus balticus	2	Mentha arvensis	1
Mud Flats	1	Open Water	0
Potentilla anserina	2	Ranunculus sceleratus	1
Salix lutea	1	Schoenoplectus tabernaem	1
Typha latifolia	3		

**Ending Station** 219 **Community Type:** Bromus inermis / Poa pratensis

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Bare Ground	2
Bromus inermis	3	Centaurea stoebe	1
Cirsium arvense	0	Deschampsia caespitosa	1
Elymus repens	1	Juncus balticus	1
Leymus cinereus	1	Poa pratensis	2
Poa secunda	1	Potentilla anserina	0
Sonchus arvensis	1	Thlaspi arvense	1

Transect Notes:

Even less open water than in 2021, as more emergent vegetation has moved into the cell. Minimal changes in species presence and cover since 2021. Lower plant cover than would be expected later in the year due to the late growing season start.

## PLANTED WOODY VEGETATION SURVIVAL

Silicon Mountain

Planting Type	#Planted	#Alive	Notes
Alnus incana		5	
Salix eriocephala		14	
Salix exigua		16	
Salix geyeriana		13	
Sheperdia argentea		10	

### Comments

An estimated 350 containerized trees and shrubs were part of the original planting. During the 2015 monitoring a total of 47 live shrubs were noted; in 2016, 2017 and 2018 a total of 44 live shrubs were identified. During the July 2019 through June 2022 monitoring events an additional 14 trees and shrubs were counted, increasing the total to 58 live containerized plants. Volunteer willows and alders were observed in and around excavated wetland cells across the site.



## Silicon Mountain

### WILDLIFE

#### Birds

Were man-made nesting structures installed? No

If yes, type of structure: \_\_\_\_\_

How many? \_\_\_\_\_

Are the nesting structures being used? No

Do the nesting structures need repairs? No

#### Nesting Structure Comments:

Two abandoned duck nests observed on installed platforms.

Species	#Observed	Behavior	Habitat
American Coot	4		
American Crow	1		
Black-billed Magpie	1		
Brown-headed Cowbird	2		
Cinnamon Teal	4		
Common Raven	10		
Eurasian Collared-Dove	1		
Great Blue Heron	1		
Killdeer	2		
Northern Flicker	1		
Northern Harrier	1		
Red-winged Blackbird	17		
Ruddy Duck	6		
Sandhill Crane	4		
Swallow sp.	2		
Yellow-headed Blackbird	12		

#### Bird Comments

American coots observed with chicks observed.

**BEHAVIOR CODES**

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

**HABITAT CODES**

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

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

## Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Cottontail Rabbit	1	No	No	No	
White-tailed Deer	1	Yes	No	No	

### Wildlife Comments:

Site is used by a diversity of bird and wildlife species.



**PHOTOGRAPHS**

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

**Photograph Checklist:**

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

Photo #	Latitude	Longitude	Bearing	Description
DP01u				
DP01w				
DP02u				
DP02w				
DP03u				
DP03w				
DP04u				
DP04w				
DP05u				
DP05w				
DP06u				
DP06w				
DP07u				
DP07w				
PP01				West side of wetland cell 1
PP02				Outside wetland cell 1
PP03				West side of wetland cell 4
PP04				East side of constructed wetland cell 5
PP05				North end of T-1, constructed wetland cell 3
PP06				South end of T-1, constructed wetland cell 3
PP07				Cell 6, west side of tracks, south of overpass
PP08				Southern edge of cell 6 - upstream end
PP09				Northern edge of cell 6 - downstream end
PP10				West side of wetland cell 3
PP11				Sand Creek
PP12				Sand Creek

PP13	Sand Creek
PP14	Headcut
PP15	Headcut
PP16	Headcut
PP17	Northern end of Sand Creek
T-1-E	West side of cell 2
T-1-S	South end of wetland cell 2
T-2-E	West side of cell 4
T-2-S	East side of wetland cell 4

**Comments:**

## ADDITIONAL ITEMS CHECKLIST

### Hydrology

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

### Photos

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

### Vegetation

- ☒ Map vegetation community boundaries
- ☒ Complete Vegetation Transects

### Soils

- ☒ Assess soils

### Wetland Delineations

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

#### Wetland Delineation Comments

The total wetland acreage delineated in 2022, including pre-existing wetland areas, was 17.75 acres, which is a decrease of 0.35 acres since 2021.

### Functional Assessments

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

#### Functional Assessment Comments:

Created Wetland Cells 1 and 5; Cells 2, 3, and 4; and Preservation Wetlands were classified as Functional assessment completed on created cells and preservation wetlands. Open water areas contribute to AA acreage.



### **Maintenance**

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

If yes, do they need to be repaired?

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

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

into or out of the wetland?    Yes

If yes, are the structures in need of repair?    No

If yes, describe the problems below.

No obvious issues with water control structures or impoundments were observed, including in cell 6 where wetlany hydrology was diminished for unknown reasons.

# MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name  2. MDT project#  Control#

3. Evaluation Date  4. Evaluators  5. Wetland/Site# (s)

6. Wetland Location(s): T  R  Sec1  T  R  Sec2

Approx Stationing or Mileposts

Watershed  Watershed/County

7. Evaluating Agency

8. Wetland size acres

Purpose of Evaluation

☐ Wetlands potentially affected by MDT project

☐ Mitigation Wetlands: pre-construction

☒ Mitigation Wetlands: post construction

☐ Other

How assessed:

9. Assessment area (AA) size (acres)

How assessed:

## 10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittent	92
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	5
Depressional	Scrub-Shrub Wetland	Excavated	Seasonal/Intermittent	3
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

11. Estimated Relative Abundance

## 12. General Condition of AA

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

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

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

There was a high level of disturbance in this AA due to site construction prior to 2015. The site has since recovered and is considered stable. The wetlands are well developed and continue to expand. The area surrounding the site is primarily rural, but there are railroad track directly adjacent to cells 2 and 3. Cell 4 is adjacent to the bike path, a home, and a parking area.

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

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

The AA consists of wetland cells constructed to intercept groundwater. It's composed of the wetland cells 2, 3, and 4 that have a more seasonal/intermittent water regime, with the exception of some perennial open water present within cell 4. Sand Creek is not included in this AA because the berms surrounding the cells do not allow the creek to access these areas. The surrounding area comprises low rolling hills dominated by sagebrush and graminoids.

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

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

**Comments:** Palustrine Emergent, Palustrine Scrub-Shrub, Palustrine Aquatic Bed (less than 5% vegetation cover)

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)

☐ D ☐ S

Secondary habitat (list Species)

☐ D ☐ S

Incidental habitat (list species)

☐ D ☐ S

No usable habitat

☒ S

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

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

Sources for documented use

USFWS IPaC

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

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

Primary or critical habitat (list species)

☐ D ☐ S

Secondary habitat (list Species)

☐ D ☒ S

Hoary bat (S3), Preble's shrew (S3)

Incidental habitat (list species)

☐ D ☐ S

No usable habitat

☐ S

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

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

Sources for documented use

MTNHP



#### 14C. General Wildlife Habitat Rating:

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

Moderate

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

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

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

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

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

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

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

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

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

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

Comments: Moderate wildlife use and exceptional wildlife habitat features ratings.

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

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

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

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

**ii. Modified Rating** (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? Y ☐ N ☒ If yes, reduce score in i above by 0.1: **Modified Rating** .5M

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

**Modified Rating**

iii. **Final Score and Rating:** .5 M **Comments:** No fish habitat within AA. Cell 4 has open water but no inlet or outlet.

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

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

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

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



Floodprone width  / Bankfull width  = Entrenchment ratio

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

**Comments:** AA is less than 10 acres and all cells not subject to flooding via in-channel or overbank flow.

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

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

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

**Comments:** Wetland cells intercept groundwater seasonally and are less than 5 acres.

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

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

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

**Comments:** Cells have the potential to receive compounds through groundwater and overland flow.

**14H Sediment/Shoreline Stabilization:** (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, click ☐ **NA** here and proceed to 14I.)

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

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

**Comments:** Wave action is possible across a portion of these wetland cells at times. Vegetation includes *Juncus balticus*, *Typha latifolia*, *Eleocharis palustris*, and *Salix* spp. with ratings of 6 or greater.

#### 14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? Y ☒ N ☐ If yes, add 0.1 to the score in ii above and adjust rating accordingly: **Modified Rating** .9H

**Comments:** Cells contain a subsurface outlet; have vegetated buffers.



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

**i. Discharge Indicators**

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

**ii. Recharge Indicators**

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

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

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

**Comments:** Mitigation cells designed to intercept shallow groundwater aquifer.

**14K. Uniqueness:**

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

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

**Comments:** AA doesn't contain rare types and structural diversity is high.

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

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

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

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

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

**Comments:**

Site is a mitigation area that could be used for education purposes, has general public access and public ownership. Used for educational studies by students at MSU and Montana Tech.

**General Site Notes**

Wetland acreage decreased in 2022 by 0.3-acres.

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA1 - Created Cells 2, 3, 4

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0.00	<input type="checkbox"/>
B. MT Natural Heritage Program Species Habitat	M	.5	1	1.85	<input type="checkbox"/>
C. General Wildlife Habitat	H	.9	1	3.33	<input checked="" type="checkbox"/>
D. General Fish Habitat	M	.5	0	1.85	<input type="checkbox"/>
E. Flood Attenuation	NA	0	0	0.00	<input type="checkbox"/>
F. Short and Long Term Surface Water Storage	M	.6	1	2.22	<input type="checkbox"/>
G. Sediment/Nutrient/Toxicant Removal	H	1	1	3.70	<input checked="" type="checkbox"/>
H. Sediment/Shoreline Stabilization	M	.6	1	2.22	<input type="checkbox"/>
I. Production Export/Food Chain Support	H	.9	1	3.33	<input checked="" type="checkbox"/>
J. Groundwater Discharge/Recharge	M	.7	1	2.59	<input checked="" type="checkbox"/>
K. Uniqueness	M	.5	1	1.85	<input type="checkbox"/>
L. Recreation/Education Potential (bonus points)	H	.2	NA	0.74	<input type="checkbox"/>
Totals:		6.4	9	23.68	
Percent of Possible Score			71.11 %		

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**  
☐ Score of 1 functional point for Uniqueness; **or**  
☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**  
☐ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**  
☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**  
☐ Score of .9 or 1 functional point for General Fish Habitat; **or**  
☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**  
☐ Score of .9 functional point for Uniqueness; **or**  
☐ Percent of possible score > 65% (round to nearest whole #).

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

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**  
☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**  
☐ Percent of possible score < 35% (round to nearest whole #).

**OVERALL ANALYSIS AREA RATING:**

(check appropriate category based on the criteria outlined above)

I	II	III	IV
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## MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name	Silicon Mountain Wetland Mitigation Site	2. MDT project#	STPX 47(024)56	Control#	5034000
3. Evaluation Date	11/2/2022	4. Evaluators	R Jones, S Weyant, W Fouts, M Hickey		
5. Wetland/Site# (s)	AA2- Created Cells 1 and 5				
6. Wetland Location(s):	T	3N	R	9W	Sec1 24
				T	R
Approx Stationing or Mileposts	N/A				
Watershed	2 - Upper Clark Fork		Watershed/County	Silver Bow	

7. Evaluating Agency	CCI for MDT
Purpose of Evaluation	8. Wetland size acres
<input type="checkbox"/> Wetlands potentially affected by MDT project	6.08
<input type="checkbox"/> Mitigation Wetlands: pre-construction	How assessed: Measured e.g. by GPS
<input checked="" type="checkbox"/> Mitigation Wetlands: post construction	9. Assessment area (AA) size (acres)
<input type="checkbox"/> Other	6.08
	How assessed: Measured e.g. by GPS

### 10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	43
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittent	52
Depressional	Scrub-Shrub Wetland	Excavated	Seasonal/Intermittent	5

11. Estimated Relative Abundance	Common
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### 12. General Condition of AA

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

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

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

This is year 8 following construction; wetland cells 1 and 5 have established desirable perennial grass, forb, and shrub cover, with minimal annual and perennial weeds present. The level of disturbance has declined, the site has stabilized with increasing cover by perennial species.

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

Linaria vulgaris and Euphorbia esula

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

The AA is composed of two separate wetland cells (1 & 5) that are designed to intercept groundwater, and appear to have water source. They have no surface connection to one another. Cell 1 drains into Sand Creek, but is upslope/outside of Sand Creek's active floodplain area. Neither cell is subject to overbank flooding. The AA also includes the emergent and scrub-shrub wetland that has developed surrounding constructed cells 1 and 5.



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

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

**Comments:** Palustrine Aquatic Bed (w/ less than 5% emergent vegetation), Palustrine emergent, Palustrine scrub-shrub

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ☐ D ☐ S

Incidental habitat (list species) ☐ D ☐ S

No usable habitat ☒ S

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

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

Sources for documented use USFWS IPaC

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

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

Primary or critical habitat (list species) ☐ D ☒ S Westslope cutthroat trout (S2)

Secondary habitat (list Species) ☐ D ☒ S Preble's shrew (S3),

Incidental habitat (list species) ☐ D ☒ S Hoary bat (S3), Large flowered beardtongue (S1)

No usable habitat ☐ S

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

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

Sources for documented use MTNHP

#### 14C. General Wildlife Habitat Rating:

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

Moderate

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

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

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

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

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

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

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

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

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

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

Comments

Moderate wildlife use but exceptional and diverse wildlife habitat features.

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

☒ **NA** here and proceed to 14E.)

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

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

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

**ii. Modified Rating** (NOTE: Modified score cannot exceed 1 or be less than 0.1)

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

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

**Modified Rating**

iii. **Final Score and Rating:**  **Comments:** Cell 1 drains into Sand Creek, but is upslope/outside of Sand Creek's active floodplain area; no fish have been observed and are not suspected in AA.

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

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

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

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



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

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

**Comments:** Wetland cells impound water restricting return to Sand Creek. Cells 1 and 5 are upslope/outside of Sand Creek's active floodplain area, and not subject to overbank flooding.

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

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

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

**Comments:** (2.67 created acres of perennial depressional aquatic bed) x (average 1 ft. ponding/flow at high water) = 2.67 acre feet

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

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

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

**Comments:** Does not achieve 70% threshold due to being 43% open water

**14H Sediment/Shoreline Stabilization:** (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, click ☐ **NA** here and proceed to 14I.)

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

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

**Comments:** Vegetation with a rating of 6 or greater include Typha latifolia, Juncus balticus, Eleocharis palustris, Carex nebrascensis, and Salix spp., which surrounds aquatic beds as emergent/scrub-shrub wetland.

#### 14I. Production Export/Food Chain Support:

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

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

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

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

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

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

**Comments:** Vegetated component increased by 1.4 acres in 2021.



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

**i. Discharge Indicators**

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

**ii. Recharge Indicators**

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

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

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

**Comments:** Wetland mitigation cells with perennial water that intercept groundwater.

**14K. Uniqueness:**

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

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

**Comments:** AA does not contain rare types and structural diversity is considered high following 2022 site visit.

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

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

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

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

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

**Comments:**

Mitigation site with public ownership, public access, and potential for educational use. Site is being used for educational studies by students at MSU and Montana Tech.

**General Site Notes**

The open water attracts a variety of waterfowl and other bird species, and adds habitat complexity promoting an increase in plant and animal diversity. This increased diversity represents a valuable educational resource for scientists, teachers, students, and conservation groups. The AA is highly accessible due to the adjacent parking area and bike path.

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA2- Created Cells 1 and 5

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0.00	<input type="checkbox"/>
B. MT Natural Heritage Program Species Habitat	M	.5	1	3.04	<input type="checkbox"/>
C. General Wildlife Habitat	H	.9	1	5.47	<input checked="" type="checkbox"/>
D. General Fish Habitat	NA	0	0	0.00	<input type="checkbox"/>
E. Flood Attenuation	NA	0	0	0.00	<input type="checkbox"/>
F. Short and Long Term Surface Water Storage	H	.8	1	4.86	<input checked="" type="checkbox"/>
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	4.26	<input type="checkbox"/>
H. Sediment/Shoreline Stabilization	H	1	1	6.08	<input type="checkbox"/>
I. Production Export/Food Chain Support	E	1	1	6.08	<input checked="" type="checkbox"/>
J. Groundwater Discharge/Recharge	H	1	1	6.08	<input checked="" type="checkbox"/>
K. Uniqueness	M	.6	1	3.65	<input type="checkbox"/>
L. Recreation/Education Potential (bonus points)	H	.2	NA	1.22	<input type="checkbox"/>
Totals:		6.7	9	40.74	
Percent of Possible Score			74.44 %		

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of possible score > 65% (round to nearest whole #).

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

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

**OVERALL ANALYSIS AREA RATING:**

(check appropriate category based on the criteria outlined above)

I	II	III	IV
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## MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name	Silicon Mountain Wetland Mitigation Site	2. MDT project#	STPX 47(024)56	Control#	5034000
3. Evaluation Date	7/1/2021	4. Evaluators	R Jones, S Weyant, W Fouts, M Hickey		
5. Wetland/Site# (s)	AA3 - Preservation				
6. Wetland Location(s):	T	3N	R	9W	Sec1 24
					T
					R
					Sec2
Approx Stationing or Mileposts	N/A				
Watershed	2 - Upper Clark Fork		Watershed/County	Silver Bow	

7. Evaluating Agency	CCI for MDT
Purpose of Evaluation	8. Wetland size acres
<input type="checkbox"/> Wetlands potentially affected by MDT project	11
<input type="checkbox"/> Mitigation Wetlands: pre-construction	How assessed: Measured e.g. by GPS
<input checked="" type="checkbox"/> Mitigation Wetlands: post construction	9. Assessment area (AA) size (acres)
<input type="checkbox"/> Other	11.92
	How assessed: Measured e.g. by GPS

### 10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Aquatic Bed		Permanent/Perennial	5
Depressional	Emergent Wetland		Seasonal/Intermittent	35
Depressional	Scrub-Shrub Wetland		Seasonal/Intermittent	2
Depressional	Emergent Wetland		Permanent/Perennial	58

11. Estimated Relative Abundance	Common
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### 12. General Condition of AA

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

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

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

The wetland mitigation site was constructed in 2014 which consisted of substantial excavation to create new wetlands and channel re-alignment/restoration. In 2016 the area surrounding the preserved wetlands was disturbed as a result of the new trail and bridge. In 2022, disturbed areas surrounding the preserved wetland areas were stable and well vegetated with seeded and volunteer native perennial grasses and forbs.

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

Cirsium arvense and Linaria vulgaris
--------------------------------------

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

The AA consists of pre-existing depressional wetlands located adjacent to Sand Creek and south of Silver Bow Creek. Land use surrounding the AA includes commercial developments, agriculture (grazing/pasture), transportation (railroad and highway) and private residences.

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

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

**Comments:** Palustrine Emergent, Palustrine Scrub-Shrub, Palustrine Aquatic Bed (less than 5% vegetation cover)

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)

☐ D ☐ S

Secondary habitat (list Species)

☐ D ☐ S

Incidental habitat (list species)

☐ D ☐ S

No usable habitat

☒ S

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

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

Sources for documented use

USFWS IPaC

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

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

Primary or critical habitat (list species)

☐ D ☒ S

Westslope cutthroat trout (S2)

Secondary habitat (list Species)

☐ D ☒ S

Hoary bat (S3)

Incidental habitat (list species)

☐ D ☒ S

Hoary bat (S3), Large flowered beardtongue (S1)

No usable habitat

☐ S

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

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

Sources for documented use

MTNHP



**14C. General Wildlife Habitat Rating:**

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

Moderate

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

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

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

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

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

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

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

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

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

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

**Comments** Moderate wildlife use but a diversity of wildlife habitat features.

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

☒ **NA** here and proceed to 14E.)

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

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

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

ii. **Modified Rating** (NOTE: Modified score cannot exceed 1 or be less than 0.1)

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

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

**Modified Rating**

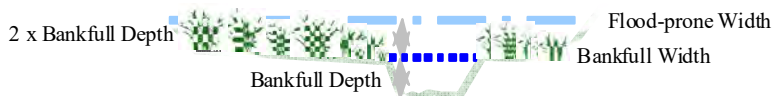
iii. **Final Score and Rating:**  **Comments:** No fish habitat within AA.

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

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

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

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



Floodprone width  / Bankfull width  = Entrenchment ratio

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

**Comments:** AA not subject to flooding via in-channel or overbank flow.

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

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

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

**Comments:** ~65% of preservation wetlands have permanent/perennial water regime (10.8 acre x 0.65=7.02 acres), average 1 foot standing/flowing water during high water events (7.02 acres x 1 foot= 7.02 acre feet).

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

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

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

**Comments:** Evidence of flooding or ponding in the preservation wetlands.

**14H Sediment/Shoreline Stabilization:** (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, click ☐ **NA** here and proceed to 14I.)

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

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

**Comments:** Preservation wetlands in the far eastern portion of the site include a shoreline with standing water. Vegetation includes a mix of Typha latifolia, Carex utriculata and Juncus balticus.

#### 14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? Y ☒ N ☐ If yes, add 0.1 to the score in ii above and adjust rating accordingly: **Modified Rating** .6M

**Comments:** Well-vegetated upland buffer around greater than 75 percent of the AA's perimeter.

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

**i. Discharge Indicators**

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

**ii. Recharge Indicators**

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

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

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

**Comments:** Most of the preserved wetlands intercept shallow subsurface groundwater; the large wetland in the NE corner intercepts shallow groundwater and is fed by surface water from a spring that flows out of a subsurface aquifer.

**14K. Uniqueness:**

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

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

**Comments:** Wetlands common in the area, low disturbance in comparison to others impacted by land mgmt; structural diversity high.

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

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

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

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

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

**Comments:**

Mitigation site with public ownership, public access, and potential for educational use. Site is being used for educational studies by students at MSU and Montana Tech.

**General Site Notes**

Inundation and saturation depths were higher across the preservation wetlands in 2022 as compared to 2021 due to the heavy spring precipitation.



FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA3 - Preservation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0.00	<input type="checkbox"/>
B. MT Natural Heritage Program Species Habitat	M	.5	1	5.96	<input type="checkbox"/>
C. General Wildlife Habitat	H	.9	1	10.73	<input checked="" type="checkbox"/>
D. General Fish Habitat	NA	0	0	0.00	<input type="checkbox"/>
E. Flood Attenuation	NA	0	0	0.00	<input type="checkbox"/>
F. Short and Long Term Surface Water Storage	H	1	1	11.92	<input checked="" type="checkbox"/>
G. Sediment/Nutrient/Toxicant Removal	H	1	1	11.92	<input checked="" type="checkbox"/>
H. Sediment/Shoreline Stabilization	M	.7	1	8.34	<input type="checkbox"/>
I. Production Export/Food Chain Support	M	.6	1	7.15	<input type="checkbox"/>
J. Groundwater Discharge/Recharge	H	1	1	11.92	<input checked="" type="checkbox"/>
K. Uniqueness	M	.6	1	7.15	<input type="checkbox"/>
L. Recreation/Education Potential (bonus points)	H	.2	NA	2.38	<input type="checkbox"/>
Totals:		6.5	9	77.48	
Percent of Possible Score			72.22 %		

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of possible score > 65% (round to nearest whole #).

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

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

**OVERALL ANALYSIS AREA RATING:**

(check appropriate category based on the criteria outlined above)

I	II	III	IV
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## MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name	Silicon Mountain Wetland Mitigation Site	2. MDT project#	STPX 47(024)56	Control#	5034000
3. Evaluation Date	10/1/2021	4. Evaluators	R Jones, S Weyant, W Fouts, M Hickey		
5. Wetland/Site# (s)	AA4 - Created Cell 6				
6. Wetland Location(s):	T	3N	R	9W	Sec1 24
					T
					R
Approx Stationing or Mileposts	N/A				
Watershed	2 - Upper Clark Fork		Watershed/County	Silver Bow	

7. Evaluating Agency	CCI for MDT
Purpose of Evaluation	8. Wetland size acres
<input type="checkbox"/> Wetlands potentially affected by MDT project	0.18
<input type="checkbox"/> Mitigation Wetlands: pre-construction	How assessed: Measured e.g. by GPS
<input checked="" type="checkbox"/> Mitigation Wetlands: post construction	9. Assessment area (AA) size (acres)
<input type="checkbox"/> Other	0.18
	How assessed: Measured e.g. by GPS

### 10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Aquatic Bed	Excavated	Seasonal/Intermittent	5
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittent	95

11. Estimated Relative Abundance	Abundant
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### 12. General Condition of AA

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

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

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

Water was observed within the excavated portion of wetland cell 6 in 2018 and 2020. This cell was dry in 2019, 2021 and 2022. Wetland Cell 6 is within the old road alignment, wetland construction included excavation, regrading and revegetation. The surrounding upland/wetland area is stable and well vegetated with seeded perennial grasses and forbs. A large spotted knapweed population exists upgradient of the cell.

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

Cirsium arvense and Euphorbia esula
-------------------------------------

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

The AA consists of a depressional wetland and upland buffer at the bottom of a gentle hillslope. Land use surrounding the AA includes commercial developments and transportation (railroad tracks and highway).

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

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

Comments: Palustrine emergent wetland

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)

☐ D ☐ S

Secondary habitat (list Species)

☐ D ☐ S

Incidental habitat (list species)

☐ D ☐ S

No usable habitat

☒ S

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

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

Sources for documented use

USFWS IPaC

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

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

Primary or critical habitat (list species)

☐ D ☒ S

Westslope Cutthroat Trout (S2)

Secondary habitat (list Species)

☐ D ☒ S

Preble's shrew (S3)

Incidental habitat (list species)

☐ D ☒ S

Hoary bat (S3), Large flowered beardtongue (S1)

No usable habitat

☐ S

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

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

Sources for documented use

MTNHP

**14C. General Wildlife Habitat Rating:**

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

Low

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

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

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

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

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

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

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

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

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

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

Comments

Small wetland with limited value to wildlife.

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

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

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



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

ii. **Modified Rating** (NOTE: Modified score cannot exceed 1 or be less than 0.1)

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

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

**Modified Rating**

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

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

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

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

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



Floodprone width  / Bankfull width  = Entrenchment ratio

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

**Comments:** AA subject to flooding is less than 10 acres. Depressional wetland restricts discharge or drainage to the east toward the railroad tracks.

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

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

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

**Comments:** This wetland is subject to ponding from precipitation, and upland surface flow.

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

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

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

**Comments:** No sedimentation observed in wetland cell in 2022.

**14H Sediment/Shoreline Stabilization:** (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, click ☐ **NA** here and proceed to 14I.)

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

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

This small wetland is likely subject to wave action only when surface or ponded water is present.

**Comments:**

#### 14I. Production Export/Food Chain Support:

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

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

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

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

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

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

**Comments:** There is a 50-foot buffer around the wetland.

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

**i. Discharge Indicators**

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

**ii. Recharge Indicators**

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

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

Criteria	Duration of saturation at AA Wetlands <b>FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM</b>			
	P/P	S/I	T	None
Groundwater Discharge or Recharge	<input type="text" value="1H"/>	<input type="text" value=".7M"/>	<input type="text" value=".4M"/>	<input type="text" value=".1L"/>
Insufficient Data/Information	<input type="text" value="NA"/>			

**Comments:**

**14K. Uniqueness:**

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

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

**Comments:**

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

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

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

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

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	<input type="text" value=".2H"/>	<input type="text" value=".15H"/>
Private ownership with general public access (no permission required)	<input type="text" value=".15H"/>	<input type="text" value=".1M"/>
Private or public ownership without general public access, or requiring permission for public access	<input type="text" value=".1M"/>	<input type="text" value=".05L"/>

**Comments:**

**General Site Notes**

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0.00	<input type="checkbox"/>
B. MT Natural Heritage Program Species Habitat	M	.5	1	0.09	<input checked="" type="checkbox"/>
C. General Wildlife Habitat	M	.4	1	0.07	<input checked="" type="checkbox"/>
D. General Fish Habitat	NA	0	0	0.00	<input type="checkbox"/>
E. Flood Attenuation	NA	0	0	0.00	<input type="checkbox"/>
F. Short and Long Term Surface Water Storage	L	.2	1	0.04	<input type="checkbox"/>
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	0.13	<input checked="" type="checkbox"/>
H. Sediment/Shoreline Stabilization	L	.2	1	0.04	<input type="checkbox"/>
I. Production Export/Food Chain Support	M	.4	1	0.07	<input type="checkbox"/>
J. Groundwater Discharge/Recharge	M	.7	1	0.13	<input checked="" type="checkbox"/>
K. Uniqueness	L	.3	1	0.05	<input type="checkbox"/>
L. Recreation/Education Potential (bonus points)	NA	0	NA	0.00	<input type="checkbox"/>
Totals:		3.4	9	0.61	
Percent of Possible Score			37.78 %		

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

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



**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

**OVERALL ANALYSIS AREA RATING:**

(check appropriate category based on the criteria outlined above)

I	II	III	IV
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## MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name	Silicon Mountain Wetland Mitigation Site	2. MDT project#	STPX 47(024)56	Control#	5034000
3. Evaluation Date	2/6/2023	4. Evaluators	R. Jones	5. Wetland/Site# (s)	AA5 - Establishment along Sand Creek
6. Wetland Location(s):	T	3N	R	9W	Sec1 24
				T	R
Approx Stationing or Mileposts	N/A				
Watershed	2 - Upper Clark Fork		Watershed/County	Silver Bow	

7. Evaluating Agency	CCI for MDT
Purpose of Evaluation	8. Wetland size acres
<input type="checkbox"/> Wetlands potentially affected by MDT project	2.26
<input type="checkbox"/> Mitigation Wetlands: pre-construction	How assessed: Measured e.g. by GPS
<input checked="" type="checkbox"/> Mitigation Wetlands: post construction	9. Assessment area (AA) size (acres)
<input type="checkbox"/> Other	4.09
	How assessed: Measured e.g. by GPS

### 10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Scrub-Shrub Wetland		Permanent/Perennial	28
Depressional	Emergent Wetland		Permanent/Perennial	27
Riverine	Rock Bottom		Permanent/Perennial	45

11. Estimated Relative Abundance	Unknown
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### 12. General Condition of AA

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

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

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

Railroad, bike path, roadways and driveways, parking area

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

Centaurea stoebe

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

Land use surrounding the AA includes commercial developments, agriculture (grazing/pasture), transportation (railroad and highway) and private residences.

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

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

**Comments:** AA includes Sand Creek, PEM, and scrub-shrub (willow dominated) wetlands

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)

☐ D ☐ S

Secondary habitat (list Species)

☐ D ☐ S

Incidental habitat (list species)

☐ D ☐ S

No usable habitat

☒ S

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

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

Sources for documented use

USFWS IPaC

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

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

Primary or critical habitat (list species)

☐ D ☒ S

Westslope cutthroat trout (S2)

Secondary habitat (list Species)

☐ D ☒ S

Hoary bat (S3)

Incidental habitat (list species)

☐ D ☒ S

Hoary bat (S3), Large flowered beardtongue (S1)

No usable habitat

☐ S

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

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

Sources for documented use

MTNHP Environmental Summary

#### 14C. General Wildlife Habitat Rating:

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

Moderate

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

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

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

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

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

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

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

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

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

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

Comments

Excellent neotropical migrant habitat

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

☐ **NA** here and proceed to 14E.) Cold Water

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

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

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

**ii. Modified Rating** (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see **Appendix E**) occur in fish habitat? Y ☐ N ☒ If yes, reduce score in i above by 0.1: **Modified Rating** .6M

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

**Modified Rating**

iii. **Final Score and Rating:** .6 M **Comments:** Potential habitat for Westslope Cutthroat Trout

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

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

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

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



Floodprone width 17 / Bankfull width 12 = Entrenchment ratio 1.41666666666667

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

**Comments:** The Sand Creek channel is more entrenched in some places than in others.

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

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

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

**Comments:** Overbankflow more likely at the upstream end of Sand Creek.



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

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

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

**Comments:** Railroad and roadways have high potential to contribute contaminants.

**14H Sediment/Shoreline Stabilization:** (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, click ☐ **NA** here and proceed to 14I.)

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

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

AA dominated by Salix, Juncus, and Carex species with high stability index ratings.

**Comments:**

#### 14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? Y ☒ N ☐ If yes, add 0.1 to the score in ii above and adjust rating accordingly: **Modified Rating** .8H

**Comments:** AA contains surface outlet, and the upland buffer contains high amounts of non-noxious weed cover

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

**i. Discharge Indicators**

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

**ii. Recharge Indicators**

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

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

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

Comments: high water table present

**14K. Uniqueness:**

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

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

Comments: Habitat types range from an perennial lotic systems to shrub-dominated wetlands.

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

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

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

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

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

Comments:

Mitigation site with public ownership, public access, and potential for educational use. Site is being used for educational studies by students at MSU and Montana Tech.

**General Site Notes**

This AA was added in 2022 to capture several wetland areas delineated adjacent to the stream channel and in areas where pre-project wetlands have expanded (creation wetlands).

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA5 - Establishment along Sand Creek

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0.00	<input type="checkbox"/>
B. MT Natural Heritage Program Species Habitat	M	.5	1	2.05	<input type="checkbox"/>
C. General Wildlife Habitat	H	.9	1	3.68	<input checked="" type="checkbox"/>
D. General Fish Habitat	M	.6	1	2.45	<input type="checkbox"/>
E. Flood Attenuation	H	.9	1	3.68	<input checked="" type="checkbox"/>
F. Short and Long Term Surface Water Storage	M	.7	1	2.86	<input type="checkbox"/>
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	2.86	<input type="checkbox"/>
H. Sediment/Shoreline Stabilization	H	1	1	4.09	<input checked="" type="checkbox"/>
I. Production Export/Food Chain Support	H	.8	1	3.27	<input type="checkbox"/>
J. Groundwater Discharge/Recharge	H	1	1	4.09	<input checked="" type="checkbox"/>
K. Uniqueness	M	.6	1	2.45	<input type="checkbox"/>
L. Recreation/Education Potential (bonus points)	H	.2	NA	0.82	<input type="checkbox"/>
Totals:		7.9	11	32.31	
Percent of Possible Score			71.82 %		

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)

- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**  
☐ Score of 1 functional point for Uniqueness; **or**  
☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**  
☐ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)

- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**  
☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**  
☐ Score of .9 or 1 functional point for General Fish Habitat; **or**  
☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**  
☐ Score of .9 functional point for Uniqueness; **or**  
☒ Percent of possible score > 65% (round to nearest whole #).

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

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)

- ☐ "Low" rating for Uniqueness; **and**  
☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**  
☐ Percent of possible score < 35% (round to nearest whole #).

**OVERALL ANALYSIS AREA RATING:**

(check appropriate category based on the criteria outlined above)

I	II	III	IV
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**Table B1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2022.

Scientific Name	Common Name	WMVC Indicator Status <sup>(1)</sup>
<i>Achillea millefolium</i>	Common Yarrow	FACU
<i>Agoseria glauca</i>	Pale Goat Chicory	FAC
<i>Agropyron cristatum</i>	Crested Wheatgrass	UPL
<i>Agrostis stolonifera</i>	Spreading Bent	FAC
Algae, green	Algae, green	N/A
<i>Alisma plantago-aquatica</i>	European Water-Plantain	OBL
<i>Allium cernuum</i>	Nodding Onion	FACU
<i>Alnus incana</i>	Speckled Alder	FACW
<i>Alopecurus aequalis</i>	Short-Awn Meadow-Foxtail	OBL
<i>Alopecurus arundinaceus</i>	Creeping Meadow-Foxtail	FAC
<i>Alopecurus pratensis</i>	Field Meadow Foxtail	FAC
<i>Alyssum alyssoides</i>	Pale or Yellow Alyssum	UPL
<i>Alyssum desestorum</i>	Dwarf Alyssum	UPL
<i>Antennaria neglecta</i>	Field Pussytoes	FACU
<i>Artemisia campestris</i>	Pacific Wormwood	FACU
<i>Artemisia frigida</i>	Fringed Sage	UPL
<i>Artemisia ludovicinana</i>	White Sagebrush	FACU
<i>Artemisia tridentata</i>	Big Sagebrush	UPL
<i>Astragalus agrestis</i>	Cock's-Head/Purple Milkvetch	FACW
<i>Astragalus bisulcatus</i>	Two-Grooved Milkvetch	UPL
<i>Astragalus cicer</i>	Chickpea Milkvetch	UPL
<i>Astragalus miser</i>	Milkvetch	UPL
<i>Bassia scoparia</i>	Mexican-Fireweed	FAC
<i>Beckmannia syzigachne</i>	American Slough Grass	OBL
<i>Bidens cernua</i>	Nodding Burr-Marigold	OBL
<i>Bromus inermis</i>	Smooth Brome	UPL
<i>Bromus japonicus</i>	Japanese Brome	UPL
<i>Bromus tectorum</i>	Cheatgrass	UPL
<i>Calamagrostis canadensis</i>	Bluejoint	FACW
<i>Camelina microcarpa</i>	Little-Pod False Flax	FACU
<i>Cardaria draba</i>	Whitetop	UPL
<i>Carex aquatilis</i>	Leafy Tussock Sedge	OBL
<i>Carex filifolia</i>	Thread-leaved Sedge	UPL
<i>Carex nebrascensis</i>	Nebraska Sedge	OBL
<i>Carex pellita</i>	Woolly Sedge	OBL
<i>Carex praegracilis</i>	Clustered Field Sedge	FACW
<i>Carex praticola</i>	Northern Meadow Sedge	FACW
<i>Carex simulata</i>	Analogue Sedge	OBL
<i>Carex utriculata</i>	Northwest Territory Sedge	OBL
<i>Catabrosa aquatica</i>	Water Whorl Grass	OBL
<i>Centaurea stoebe</i>	Spotted Knapweed	UPL
<i>Chaenactis douglasii</i>	Douglas's Dustymaiden	UPL
<i>Chenopodium album</i>	Lamb's-Quarters	FACU
<i>Cicuta douglasii</i>	Western Water-Hemlock	OBL



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Scientific Name	Common Name	WMVC Indicator Status <sup>(1)</sup>
<i>Cirsium arvense</i>	Canadian Thistle	FAC
<i>Cirsium foliosum</i>	Elk Thistle	FAC
<i>Cirsium scariosum</i>	Meadow Thistle	FAC
<i>Collomia linearis</i>	Narrow-Leaf Mountain-Trumpet	FACU
<i>Crepis runcinata</i>	Fiddleleaf Hawk's Beard	FACU
<i>Crepis tectorum</i>	Narrowleaf Hawksbeard	UPL
<i>Cyrtorhyncha cymbalaria</i>	Alkali Buttercup	OBL
<i>Dasiphora fruticosa</i>	Golden-Hardhack	FAC
<i>Deschampsia caespitosa</i>	Tufted Hair Grass	FACW
<i>Descurainia richardsonii</i>	Western Tansy Mustard	UPL
<i>Descurainia sophia</i>	Herb Sophia	UPL
<i>Distichlis spicata</i>	Coastal/Inland Saltgrass	FACW
<i>Eleocharis palustris</i>	Common Spike-Rush	OBL
<i>Elymus canadensis</i>	Nodding Wild Rye	FAC
<i>Elymus lanceolatus</i>	Streamside Wild Rye	FACU
<i>Elymus repens</i>	Creeping Wild Rye	FAC
<i>Elymus trachycaulus</i>	Slender Wild Rye	FAC
<i>Epilobium ciliatum</i>	Fringed Willowherb	FACW
<i>Equisetum arvense</i>	Field Horsetail	FAC
<i>Equisetum laevigatum</i>	Smooth Scouring-Rush	FACW
<i>Ericameria nauseosa</i>	Rubber Rabbitbrush	UPL
<i>Erigeron</i> sp.	Fleabane	N/A
<i>Erysimum inconspicuum</i>	Small-flowered Wallflower	UPL
<i>Euphorbia esula</i>	Leafy Spurge	UPL
<i>Festuca ovina</i>	Sheep Fescue	UPL
<i>Filago arvenis</i>	Field Cudweed	UPL
<i>Geum macrophyllum</i>	Large-Leaf Avens	FAC
<i>Glyceria grandis</i>	American Manna Grass	OBL
<i>Glyceria striata</i>	Fowl Manna Grass	OBL
<i>Grindelia squarrosa</i>	Curly-Cup Gumweed	FACU
<i>Gutierrezia sarothrae</i>	Matchbrush	UPL
<i>Hesperostipa comata</i>	Needle-and-Thread	UPL
<i>Heterotheca villosa</i>	Hairy Golden Aster	UPL
<i>Hordeum brachyantherum</i>	Meadow Barley	FACW
<i>Hordeum jubatum</i>	Fox-Tail Barley	FAC
<i>Hyoscyamus niger</i>	Black Henbane	UPL
<i>Ionactis alpina</i>	Crag Aster	UPL
<i>Iris missouriensis</i>	Rocky Mountain Iris	FACW
<i>Juncus balticus</i>	Baltic Rush	FACW
<i>Juncus bufonius</i>	Toad Rush	FACW
<i>Juncus effusus</i>	Lamp Rush	FACW
<i>Juncus longistylis</i>	Long-Style Rush	FACW
<i>Juncus mertensianus</i>	Mertens' Rush	OBL
<i>Juniperus scopulorum</i>	Rocky Mountain Juniper	UPL

**Table B1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2022.

Scientific Name	Common Name	WMVC Indicator Status <sup>(1)</sup>
<i>Koeleria macrantha</i>	Prairie Junegrass	UPL
<i>Lemna minor</i>	Common Duckweed	OBL
<i>Lepidium campestre</i>	Field Pepper-grass	UPL
<i>Lepidium perfoliatum</i>	Clasping Pepperwort	FACU
<i>Leymus cinereus</i>	Great Basin Wild Rye	FAC
<i>Linaria vulgaris</i>	Butter-and-Eggs	UPL
<i>Linum lewisii</i>	Prairie Flax	UPL
<i>Lupinus sericeus</i>	Silky Lupine	UPL
<i>Madia glomerata</i>	Mountain Tarplant	FACU
<i>Medicago lupulina</i>	Black Medic	FACU
<i>Melilotus officinalis</i>	Yellow Sweet-Clover	FACU
<i>Mentha arvensis</i>	American Wild Mint	FACW
<i>Mimulus guttatus</i>	Seep Monkey-Flower	OBL
<i>Myosotis laxa</i>	Bay Forget-Me-Not	OBL
<i>Nasturtium officinale</i>	Watercress	OBL
<i>Orthocarpus tenuifolius</i>	Thin-leaved Owl's-clover	UPL
<i>Oxytropis deflexa</i>	Pendant-pod Locoweed	FACU
<i>Pascopyrum smithii</i>	Western-Wheat Grass	FACU
<i>Penstemon eriantherus</i>	Fuzzy-Tongue Penstemon	UPL
<i>Penstemon nitidus</i>	Wax-leaf Beardtongue	UPL
<i>Penstemon procerus</i>	Pincushion Beardtongue	FAC
<i>Penstemon strictus</i>	Rocky Mountain Penstemon	UPL
<i>Peritoma serrulata</i>	Rocky Mountain Beeplant	FACU
<i>Persicaria amphibia</i>	Water Smartweed	OBL
<i>Phacelia hastata</i>	Silverleaf Scorpion-weed	UPL
<i>Phalaris arundinacea</i>	Reed Canary Grass	FACW
<i>Phleum pratense</i>	Common Timothy	FAC
<i>Phlox muscoides</i>	Moss Phlox	UPL
<i>Plantago eriopoda</i>	Red-Wooly or Redwool Plantain	FACW
<i>Plantago major</i>	Great Plantain	FAC
<i>Poa ampla</i> (= <i>P. secunda</i> , <i>P. juncifolia</i> )	Big Bluegrass	FACU
<i>Poa compressa</i>	Flat-stem Bluegrass	FACU
<i>Poa palustris</i>	Fowl Blue Grass	FAC
<i>Poa pratensis</i>	Kentucky Blue Grass	FAC
<i>Poa secunda</i>	Curly Blue Grass	FACU
<i>Polemonium pulcherrimum</i>	Showy Jacob's-ladder	UPL
<i>Polygonum aviculare</i>	Yard Knotweed	FAC
<i>Polypogon monspeliensis</i>	Annual Rabbit's Foot Grass	FACW
<i>Potentilla anserina</i>	Silverweed	OBL
<i>Potentilla gracilis</i>	Graceful Cinquefoil	FAC
<i>Pseudoroegneria spicata</i>	Bluebunch Wheatgrass	UPL
<i>Puccinellia distans</i>	Spreading Alkali Grass	FACW
<i>Puccinellia nuttalliana</i>	Nuttall's Alkali Grass	FACW
<i>Pyrocoma integrifolia</i>	Goldenweed	UPL

**Table B1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2022.

Scientific Name	Common Name	WMVC Indicator Status <sup>(1)</sup>
<i>Ranunculus sceleratus</i>	Cursed Buttercup	OBL
<i>Ranunculus</i> sp.	Buttercup	N/A
<i>Ribes aureum</i>	Golden Currant	FAC
<i>Ribes irriguum</i>	Idaho Gooseberry	UPL
<i>Rorippa palustris</i>	Bog Yellow Cress	OBL
<i>Rumex crispus</i>	Curly Dock	FAC
<i>Rumex salicifolius</i>	Willow Dock	FACW
<i>Salix bebbiana</i>	Gray Willow	FACW
<i>Salix boothii</i>	Booth's Willow	FACW
<i>Salix exigua</i>	Narrow-Leaf Willow	FACW
<i>Salix geyerianna</i>	Geyer Willow	FACW
<i>Salix lasiandra</i>	Pacific Willow	FACW
<i>Salix lutea</i> (=S. <i>eriocephala</i> )	Yellow Willow	OBL
<i>Schedonorus pratensis</i>	Meadow False Rye Grass	FACU
<i>Schoenocrambe linifolia</i>	Plains Mustard	UPL
<i>Schoenoplectus tabernaernaemontani</i>	Soft-Stem Club-Rush	OBL
<i>Scirpus microcarpus</i>	Red-Tinge Bulrush	OBL
<i>Shephardia argentea</i>	Silver Buffalo-Berry	FACU
<i>Silene latifolia</i>	White Cockle/Campion	UPL
<i>Sisymbrium altissimum</i>	Tall Hedge-Mustard	FACU
<i>Sisymbrium loeselii</i>	Smallpod Tumble Mustard	UPL
<i>Sisyrinchium montanum</i>	Strict Blue-eyed Grass	FAC
<i>Solidago canadensis</i>	Canadian Goldenrod	FACU
<i>Solidago gigantea</i>	Late Goldenrod	FACW
<i>Sonchus arvensis</i>	Field Sow-Thistle	FACU
<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	UPL
<i>Stachys pilosa</i>	Hairy Hedge-Nettle	FACW
<i>Stellaria longipes</i>	Long-Stalk Starwort	FACW
<i>Symphyotrichum ascendens</i>	Western American-Aster	FACU
<i>Symphyotrichum ciliatum</i>	Alkali American-Aster	FACW
<i>Symphyotrichum falcatum</i>	Rough White Prairie American-Aster	FACU
<i>Symphyotrichum lanceolatum</i>	White Panicked American-Aster	OBL
<i>Tanacetum vulgare</i>	Common Tansy	FACU
<i>Taraxacum officinale</i>	Common Dandelion	FACU
<i>Thlaspi arvense</i>	Field Pennycress	UPL
<i>Tragopogon dubius</i>	Meadow Goat's-beard	UPL
<i>Trifolium hybridum</i>	Alsike Clover	FAC
<i>Trifolium longipes</i>	Long-Stalk Clover	FAC
<i>Trifolium pratense</i>	Red Clover	FACU
<i>Trifolium repens</i>	White Clover	FAC
<i>Typha latifolia</i>	Broad-Leaf Cat-Tail	OBL
<i>Valeriana edulis</i>	Tobacco-Root	FAC
<i>Verbascum thapsus</i>	Great Mullein	FACU
<i>Veronica americana</i>	American Brooklime or Speedwell	OBL

**Table B1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2022.

Scientific Name	Common Name	WMVC Indicator Status <sup>(1)</sup>
<i>Veronica anagallis-aquatica</i>	Blue Water Speedwell	OBL
<i>Veronica arvensis</i>	Corm Speedwell	FACU

<sup>1</sup> 2020 NWPL (USACE 2020)



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## APPENDIX C

### PROJECT AREA PHOTOGRAPHS

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MDT Wetland Mitigation Monitoring  
Silicon Mountain  
Butte Silver Bow County, Montana



## Silicon Mountain: Photo Point Photographs



Photo Point: 1. Photo 1: View of western edge of cell 1  
looking NW. Bearing: 333 degrees Year: 2015



Photo Point: 1. Photo 1: View of western edge of cell 1  
looking NW. Bearing: 333 degrees Year: 2022



Photo Point: 1. Photo 2: View of central portion of cell 1  
looking NE. Bearing: 26 degrees Year: 2015



Photo Point: 1. Photo 2: View of central portion of cell 1  
looking NE. Bearing: 26 degrees Year: 2022



Photo Point: 1. Photo 3: View of central portion of cell 1  
looking E. Bearing: 86 degrees Year: 2015



Photo Point: 1. Photo 3: View of central portion of cell 1  
looking E. Bearing: 86 degrees Year: 2022



## Silicon Mountain: Photo Point Photographs



Photo Point: 1. Photo 4: View of southern end of cell 1  
looking SE. Bearing: 166 degrees Year: 2015



Photo Point: 1. Photo 4: View of southern end of cell 1  
looking SE. Bearing: 166 degrees Year: 2022



Photo Point: 1. Photo 5: View of western side of cell 1  
looking SW. Bearing: 202 degrees Year: 2015



Photo Point: 1. Photo 5: View of western side of cell 1  
looking SW. Bearing: 202 degrees Year: 2022



Photo Point: 2. Photo 1: View of Sand Creek channel  
looking NE. Bearing: 40 degrees Year: 2015



Photo Point: 2. Photo 1: View of Sand Creek channel  
looking NE. Bearing: 40 degrees Year: 2022



## Silicon Mountain: Photo Point Photographs



Photo Point: 2. Photo 2: View outside cell 1 looking east.  
Bearing: 86 degrees Year: 2015



Photo Point: 2. Photo 2: View outside cell 1 looking east.  
Bearing: 86 degrees Year: 2022



Photo Point: 2. Photo 3: View of eastern portion of cell 1 looking SE.  
Bearing: 113 degrees Year: 2015



Photo Point: 2. Photo 3: View of eastern portion of cell 1 looking SE.  
Bearing: 113 degrees Year: 2022



Photo Point: 3. Photo 1: View of western edge of cell 4 looking NW.  
Bearing: 314 degrees Year: 2015



Photo Point: 3. Photo 1: View of western edge of cell 4 looking NW.  
Bearing: 314 degrees Year: 2022



## Silicon Mountain: Photo Point Photographs



Photo Point: 3. Photo 2: View of western side of cell 4 looking N. Bearing: 343 degrees Year: 2015



Photo Point: 3. Photo 2: View of western side of cell 4 looking N. Bearing: 343 degrees Year: 2022



Photo Point: 3. Photo 3: View across center of cell 4 looking NW. Bearing: 66 degrees Year: 2015



Photo Point: 3. Photo 3: View across center of cell 4 looking NW. Bearing: 66 degrees Year: 2022



Photo Point: 3. Photo 4: View of southern side of cell 4 looking SE. Bearing: 114 degrees Year: 2015



Photo Point: 3. Photo 4: View of southern side of cell 4 looking SE. Bearing: 114 degrees Year: 2022



## Silicon Mountain: Photo Point Photographs



Photo Point: 4. Photo 1: View of southern side of cell 5  
looking SW. Bearing: 220 degrees Year: 2015



Photo Point: 4. Photo 1: View of southern side of cell 5  
looking SW. Bearing: 220 degrees Year: 2022



Photo Point: 4. Photo 2: View across SE portion of cell 5  
looking W. Bearing: 268 degrees Year: 2015



Photo Point: 4. Photo 2: View across SE portion of cell 5  
looking W. Bearing: 268 degrees Year: 2022



Photo Point: 4. Photo 3: View across center of cell 5  
looking NW. Bearing: 321 degrees Year: 2015



Photo Point: 4. Photo 3: View across center of cell 5  
looking NW. Bearing: 321 degrees Year: 2022



## Silicon Mountain: Photo Point Photographs



Photo Point: 4.      Photo 4: View of eastern side of cell 5  
looking N.      Bearing: 24 degrees      Year: 2015



Photo Point: 4.      Photo 4: View of eastern side of cell 5  
looking N.      Bearing: 24 degrees      Year: 2022



Photo Point: 4.      Photo 5: View of eastern side of cell 5  
looking NE.      Bearing: 56 degrees      Year: 2015



Photo Point: 4.      Photo 5: View of eastern side of cell 5  
looking NE.      Bearing: 56 degrees      Year: 2022



Photo Point: 5.      Photo 1: View of north end of cell 3  
looking SE.      Bearing: 145 degrees      Year: 2015



Photo Point: 5.      Photo 1: View of north end of cell 3  
looking SE.      Bearing: 145 degrees      Year: 2022



## Silicon Mountain: Photo Point Photographs



Photo Point: 5. Photo 2: View of north end of cell 3  
looking NW. Bearing: 345 degrees Year: 2015



Photo Point: 5. Photo 2: View of north end of cell 3  
looking NW. Bearing: 345 degrees Year: 2022



Photo Point: 6. Photo 1: View of south end of cell 2  
looking NW. Bearing: 326 degrees Year: 2015



Photo Point: 6. Photo 1: View of south end of cell 2  
looking NW. Bearing: 326 degrees Year: 2022



Photo Point: 6. Photo 2: View of southeast side of cell 2  
looking N. Bearing: 352 degrees Year: 2015



Photo Point: 6. Photo 2: View of southeast side of cell 2  
looking N. Bearing: 352 degrees Year: 2022



## Silicon Mountain: Photo Point and Stream Photographs



Photo Point: 7. Photo 1: View of cell 6 looking east.  
Bearing: 95 degrees Year: 2015



Photo Point: 7. Photo 1: View of cell 6 looking east.  
Bearing: 95 degrees Year: 2022



Photo Point: 8. Photo 1: View of the south end of Sand Creek looking SW. Bearing: 213 degrees Year: 2015



Photo Point: 8. Photo 1: View of the south end of Sand Creek looking SW. Bearing: 213 degrees Year: 2022



Photo Point: 8. Photo 2: View across southern portion of Sand Creek looking NE. Bearing: 28 degrees Year: 2015



Photo Point: 8. Photo 2: View across southern portion of Sand Creek looking NE. Bearing: 28 degrees Year: 2022



## Silicon Mountain: Stream Point Photographs



Photo Point: 9. Photo 1: View of Sand Creek downstream of PP-8 looking SE. Bearing: 148 degrees Year: 2015



Photo Point: 9. Photo 1: View of Sand Creek downstream of PP-8 looking SE. Bearing: 148 degrees Year: 2022



Photo Point: 9. Photo 2: View of Sand Creek downstream of PP-9 looking N. Bearing: 220 degrees Year: 2015



Photo Point: 9. Photo 2: View of Sand Creek downstream of PP-9 looking N. Bearing: 220 degrees Year: 2022



Photo Point: 10. Photo 1: View of the channel/slopes under overpass looking NW. Bearing: 312 degrees Year: 2015



Photo Point: 10. Photo 1: View of the channel/slopes under overpass looking NW. Bearing: 312 degrees Year: 2022



## Silicon Mountain: Stream Point Photographs



Photo Point: 10. Photo 2: View of Sand Creek looking  
NE Bearing: 66 degrees Year: 2015



Photo Point: 10. Photo 2: View of Sand Creek looking  
NE Bearing: 66 degrees Year: 2022



Photo Point: 11. Photo 1: View of Sand Creek looking  
SE. Bearing: 144 degrees Year: 2015



Photo Point: 11. Photo 1: View of Sand Creek looking  
SE. Bearing: 144 degrees Year: 2022



Photo Point: 11. Photo 2: View of stream x-section 3  
looking S. Bearing: 178 degrees Year: 2015



Photo Point: 11. Photo 2: View of stream x-section 3  
looking S. Bearing: 178 degrees Year: 2022



## Silicon Mountain: Stream Point Photographs



Photo Point: 11. Photo 3: View downstream of stream x-section 3 looking NW. Bearing: 300 degrees Year: 2015



Photo Point: 11. Photo 3: View downstream of stream x-section 3 looking NW. Bearing: 300 degrees Year: 2022



Photo Point: 12. Photo 1: View SW across stream x-section 4. Bearing: 216 degrees Year: 2015



Photo Point: 12. Photo 1: View SW across stream x-section 4. Bearing: 216 degrees Year: 2022



Photo Point: 12. Photo 2: View W across stream x-section 4. Bearing: 284 degrees Year: 2015



Photo Point: 12. Photo 2: View W across stream x-section 4. Bearing: 284 degrees Year: 2022



## Silicon Mountain: Stream Point Photographs



Photo Point: 12. Photo 3: View west across Sand  
Creek channel. Bearing: 270 degrees Year: 2015



Photo Point: 12. Photo 3: View west across Sand Creek  
channel. Bearing: 270 degrees Year: 2022



Photo Point: 12. Photo 4: View NW of stream x-section 4.  
Bearing: 348 degrees Year: 2015



Photo Point: 12. Photo 4: View NW of stream x-section 4.  
Bearing: 348 degrees Year: 2022



Photo Point: 13. Photo 1: View SE of stream x-section 7.  
Bearing: 153 degrees Year: 2015



Photo Point: 13. Photo 1: View SE of stream x-section 7.  
Bearing: 153 degrees Year: 2021



## Silicon Mountain: Stream Point Photographs



Photo Point: 13. Photo 2: View NE of stream x-section 7.  
Bearing: 341 degrees Year: 2015



Photo Point: 13. Photo 2: View NE of stream x-section 7.  
Bearing: 341 degrees Year: 2022



Photo Point: 14. Photo 1: View of middle headcut  
looking south. Bearing: 178 degrees Year: 2015



Photo Point: 14. Photo 1: View of middle headcut  
looking south. Bearing: 178 degrees Year: 2022



Photo Point: 15. Photo 1: View of the eastern headcut  
looking S. Bearing: 189 degrees Year: 2015



Photo Point: 15. Photo 1: View of the eastern headcut  
looking S. Bearing: 189 degrees Year: 2022



## Silicon Mountain: Stream Point Photographs



Photo Point: 16. Photo 1: View of western headcut  
looking west. Bearing: 210 degrees Year: 2015



Photo Point: 16. Photo 1: View of western headcut  
looking west. Bearing: 210 degrees Year: 2022



Photo Point: 17. Photo 1: View of Sand Creek channel  
looking W. Bearing: 157 degrees Year: 2015



Photo Point: 17. Photo 1: View of Sand Creek channel  
looking W. Bearing: 157 degrees Year: 2022



Photo Point: 17. Photo 2: View of Sand Creek channel  
looking N. Bearing: 356 degrees Year: 2015



Photo Point: 17. Photo 2: View of Sand Creek channel  
looking N. Bearing: 356 degrees Year: 2022



## Silicon Mountain: Transect Photographs



Transect 1: Start  
Bearing: 305 degrees

Location: South end cell 2  
Year: 2015



Transect 1: Start  
Bearing: 305 degrees

Location: South end cell 2  
Year: 2022



Transect 1: End  
Bearing: 177 degrees

Location: North end of cell 3  
Year: 2015



Transect 1: End  
Bearing: 177 degrees

Location: North end of cell 3  
Year: 2022



## Silicon Mountain: Transect Photographs



Transect 2: Start      Location: E side of cell 4, look west  
Bearing: 285 degrees      Year: 2015



Transect 2: Start      Location: East side of cell 4, look west  
Bearing: 285 degrees      Year: 2022



Transect 2: End      Location: SW side of cell 4, look east  
Bearing: 106 degrees      Year: 2015



Transect 2: End      Location: SW side of cell 4, look E  
Bearing: 106 degrees      Year: 2022



## Silicon Mountain: Data Points



Data Point: DP01w  
Sand Creek channel.

Location: Veg Comm. 3 along  
Year: 2022



Data Point: DP01u  
Sand Creek channel.

Location: Veg Comm. 8 along  
Year 2022



Data Point: DP02w  
Year: 2022

Location: Wetland cell 2



Data Point: DP02u  
Year: 2022

Location: Veg Comm. 13



Data Point: DP03w  
Year: 2022

Location: Wetland Cell 3



Data Point: DP03u  
Year: 2022

Location: Veg Comm. 16



## Silicon Mountain: Data Points



Data Point: DP04w  
cell 4.

Location: Constructed wetland  
Year: 2022



Data Point: DP04u  
Year: 2022

Location: Veg Comm. 13.



Data Point: DP05w  
cell 5.

Location: Constructed wetland  
Year: 2022



Data Point: DP05u  
Year: 2022

Location: Veg Comm. 13.



## Silicon Mountain: Data Points



Data Point: DP06w  
cell 6.

Location: Constructed wetland  
Year: 2022



Data Point: DP06u  
Year: 2022

Location: Veg Comm. 13.



Data Point: DP07-w  
Year: 2022

Location: Wetland cell 1.



Data Point: DP07-u  
Year: 2022

Location: Veg Comm. 9.



## Silicon Mountain: Data Points



Data Point: DP08w  
cell 13.

Location: Constructed wetland  
Year: 2022



Data Point: DP08u  
Year: 2022

Location: Veg Comm. 10.



Data Point: DP09w  
wetland cell 1.

Location: South of constructed  
Year: 2022



Data Point: DP09u  
Year: 2022

Location: Veg Comm 10.



Data Point: DP10w  
Location: Along Sand Creek  
Channel, at south end of project area.  
Year: 2022



Data Point: DP10u  
Year: 2022

Location: Veg Comm. 5.



## Silicon Mountain: Cross-Section Photographs



Cross-section 1: At center looking upstream.  
Year: 2017



Cross-section 1: At center looking upstream.  
Year: 2022



Cross-section 1: At center looking downstream.  
Year: 2017



Cross-section 1: At center looking downstream.  
Year: 2022



Cross-section 2: At center looking upstream.  
Year: 2017



Cross-section 2: At center looking upstream.  
Year: 2022



## Silicon Mountain: Cross-Section Photographs



Cross-section 2: At center looking downstream.  
Year: 2017



Cross-section 2: At center looking downstream.  
Year: 2022



Cross-section 3: At center looking upstream.  
Year: 2017



Cross-section 3: At center looking upstream.  
Year: 2022



Cross-section 3: At center looking downstream.  
Year: 2017



Cross-section 3: At center looking downstream.  
Year: 2022



## Silicon Mountain: Cross-Section Photographs



Cross-section 4: At center looking upstream.  
Year: 2017



Cross-section 4: At center looking upstream.  
Year: 2022



Cross-section 4: At center looking downstream.  
Year: 2017



Cross-section 4: At center looking downstream.  
Year: 2022



Cross-section 5: At center looking upstream.  
Year: 2017



Cross-section 5: At center looking upstream.  
Year: 2022



## Silicon Mountain: Cross-Section Photographs



Cross-section 5: At center looking downstream.  
Year: 2017



Cross-section 5: At center looking downstream.  
Year: 2022



Cross-section 6: At center looking upstream.  
Year: 2017



Cross-section 6: At center looking upstream.  
Year: 2022



Cross-section 6: At center looking downstream.  
Year: 2017



Cross-section 6: At center looking downstream.  
Year: 2022



## Silicon Mountain: Cross-Section Photographs



Cross-section 7: At center looking upstream.  
Year: 2017



Cross-section 7: At center looking upstream.  
Year: 2022



Cross-section 7: At center looking downstream.  
Year: 2017



Cross-section 7: At center looking downstream.  
Year: 2022



Cross-section 8: At center looking upstream.  
Year: 2017



Cross-section 8: At center looking upstream.  
Year: 2022





Cross-section 8: At center looking downstream.  
Year: 2017



Cross-section 8: At center looking downstream.  
Year: 2022



---

## APPENDIX D

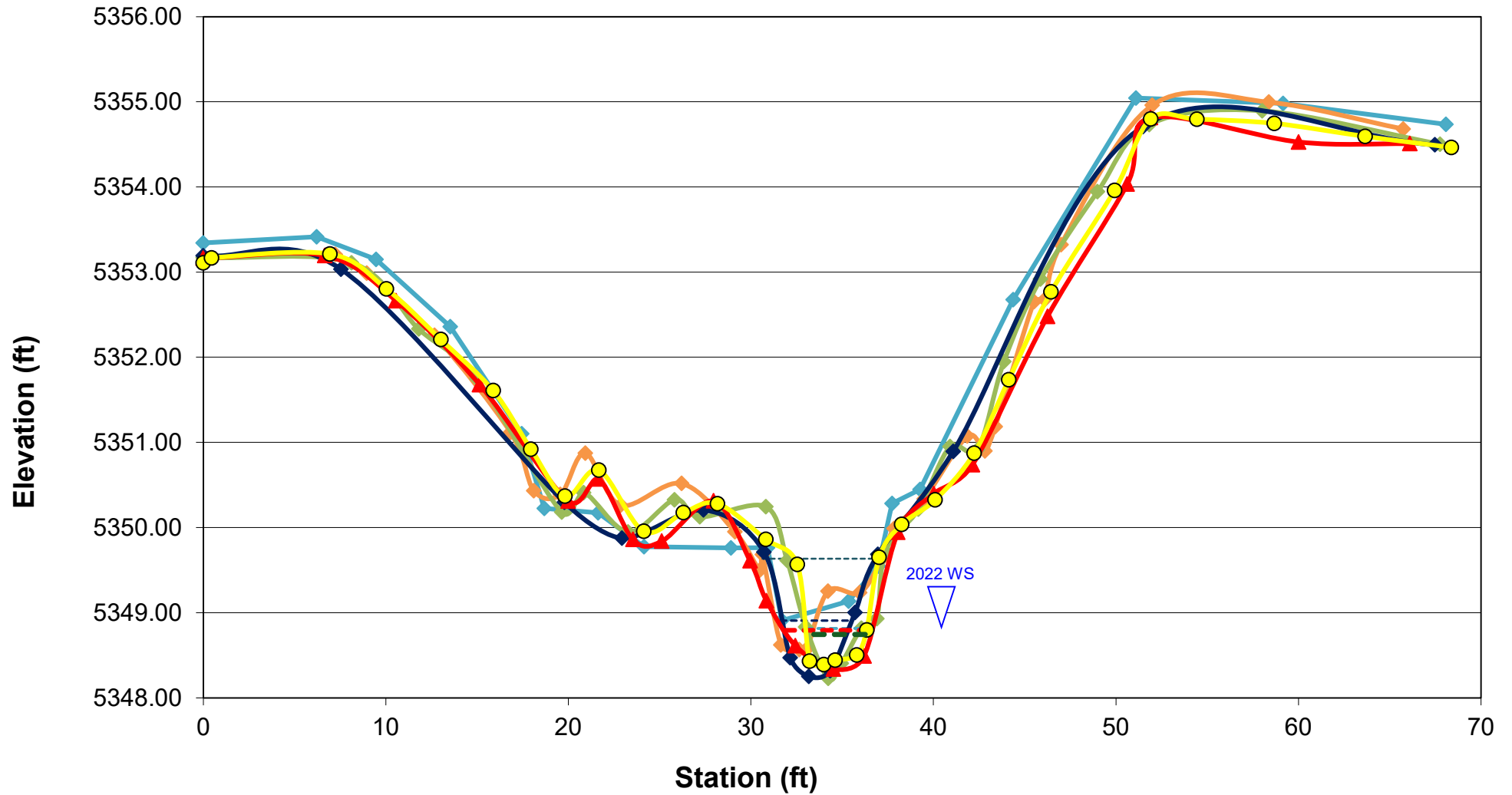
### Surveyed Stream Cross Sections

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MDT Wetland Mitigation Monitoring  
Silicon Mountain  
Butte Silver Bow County, Montana



# XS1

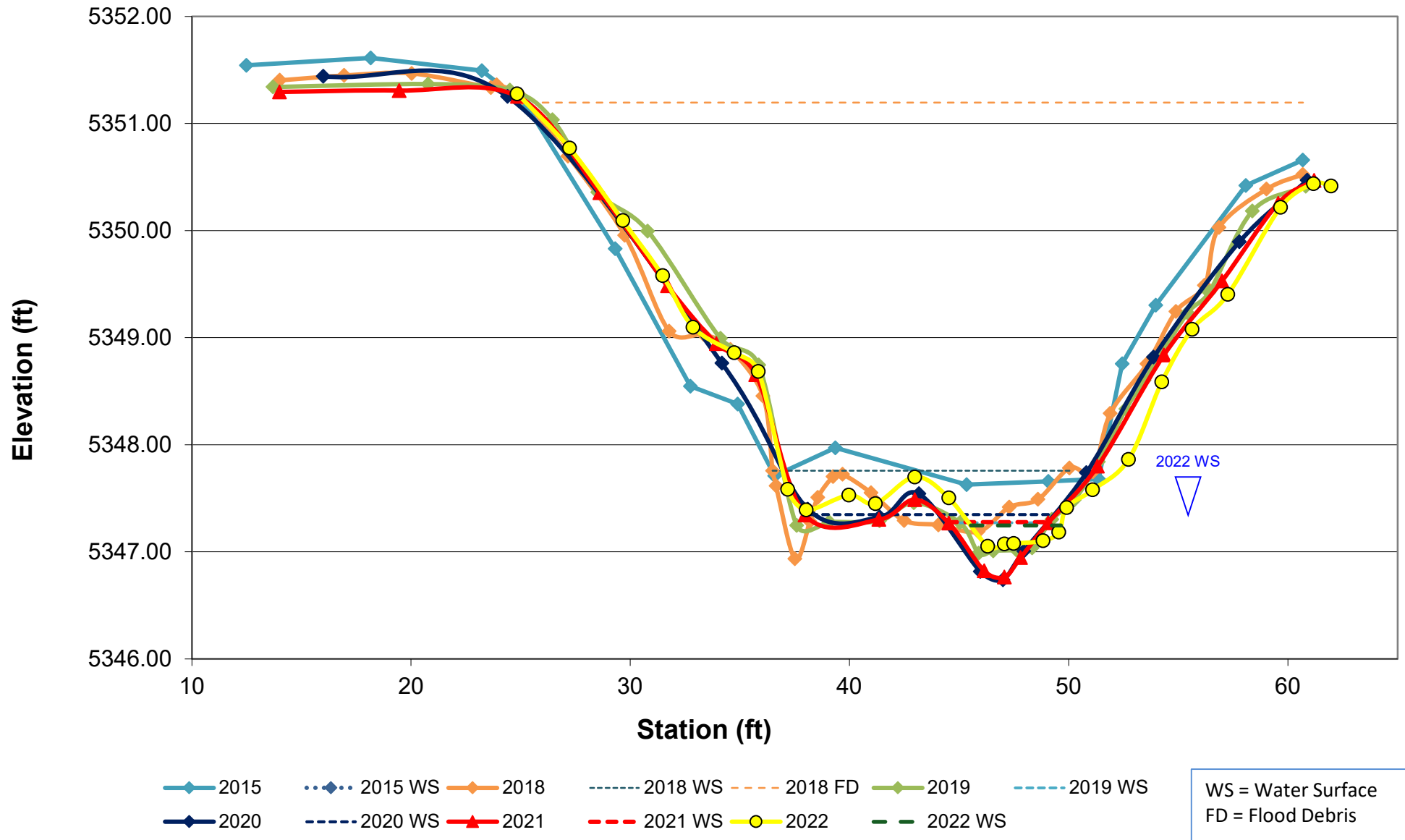


2015 2015 WS 2018 2018 WS 2019 2019 WS  
 2020 2020 WS 2021 2021 WS 2022 2022 WS

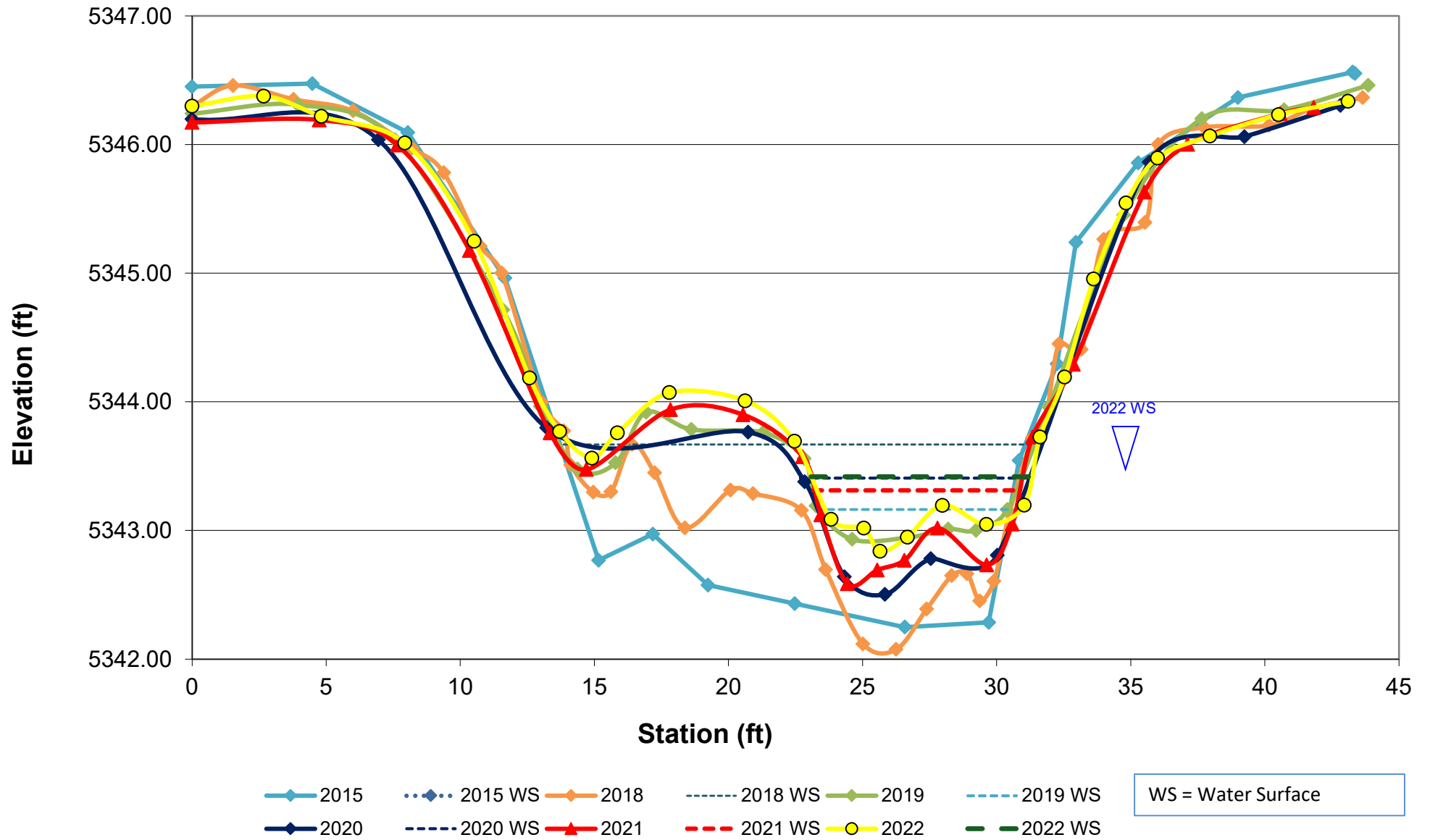
WS = Water Surface



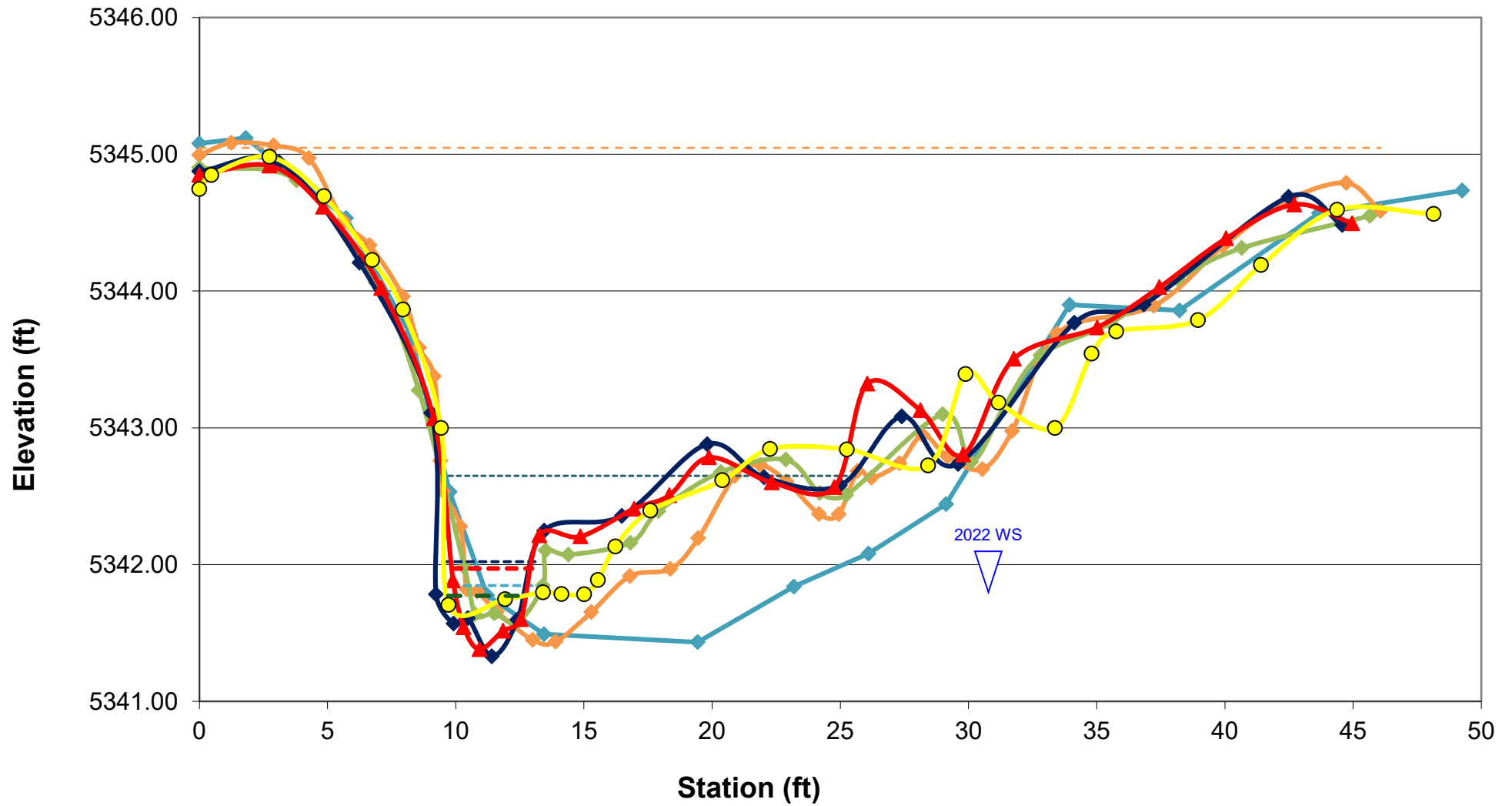
# XS2



# XS3



# XS4

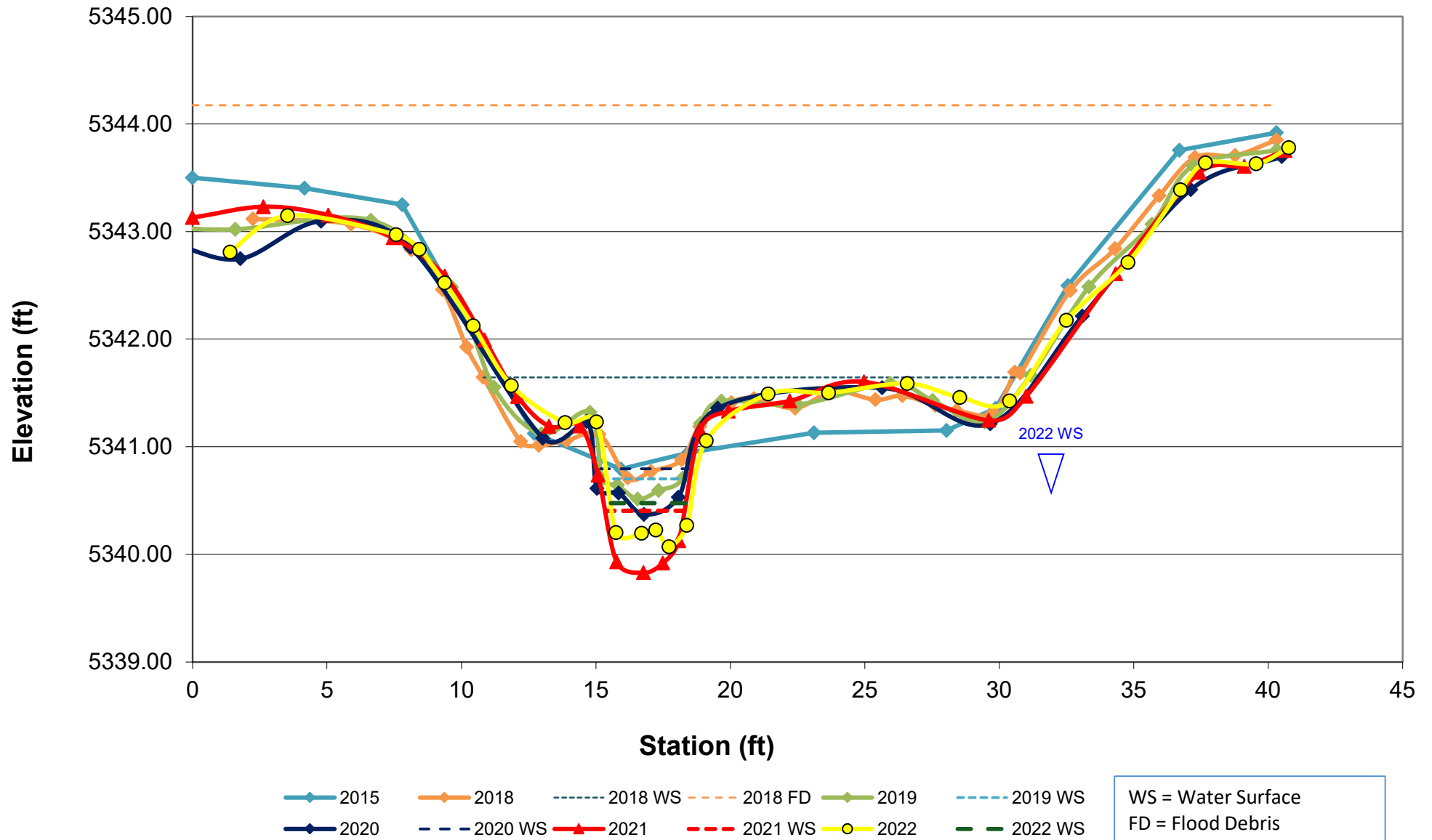


2015 2018 2018 WS 2018 FD 2019 2019 WS  
 2020 2020 WS 2021 2021 WS 2022 2022 WS

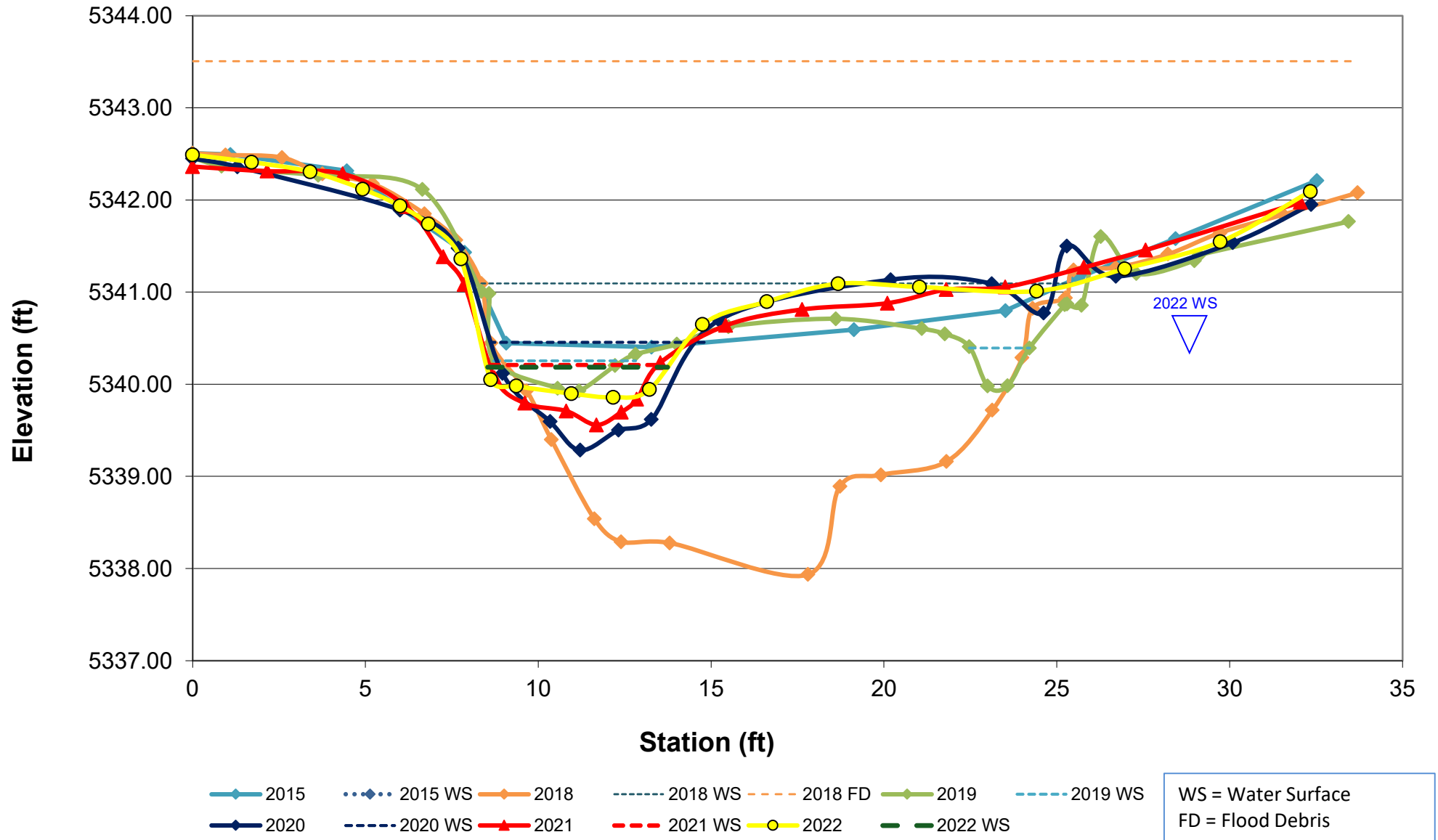
WS = Water Surface  
 FD = Flood Debris



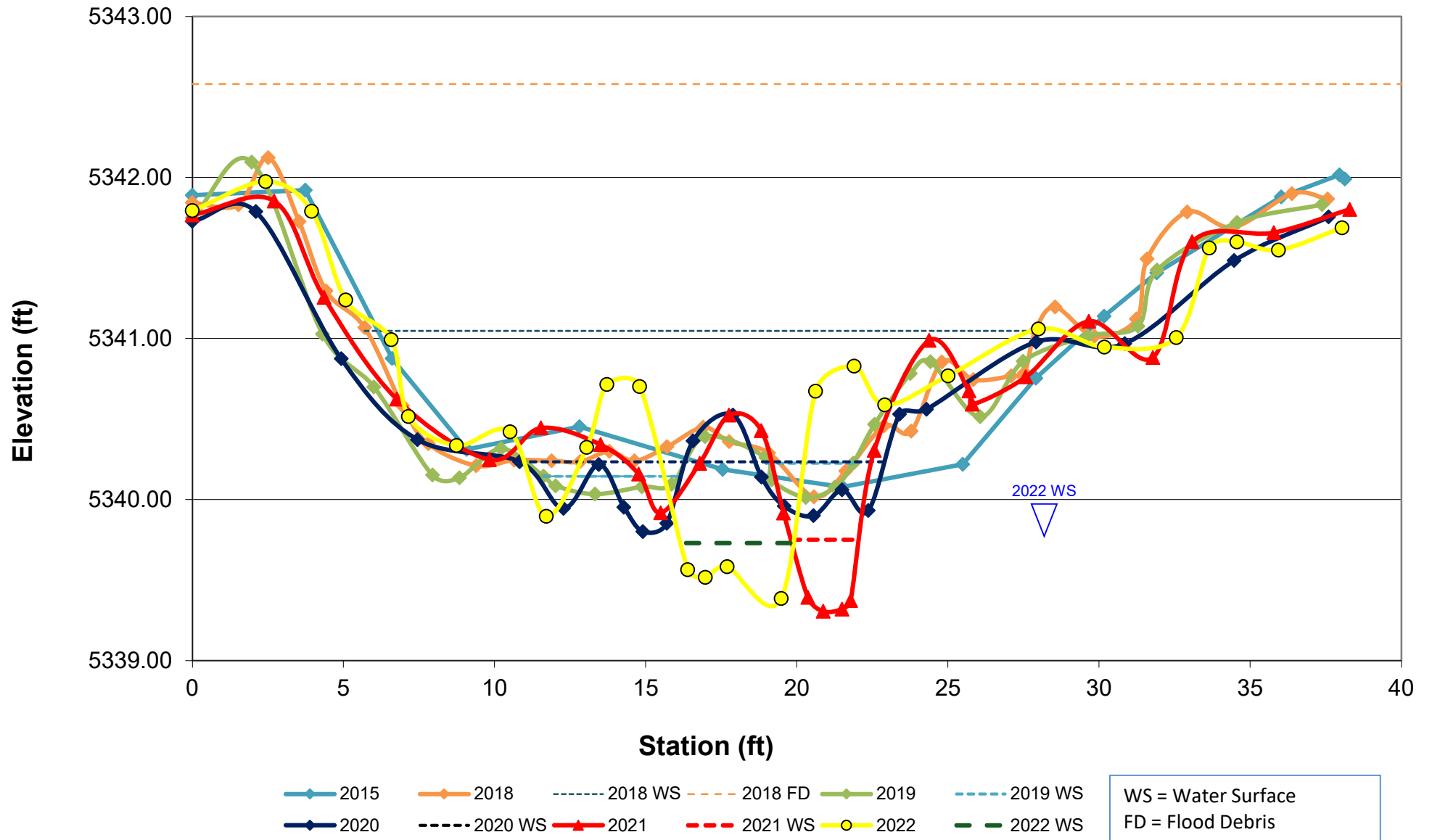
# XS5



# XS6



# XS7





# XS8

