**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:** 2023

**Years Monitored**: 9th 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:** July 6th-7th, 2023

**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 Port bridge/road realignment project 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 anticipated 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 reserve by MDT for transportation projects in the Butte area.

**Site Location:**

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

**County:** Butte Silver Bow **Nearest Town:** Rocker, 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 occurred in the Fall of 2023 and will continue into the future. There is a need to assess the structural integrity of the outlet for Cell #1..

**Anticipated Wetland Credit Acres:** 11.45 total, 4.33 assigned to BSBC, 7.12 assigned to MDT

**Wetland Credit Acres Generated to Date:** 14.36 total, 4.33 assigned to BSBC 10.03 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 2023 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 ≥ 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 were estimated at 4 percent absolute cover within wetland areas in 2023. |
| 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 and channel evolution. The stream is dynamically stable with evidence of natural sediment redistribution. |
| Stream Bank Vegetation | Banks are vegetated with a majority of deep-rooting riparian plant species that have root-stability indexes ≥ 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 2023, 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.<br>Wetland Cells 1, 5, wetland 13, and a small portion of cell 4 appear to support perennial inundation and exhibited open water and aquatic macrophytes. 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 3 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 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 | MDT has implemented weed-control efforts based upon annual monitoring efforts. Absolute cover from Montana state-listed noxious weeds was estimated at 7 percent across the entire site (wetlands & uplands). |

**Summary Data**

***Wetland Delineation*** – A total of 18.59 wetland acres were delineated within the Silicon Mountain project area in 2023 which is an increase of 0.66 acres since the 2022 monitoring event. Of the 18.59 wetland acres delineated, 9.31 acres are pre-existing wetlands that have been preserved and 9.28 acres are wetlands established since construction. Open water, as defined by recent USACE guidance (N. Green - personal communication, May 6, 2020), accounted for 3.07 acres of the mitigation site in 2023, which is a decrease of 0.45 acres since 2022. The decrease in open water is a result of increased emergent vegetation in Wetland Cells 1 and 4, and preservation Wetland Cell 13. Of the open water, 0.66 acres are associated with preservation Wetland cell 13, and 2.41 acres are associated with created wetlands (Table 2; Appendix A). Uplands accounted for approximately 26.92 acres of the mitigation site and 1.52 acres are represented by the restored Sand Creek channel (Figure A-3, Appendix A). In 2023, the Sand Creek stream channel acreage decreased as a result of channel narrowing from aggradation, wetland expansion, and precise mapping which removed some areas of upland from the stream channel corridor. No mudflats were observed at this site in 2023. Wetland delineation data forms can be found in Appendix B, and photos for data points in Appendix C.

**Table 2.** Upland, Wetland & Aquatic Habitat Acreage Delineated at the Silicon Mountain Site from 2016 to 2023.

| Habitat Type | 2016 Acreage | 2017 Acreage | 2018 Acreage | 2019 Acreage | 2020 Acreage | 2021 Acreage | 2022 Acreage | 2023 Acreage |
|---|---|---|---|---|---|---|---|---|
| Uplands | 31.80 | 31.30 | 30.50 | 30.10 | 28.95 | 26.84 | 26.95 | 26.92 |
| Establishment (Creation) Wetland | 6.30 | 6.30 | 7.10 | 7.50 | 6.04 | 8.42 | 8.62 | 9.28 |
| Establishment Open Water[(a)] | NA | NA | NA | NA | 2.92 | 2.65 | 2.86 | 2.41 |
| Preservation Wetland | 10.30 | 10.80 | 10.80 | 10.80 | 9.65 | 9.65 | 9.31 | 9.31 |
| Preservation Open Water[(a)] | NA | NA | NA | NA | 0.84 | 0.60 | 0.66 | 0.66 |
| Mudflat[(a)] | NA | NA | NA | NA | 0.00 | 0.24 | 0.00 | 0.00 |
| Stream Channel | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.52 |
| **Total Wetland & Aquatic Habitat** | **18.30** | **18.80** | **19.60** | **20.00** | **21.15** | **23.02** | **23.15** | **23.18** |

[(a)] Open water and mudflats were only mapped separately from wetlands beginning in 2020.

***Vegetation*** – A total of 181 plant species have been identified at the site from 2015 through 2023, with three new species reported at the site in 2023. The following 8 wetland and 7 upland community types were identified and mapped at the mitigation site in 2023 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 9 – *Juncus balticus*/*Elymus repens*
- 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 11 – *Typha latifolia*
- Wetland Type 14 – *Eleocharis palustris*/*Deschampsia caespitosa*
- Wetland Type 16 – *Juncus balticus*/*Eleocharis palustris*
- Wetland Type 17 – *Salix* spp.
- Wetland Type 18 – *Alopecurus arundinaceus*/*Juncus balticus*

Dominant vegetation community types and their boundaries remained very similar to those mapped in 2023 except that WT 11 expanded in all locations and the vegetation in wetland Cell 3 was reclassified from WT 16 to WT 18, which is a new community type added in 2023. This transition signifies a shift in dominance to more facultative species, which may indicate that the wetland hydrology in this cell has become somewhat diminished.

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).

Vegetation cover was estimated along two belt transects (T-1 and T-2) in 2023 (Figure A-2, Appendix A). T-1 is 564 feet long and intersects UT3, WT11, UT13, WT16, and WT18. The number of hydrophytic communities along the transect increased by 1 due to the vegetation community in cell 3 transitioning from WT 16 to WT 18. The total number of species observed along the transect increased by two to total 48. However, the number of upland species increased from 10 in 2022 to 22 in 2023, while the number of hydrophytic species decreased from 36 to 26. Overall, the percent of the transect comprised by wetland habitat remained relatively consistent at 85 percent, a one percent decrease from the previous year. The estimated total vegetative cover along the transect remained consistent with observations since 2019.

**Table 3**. Data Summary for T-1 From 2016 Through 2023 at the Silicon Mountain Site.

| Monitoring Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|
| Vegetation Community Transitions Along Transect | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Vegetation Communities Along Transect | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 |
| Hydrophytic Vegetation Communities Along Transect | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| Total Vegetative Species | 48 | 54 | 42 | 43 | 47 | 46 | 46 | 48 |
| Total Hydrophytic Species | 26 | 33 | 28 | 31 | 35 | 35 | 36 | 26 |
| Total Upland Species | 22 | 21 | 14 | 12 | 12 | 11 | 10 | 22 |
| Estimated % Total Vegetative Cover | 90 | 90 | 90 | 93 | 93 | 93 | 93 | 93 |
| Estimated % Unvegetated | 10 | 10 | 10 | 7 | 7 | 7 | 7 | 7 |
| % Transect Length Comprising Hydrophytic Vegetation Communities | 81.3 | 86 | 86 | 86 | 86 | 86 | 86 | 85 |
| % Transect Length Comprising Upland Vegetation Communities | 18.7 | 14 | 14 | 14 | 14 | 14 | 14 | 15 |
| % Transect Length Comprising Open Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Transect Length Comprising Mudflat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

T-2 is 219 feet long and intersects vegetation communities UT15, WT14, WT11, and UT3. Consistent with findings since 2019, T-2 intersects four vegetation communities, two of which are hydrophytic. Additionally, the proportion of the transect comprised of hydrophytic vegetation communities remains static at 90%. In 2023, a total of 35 species were observed along the transect. The number of upland species increased by 8, which reflects the diversifying upland around the wetland cell. The number of hydrophytic species decreased by 7, which may be related to the expansion of cattails (Typha latifolia), which tend to inhabit dense stands with low diversity. The estimated total vegetative cover remains consistent with observations in 2022 at 93%.

The site is currently achieving the success criteria established for noxious weed cover within both the wetland and upland buffer areas (Table 1). Priority 2B noxious weeds identified within the Silicon Mountain mitigation site included spotted knapweed (*Centaurea stoebe*), leafy spurge (*Euphorbia esula*), yellow toadflax (*Linaria vulgaris*), whitetop (*Cardaria draba*), and Canada thistle (*Cirsium arvense*) (See locations in Figure A-3 on page A-2).

- Canada thistle patches previously mapped remained mostly the same between 2022 and 2023, but several new occurrences were recorded across the site in 2023.
- Leafy spurge patches increased in the southern and central portions of the site, and the north side of wetland cell 5.
- Spotted knapweed patches remained more consistent between 2022 and 2023: a new patch was mapped to the west of wetland cell 6, while several existing patches continued to exist to the west of cell 6.

- Yellow toadflax, observed only as isolated individuals in previous years, increased in density and distribution in 2023, where one moderate-sized patch was found to the west of wetland cell 3, and three more patches at the west end of wetland cell 13
- Whitetop (*Cardaria draba*) was mapped in the northwestern portion of the project area, just south of the bike path.
- Black henbane (*Hyoscyamus niger*) was mapped for the 1st time in 2023, to the east of wetland cell 4. Black henbane is on the noxious weed lists for neighboring Beaverhead and Deer Lodge counties (Pokorny, 2017), but is not listed in Silver Bow County.

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 have survived through the 2023 survey, consistent with that observed in 2022. An estimated 85 percent of the installed willow cuttings have survived; young shoots arising from the installed cuttings ranged from 12 to 96 inches in length. The willow cuttings and other woody species are healthy and are becoming increasingly dense. Volunteer willows continue to establish along the stream channel and total shrub cover from the willow-dominated community types increased again in 2023.

**Table 4.** Data Summary for T-2 From 2016 Through 2023 at the Silicon Mountain Site.

| Monitoring Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|
| Vegetation Community Transitions Along Transect | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| Vegetation Communities Along Transect | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| Hydrophytic Vegetation Communities Along Transect | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| Total Vegetative Species | 21 | 47 | 27 | 35 | 37 | 35 | 34 | 35 |
| Total Hydrophytic Species | 10 | 24 | 17 | 19 | 26 | 26 | 26 | 19 |
| Total Upland Species | 11 | 23 | 10 | 16 | 11 | 9 | 8 | 16 |
| Estimated % Total Vegetative Cover | 45 | 55 | 72 | 87.5 | 85 | 87 | 89 | 87 |
| Estimated % Unvegetated | 55 | 45 | 28 | 12.5 | 15 | 13 | 11 | 13 |
| % Transect Length Comprising Hydrophytic Vegetation Communities | 88 | 88 | 91 | 90 | 90 | 90 | 90 | 90 |
| % Transect Length Comprising Upland Vegetation Communities | 12 | 12 | 9 | 10 | 10 | 10 | 10 | 10 |
| % Transect Length Comprising Open Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Transect Length Comprising Mudflat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

***Hydrology*** – Wetland hydrology was observed in numerous places across the Silicon Mountain mitigation site in 2023. Approximately 3.07 acres of surface water were observed in constructed wetland Cells 1, 2, 4, and 5 and preservation 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, with a few areas that exhibited ponded water on the downstream end of the channel. Indicators of wetland hydrology observed at the various wetland sample points included: surface water, high water table, saturation, algal mats, hydrogen sulfide odor, iron deposits, water-stained leaves, watermarks, and oxidized rhizospheres (Appendix B – Corps Data Forms). The only constructed wetland that showed a reduction in wetland hydrology over previous years was Cell 6.

US Geological Survey (USGS) groundwater monitoring data indicates that groundwater levels at this site experienced intra-annual fluctuations in 2023. 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). Since 2021 groundwater elevations have slowly decreased, with with the shallowest measurements having been 1.01 and 1.55 feet below ground surface in 2021

and 2022 respectively Groundwater monitoring data from 2023 indicates that groundwater levels in a portion of the site varied between 1.5-2.8 feet below the land surface elevation of 5,347 feet from May through September (Table 5; USGS, 2023).

**Table 5.** 2023 USGS Groundwater Well Data for the Silicon Mountain Mitigation Site.

| Date | Water Table Depth (feet below land surface) |
|---|---|
| 5/6/2023 | 1.49 |
| 7/26/2023 | 2.82 |
| 9/13/2023 | 2.41 |

***Soils*** – Soil pits were excavated at 22 sample points (11 sets of paired points) to comply with US Army Corps of Engineers wetland delineation requirements to determine the extent of hydric and upland soil development across the site in 2023 (Appendices A and B). Soil textures within wetland test pits ranged from coarse sand to mucky peat to clay. Hydric soil indicators were observed in all but one wetland test pit and included histic epipedon, depleted matrix, loamy mucky mineral, hydrogen sulfide odor, and redox dark surface. The wetland test pit (i.e. DP06W) lacked a hydric soil indicator, exhibited evidence of wetland hydrology and supported a hydrophytic vegetation community. Based on this evidence of a hydric moisture regime, this area is classified as wetland.

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. Comprehensive field observations for data points are provided in the USACE wetland determination data forms in Appendix B for both wetland and upland points.

***Wildlife*** – Eleven bird species were identified in 2023 at the Silicon Mountain site and included several wetland-dependent species. In addition to avian observations, a muskrat (*Ondatra zibethicus*) and common garter snake (*Thamnophis sirtalis*) were also observed (Appendix B).

***Stream Channel Monitoring*** – The annual survey of the reconstructed channel indicates that the Sand Creek channel is continuing to evolve (Appendix D). The majority of the changes within Sand Creek channel are related to the bed surface elevation. This statement is especially applicable for cross sections 1-3, which have displayed very little evidence of lateral migration over the monitoring period. In 2023 cross section 1 (XS1) appeared to have very similar dimensions as it did in 2015, even though previous year's survey data indicated that it has both downcut and re-filled by approximately 1 foot throughout the monitoring period. The thalweg at cross section 2 (XS2) was approximately 0.5 feet deeper in 2023 than it was in 2015 and it has shifted toward the right bank. The channel showed minor amounts of aggradation on the left side of XS2. Cross section 3 (XS3) has gradually aggraded by 1-2.5 feet since 2015 and the deepest parts of the channel have become narrower. Additionally, sediment was deposited along XS3 between 2022 and 2023.

Cross sections 4-7, all located in the middle of the project area, have displayed the most evidence of lateral migration over the monitoring period. The deepest part of the channel has become deeper at cross section 4 (XS4) and the thalweg has shifted slightly toward the left bank as the right side of the channel has aggraded by 1-2 feet. Over the last few years, the right bank at XS4 has been gradually eroding and the slope is becoming more gradual. The deepest part of the channel at cross section 5 (XS5) has also downcut by approximately 1 foot, while both the right and left sides of the channel have aggraded by approximately 0.5 feet. In 2023, the upper portion of the right bank at XS5 appeared to have migrated laterally by 2-3 feet. Cross section 6 (XS6) has been relatively dynamic over the monitoring period, periodically exhibiting cut-and-fill cycles, a shifting thalweg, and aggradation on the right side of the channel. Between the 2022 and 2023

monitoring events, nearly 0.8 feet of sediment were deposited on the right side of the channel. The channel form at cross section 7 (XS7) has also been dynamic over the last several years, with the thalweg shifting from the center to the right side of the channel and sediment deposition has been observed in different locations in different monitoring years. Finally, the channel form at cross section 8 (XS8) has remained relatively stable across all monitoring years.

Although several of the monitored cross sections have exhibited changes in channel form over time, none of these observations are concerning. Almost all observed channel form evolution has occurred between the constructed streambanks, and the top of bank locations have remained mostly static. The re-distribution of sediment within the stream channel and migration of the thalweg are natural processes and indicate that the stream is functioning appropriately as designed.

***Riparian Vegetation Monitoring -*** In 2023, 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 abundance along the stream banks with minor shifts in species dominance.

***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 2023 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 2023. Five distinct Assessment Areas (AA) were evaluated at the site in 2023; 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; Appendix B).

- AA1 – Established Wetland Cells 2, 3, and 4 are classified as Category II wetlands and received high ratings for General Wildlife Habitat, Sediment/Nutrient/Toxicant Removal, Production Export/Food Chain Support, and Recreation/Education Potential.

- AA2 – Established Wetland Cells 1 and 5 are classified as Category II wetlands and received a high rating for General Wildlife Habitat, Short- and Long-Term Surface Water Storage, Sediment/Shoreline Stabilization, Production Export/Food Chain Support, 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, Sediment/Shoreline Stabilization, Production Export/Food Chain Support, Groundwater Discharge/Recharge, and Recreation/Education Potential.

- AA4 - The ecological function provided by AA4 is generally lower than the other AAs due the man-made nature of the site in the footprint of the old roadway/bridge fill, 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, Sediment and Shoreline Stabilization, Production Export/Food Chain Support, Groundwater Discharge/Recharge, and Recreation/Education Potential.

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

| **Function and Value Parameters From the 2008 Montana Wetland Assessment Method** | **2023 AA1 (Established Wetland Cells 2, 3, and 4)** | **2023 AA2 (Established Wetland Cells 1 and 5)** | **2023 AA3 (Preservation Wetlands: Preservation Wetland Cells 5, 7, 12, & 13))** | **2023 AA4 (Established Wetland Cell 6)** | **2023 AA5 (Wetlands Established along Sand Creek and adjacent to preservation wetlands)** |
|---|---|---|---|---|---|
| Listed/Proposed Threatened & Endangered (T&E) Species Habitat | L (0.0) | L (0.0) | L (0.0) | L (0.0) | L (0.0) |
| Montana Natural Heritage Program Species (MTNHP) Habitat | M (0.5) | M (0.5) | M (0.5) | M (0.5) | M (0.7) |
| General Wildlife Habitat | H (0.9) | H (0.9) | H (0.9) | M (0.4) | H (0.9) |
| General Fish/Aquatic Habitat | N/A | N/A | N/A | N/A | M (0.6) |
| Flood Attenuation | N/A | N/A | N/A | N/A | M (0.7) |
| Short- and Long-Term, Surface-Water Storage | M (0.6) | H (0.8) | H (1.0) | L (0.2) | M (0.7) |
| Sediment/Nutrient/Toxicant Removal | H (1.0) | M (0.7) | H (1.0) | M (0.5) | M (0.7) |
| Sediment/Shoreline Stabilization | M (0.6) | H (1.0) | H (1.0) | N/A | H (1.0) |
| Production Export/Food Chain Support | H (0.9) | H (1.0) | H (0.8) | L (0.3) | H (1.0) |
| Groundwater Discharge/Recharge | M (0.7) | H (1.0) | H (1.0) | M (0.7) | H (1.0) |
| Uniqueness | M (0.5) | M (0.6) | M (0.6) | L (0.3) | M (0.6) |
| Recreation/Education Potential (bonus points) | H (0.2) | H (0.2) | H (0.2) | N/A | H (0.2) |
| **Actual Points/Possible Points** | **5.9/9.0** | **6.7/9.0** | **7.0/9.0** | **2.9/8.0** | **8.1/11.0** |
| **% of Possible Score Achieved** | **66%** | **74%** | **78%** | **36%** | **74%** |
| **Overall Category** | **II** | **II** | **II** | **III** | **II** |

## 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[a] for the Silicon Mountain Site.

| Mitigation Reach | Linear Feet | Sum of Mitigation Factors[(a)] | Mitigation Credits |
|---|---|---|---|
| Reach 1 | 3,250 | 3.20 | 10,400.00 |
| Reach 2 | 650 | 3.03 | 1,969.50 |
| **Total** | **3,900** | | **12,369.50** |

(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 2023, 18.59 acres of wetland were delineated at the Silicon Mountain site, all of which can be applied toward mitigation credits. The total wetland acreage delineated is comprised of 9.28 establishment wetland acres, and 9.31 acres of preservation wetlands. Additionally, 3.07 acres of open water habitat were delineated across the mitigation site, and the 50-foot upland buffer surrounding the wetland habitats provided an additional 13.74 acres toward the mitigation crediting. Applying the USACE-approved ratios to these acreage results in a total of 14.36 wetland mitigation credit acres generated in 2023, given that mitigation ratios for the 3.07 acres of open water have yet to be determined by the USACE (Tables 8 and 9). Of these 14.36 credit acres, 4.33 credits are allocated to Butte-Siver Bow County and the remaining 10.03 credit acres are allocated to MDT.

### *Functional Unit Credits*

Silicon Mountain Mitigation site generated a total of 42.96 functional unit credits for MDT in 2023. (Table 9). 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 (1st year of monitoring) compared to monitoring from 2021 through 2023*

| Compensatory Mitigation Type | Mitigation Area Description | Wetland Type[(b)] | Anticipated Mitigation Surface Area Acres | USACE-Approved Mitigation Ratios | Anticipated Mitigation Credit Acres | 2015 Delineated Acres | 2015 Mitigation Credit Acres | 2021 Delineated Acres | 2021 Mitigation Credit Acres | 2022 Delineated Acres | 2022 Mitigation Credit Acres | 2023 Delineated Acres | 2023 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 | 8.42 | 8.42 | 6.36 | 6.36 | 6.84 | 6.84 |
| Establishment (Creation) | Additional wetlands that have established surrounding preservation and riparian zone | Palustrine Emergent, Palustrine Scrub-shrub | 0.00 | 1:1 | 0.00 | - | - | - | - | 2.26 | 2.26 | 2.44 | 2.44 |
| Preservation | Existing Wetland Areas: Preservation Wetland Cells 5, 7, 12, and 13 | Palustrine Emergent, Scrub-Shrub | 10.06 | 4:1 | 2.52 | 10.24 | 2.56 | 9.65 | 2.41 | 9.31 | 2.33 | 9.31 | 2.33 |
| Upland Buffer [(c)] | 50-Foot-Wide Upland Buffer | N/A | 10.80 | 5:1 | 2.16 | 10.80 | 2.16 | 10.80 | 2.16 | 16.72 | 3.34 | 13.74 | 2.75 |
| Open Water[(a)] | Wetland Cells 1, 4, 5, & 13 | Lacustrine/ Palustrine Aquatic Bed | TBD | TBD | TBD | N/A | N/A | 3.24 | TBD | 3.51 | TBD | 3.07 | TBD |
| Mudflat[(a)] | Preserved Wetland 13 | Palustrine Aquatic Bed | TBD | TBD | TBD | N/A | N/A | 0.24 | TBD | 0.00 | N/A | 0.00 | N/A |
| **Total Acreage** | | | **28.70** | **NA** | **11.45** | **27.23** | **10.91** | **32.35** | **12.99** | **38.16** | **14.29** | **35.40** | **14.36** |
| **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** | | **8.66** | | **9.96** | | **10.03** |

(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.** 2023 MDT Wetland Functional Credits at the Silicon Mountain Site.

| Mitigation Area Description | 2023 Delineated Acres | Ratio | 2023 Mitigation Credit Acres | MWAM Actual Points (see Table 8) | Functional Credits (Mitigation Credit Acres × Actual Points) |
|---|---|---|---|---|---|
| Wetland Cell 3 (Establishment) | 0.68 | 1:1 | 0.68 | 5.9 | 4.01 |
| Wetland Cell 4 (Establishment) | 1.42 | 1:1 | 1.42 | 5.9 | 8.38 |
| Wetland Cell 5 (Establishment) | 0.48 | 1:1 | 0.48 | 6.7 | 3.22 |
| Riparian Wetlands (Establishment) | 1.96 | 1:1 | 1.96 | 8.1 | 15.88 |
| Wetland Cells 12 and 13 (Preservation) | 6.55 | 4:1 | 1.64 | 7.0 | 11.48 |
| **Total** | **11.09** | | 6.18 | 33.6 | **42.96** |

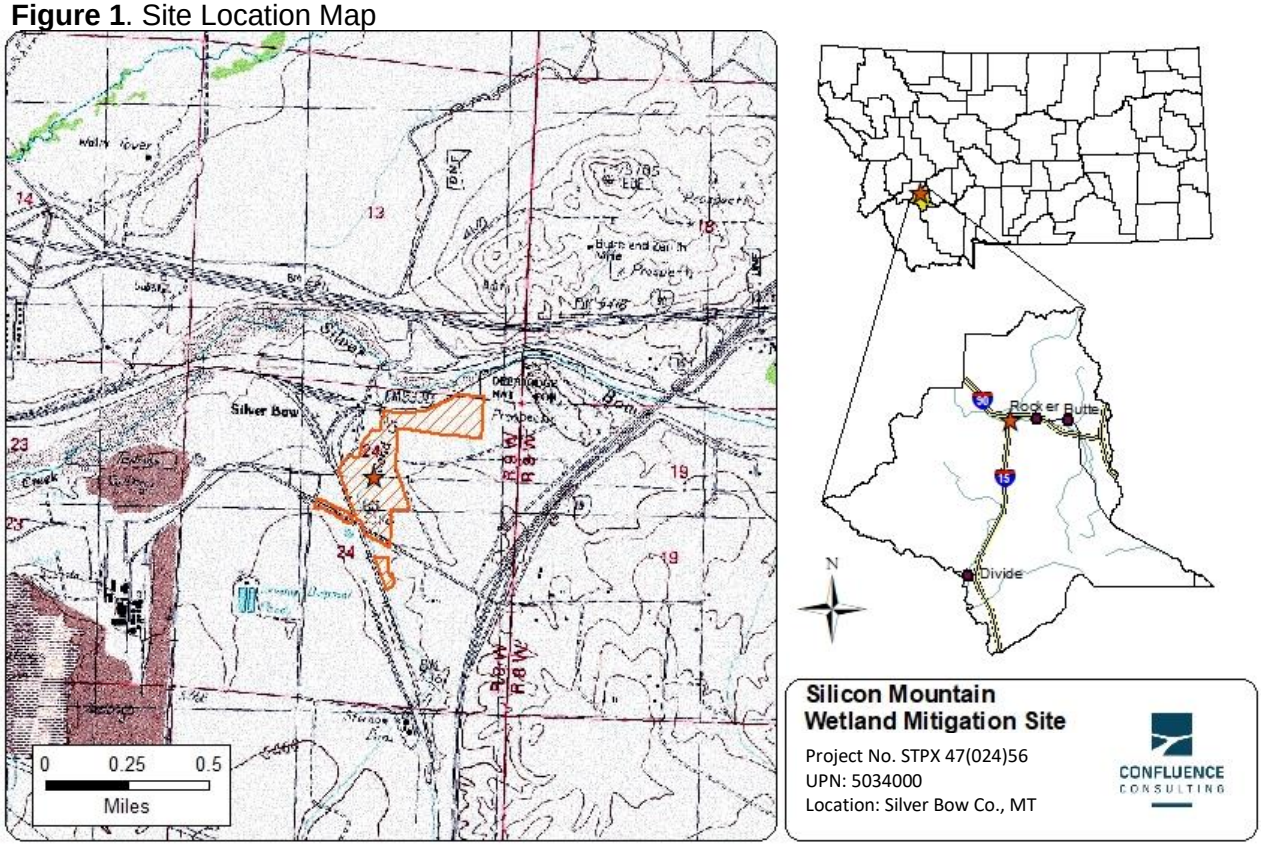
*Does not include Open Water Areas

## Conclusions

The Silicon Mountain Mitigation site is continuing to develop into a diverse stream and wetland ecosystem. The site met all established performance criteria and has exceeded the planned 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 morphology continues to evolve, though the location of the channel has remained static. Willow cuttings installed along the banks of Sand Creek continue to mature, 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 2024 to ensure that the site maintains 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 – 2023 Monitoring Activity Locations; Figure A-3 – 2023 Mapped Site Features; Figure A-4 – 2023 Wetland Credit Areas; and Figure A-5 – 2023 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

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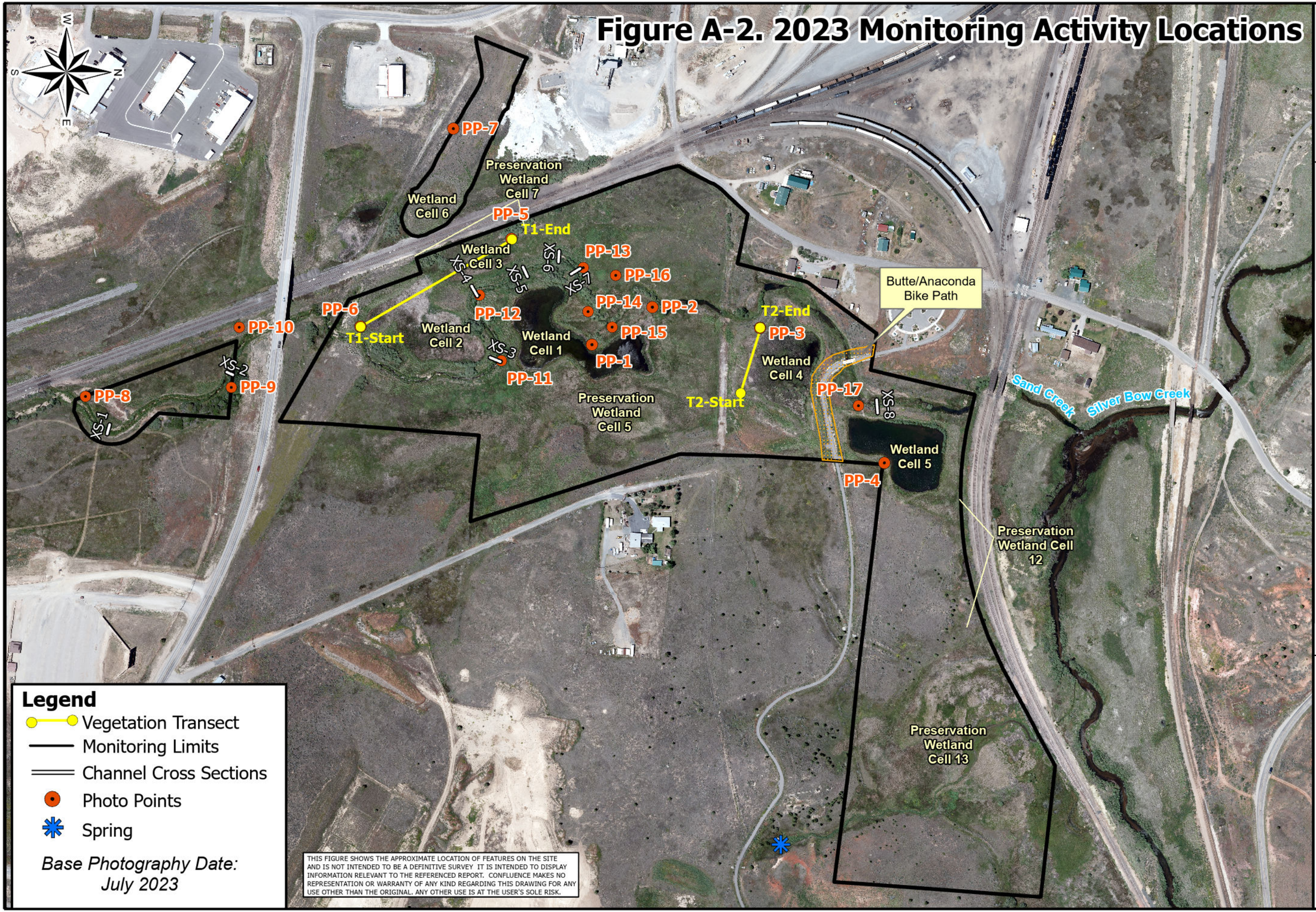
APPENDIX A
PROJECT AREA MAPS

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

# Figure A-2. 2023 Monitoring Activity Locations




CONFLUENCE CONSULTING

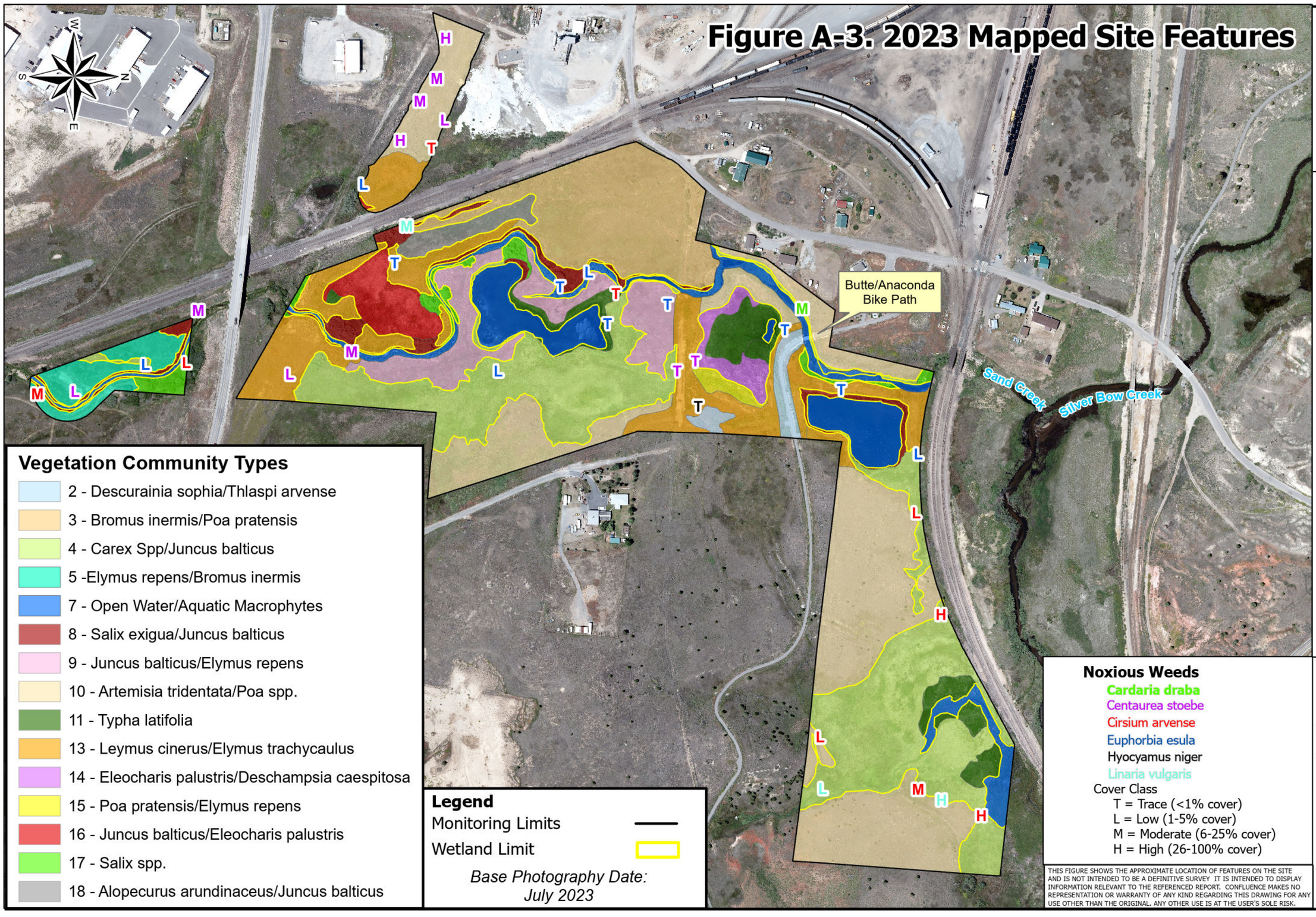
**Silicon Mountain Mitigation Site**
**2023 Monitoring Activity Locations**

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

| | |
|---|---|
| Project: | STPX STWD (813) |
| Location: | Silver Bow Co., Montana |
| Map Creation Date: | 01/29/2024 |
| Project Manager: | R McEldowney |
| Drawn By: | RJ |

File: X:\Project\MDT Wetland Mitigation 2\ArcGIS Pro\SiliconMountain\SiliconMountain.aprx

# Figure A-3. 2023 Mapped Site Features




CONFLUENCE CONSULTING

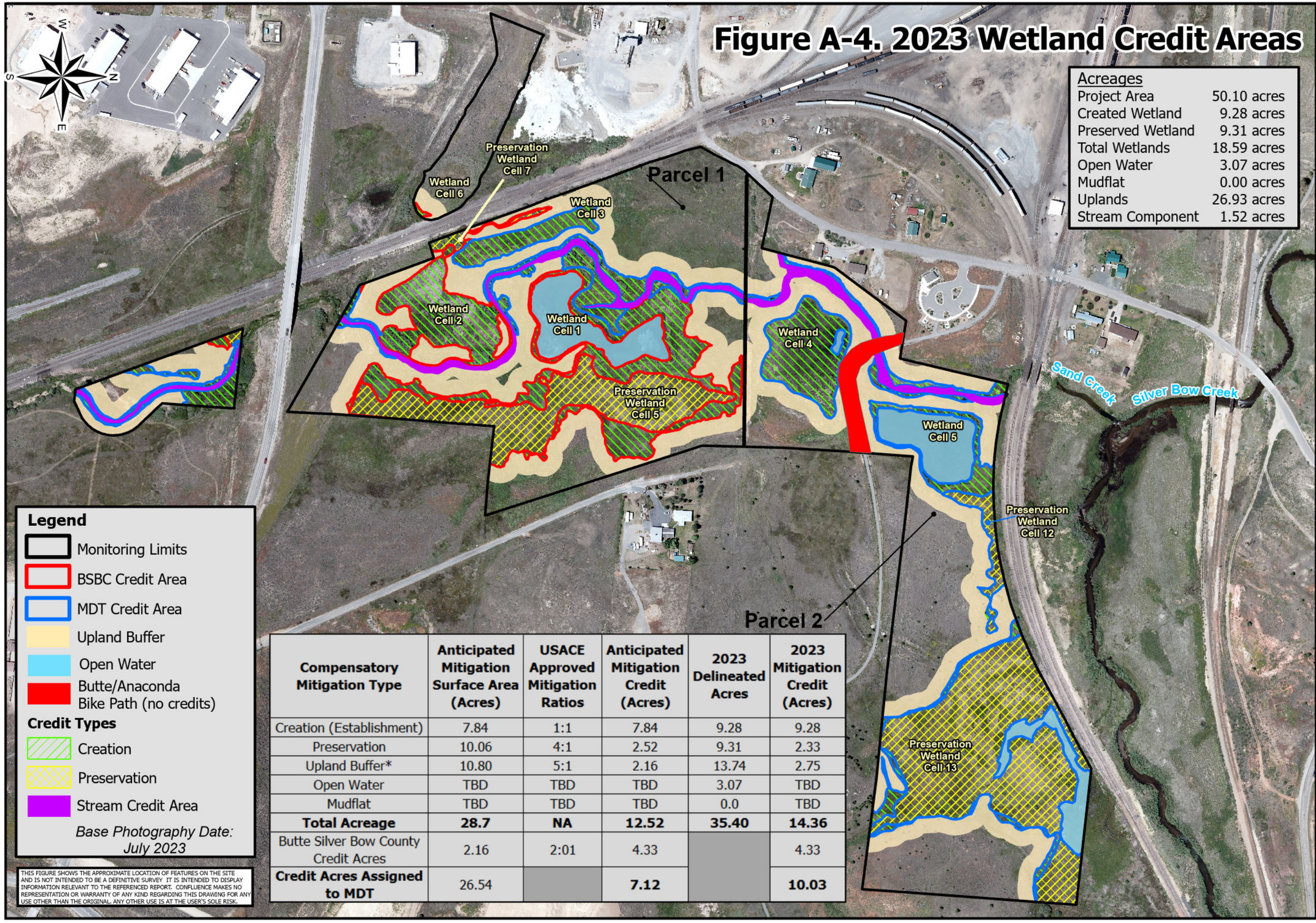
**Silicon Mountain Mitigation Site**
**2023 Mapped Site Features**

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

Project: STPX STWD (813)
Location: Silver Bow Co., Montana
Map Creation Date: 1/17/2024
Project Manager: R McEldowney
Drawn By: RJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Silicon Mountain\2023\SiliconMountain-aprx

# Figure A-4. 2023 Wetland Credit Areas




| Acreages | |
|---|---|
| Project Area | 50.10 acres |
| Created Wetland | 9.28 acres |
| Preserved Wetland | 9.31 acres |
| Total Wetlands | 18.59 acres |
| Open Water | 3.07 acres |
| Mudflat | 0.00 acres |
| Uplands | 26.93 acres |
| Stream Component | 1.52 acres |

**Legend**

- Monitoring Limits
- BSBC Credit Area
- MDT Credit Area
- Upland Buffer
- Open Water
- Butte/Anaconda Bike Path (no credits)

**Credit Types**

- Creation
- Preservation
- Stream Credit Area

*Base Photography Date: July 2023*

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.

| Compensatory Mitigation Type | Anticipated Mitigation Surface Area (Acres) | USACE Approved Mitigation Ratios | Anticipated Mitigation Credit (Acres) | 2023 Delineated Acres | 2023 Mitigation Credit (Acres) |
|---|---|---|---|---|---|
| Creation (Establishment) | 7.84 | 1:1 | 7.84 | 9.28 | 9.28 |
| Preservation | 10.06 | 4:1 | 2.52 | 9.31 | 2.33 |
| Upland Buffer* | 10.80 | 5:1 | 2.16 | 13.74 | 2.75 |
| Open Water | TBD | TBD | TBD | 3.07 | TBD |
| Mudflat | TBD | TBD | TBD | 0.0 | TBD |
| **Total Acreage** | **28.7** | **NA** | **12.52** | **35.40** | **14.36** |
| Butte Silver Bow County Credit Acres | 2.16 | 2:01 | 4.33 | | 4.33 |
| **Credit Acres Assigned to MDT** | 26.54 | | **7.12** | | **10.03** |

CONFLUENCE CONSULTING

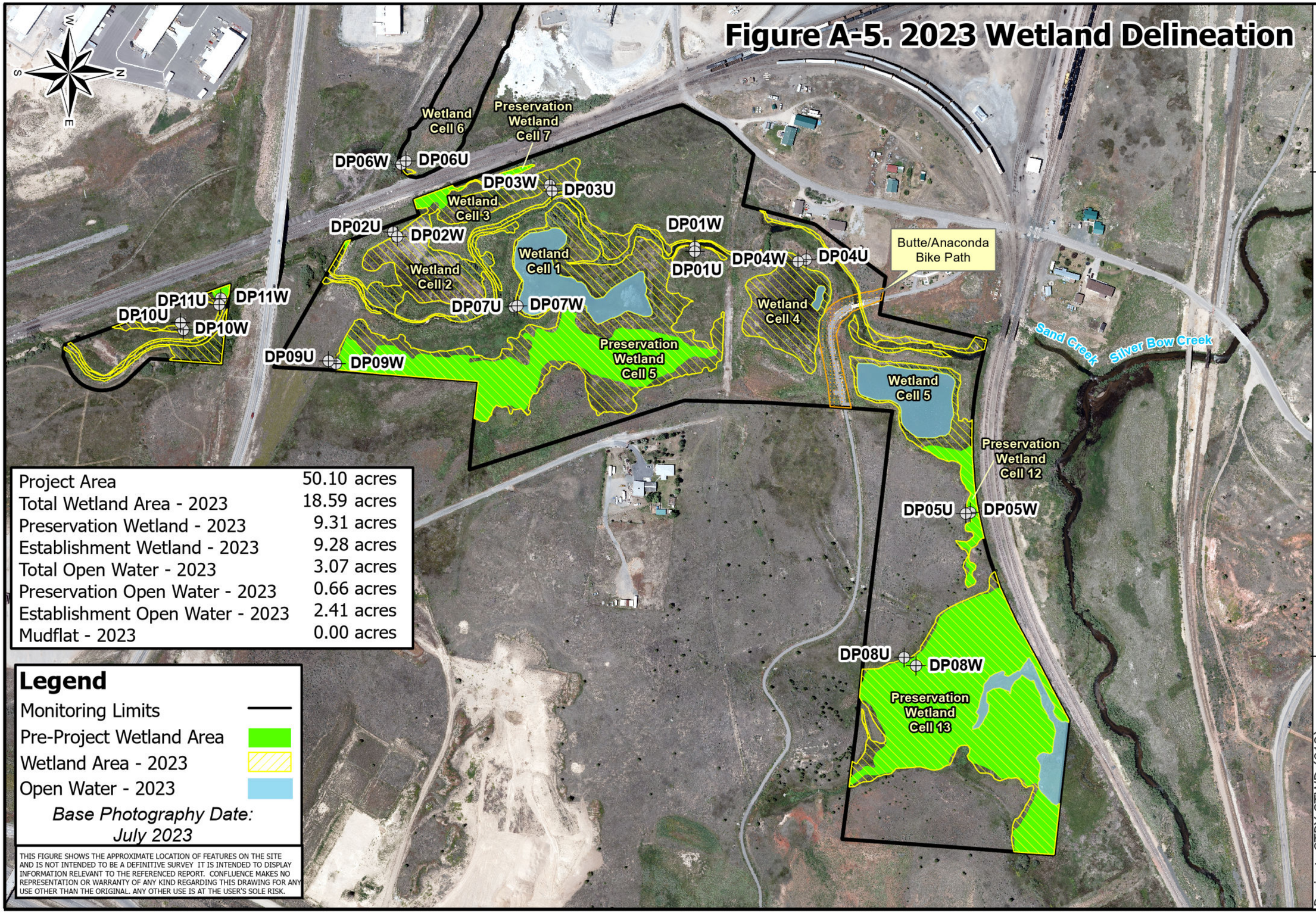
**Silicon Mountain Mitigation Site**
**2023 Wetland Credit Areas**

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

Project: STPX-STWD (813)
Location: Silver Bow Co., Montana
Map Creation Date: 1/29/2024
Project Manager: R McEldowney
Drawn By: RCJ

File: X:\Project\MDT Wetland Mitigation 2\ArcGIS Pro\SiliconMountain\SiliconMountain.aprx

# Figure A-5. 2023 Wetland Delineation




| | |
|---|---|
| Project Area | 50.10 acres |
| Total Wetland Area - 2023 | 18.59 acres |
| Preservation Wetland - 2023 | 9.31 acres |
| Establishment Wetland - 2023 | 9.28 acres |
| Total Open Water - 2023 | 3.07 acres |
| Preservation Open Water - 2023 | 0.66 acres |
| Establishment Open Water - 2023 | 2.41 acres |
| Mudflat - 2023 | 0.00 acres |

**Legend**

- Monitoring Limits
- Pre-Project Wetland Area
- Wetland Area - 2023
- Open Water - 2023

*Base Photography Date: July 2023*



CONFLUENCE CONSULTING

**Silicon Mountain Mitigation Site**
**2023 Wetland Delineation**

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

| | |
|---|---|
| Project: | STPX STWD (813) |
| Location: | Silver Bow Co., Montana |
| Date: | 1/29/2024 |
| Project Manager: | R McEldowney |
| Drawn By: | RJ |

APPENDIX B
MONITORING FORMS

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

## MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Silicon Mountain Assessment Date/Time 7/6/2023

Person(s) conducting the assessment: R Jones, S Weyant, K Kane

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: 9 #Visits in Year: 1

Size of Evaluation Area: 50.1 (acres)

Land use surrounding wetland:

Mix of commercial (railroad), residential, and parkland (bike path)

### 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: 9 %

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 wetland 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, geomorphic position, inundation on aerial imagery and saturation on aerial imagery.

#### Groundwater Monitoring Wells

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

| Well ID | Water Surface Depth (ft) |
|---|---|
| 455959112394201 | 2.41 |
| 455959112394201 | 2.82 |
| 455959112394201 | 1.49 |

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 covered ~80% of wetland cells 1 and 5. Shallow ponded water was present in ~10% of Cell 4, and ~10% of wetland 13. 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 that in addition to surface runoff during storm events, one of the water sources for cell 6 is a spring-fed wetland located north and upgradient of cell 6 (outside project area). Little of that water was ending up in cell 6 in 2023, 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:** 0.61

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agropyron cristatum | 1 | Artemisia tridentata | 1 |
| Bare Ground | 2 | Bassia scoparia | 1 |
| Bromus tectorum | 4 | Camelina microcarpa | 2 |
| Descurainia sophia | 1 | Elymus trachycaulus | 1 |
| Lepidium perfoliatum | 1 | Leymus cinereus | 1 |
| Pascopyrum smithii | 1 | Thlaspi arvense | 2 |

**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 and a second patch of was added in 2023 in the central portion of the site along the eastern boundary of the project area. As a result, this CT increased by 0.16 acres in 2023.

**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 |
| Euphorbia esula | 0 | Juncus balticus | 0 |
| Koeleria macrantha | 1 | Lactuca serriola | 0 |
| Leymus cinereus | 2 | Linaria vulgaris | 0 |
| 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. Slight increase in acreage of this CT (0.10 ac) in 2023 due to minor wetland contraction along the western portion of the project area.

**Community # 4 Community Type:** Carex spp. / Juncus balticus **Acres:** 11.42

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Calamagrostis canadensis | 1 | Carex aquatilis | 1 |
| Carex nebrascensis | 2 | Carex praegracilis | 1 |
| Carex praticola | 1 | Carex utriculata | 2 |
| Cirsium arvense | 1 | Deschampsia caespitosa | 2 |
| Euphorbia esula | 1 | Juncus balticus | 4 |
| Leymus cinereus | 0 | Mentha arvensis | 1 |
| Poa palustris | 1 | Poa pratensis | 2 |
| Potentilla anserina | 2 | Sisymbrium altissimum | 1 |
| Typha latifolia | 1 | | |

**Comments:**

PEM wetland community. Total acreage of this CT decreased by 0.24 acres between 2022 and 2023, though this CT expanded in the central portion of the site. The CT acreage decrease is due to wetland contraction in the northeastern portion of the site.

**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 | 0 | Pascopyrum smithii | 2 |
| Poa pratensis | 1 | Potentilla anserina | 0 |
| Salix exigua | 1 | | |

**Comments:**

Upland community south of the road alignment and overpass. No significant changes were observed in this CT in 2023.

**Community # 7 Community Type:** Open Water / Aquatic macrophytes **Acres:** 4.6

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, green | 3 | Beckmannia syzigachne | 1 |
| Eleocharis palustris | 1 | Glyceria grandis | 0 |
| 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 2023, open water areas decreased by approximately 0.81 acres, with a dramatic decrease observed in Cell 4 and preservation wetland 13, and to a lesser extent cell 1due to an increase in Typha latifolia. Open water also decreased in cell 5 due to shallower water depths creating a contraction of the open water cell.

**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 | 2 | Carex aquatilis | 1 |
| Carex nebrascensis | 1 | 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 | 5 |
| 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.

**Community # 9 Community Type:** Juncus balticus / Elymus repens **Acres:** 2.83

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis stolonifera | 1 | Alopecurus arundinaceus | 1 |
| Bromus inermis | 1 | Calamagrostis canadensis | 0 |
| Cirsium arvense | 1 | Elymus repens | 3 |
| Elymus trachycaulus | 1 | Epilobium ciliatum | 0 |
| Euphorbia esula | 1 | 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:**

The acreage of this wetland community decreased by approximately 0.2 acres between 2022 and 2023 due to the expansion of willows along the creek. In 2021 and 2022, this WT replaced upland UT 3 in several different areas.

**Community #** 10 **Community Type:** Artemisia tridentata / Poa spp. **Acres:** 11.86

| 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 | 2 |
| Poa pratensis | 2 | Poa secunda | 3 |
| Pseudoroegneria spicata | 0 | Symphyotrichum falcatum | 2 |

**Comments:**

Upland shrubland. This CT expanded in 2023 by 0.22 acres due to the contraction of the wetlands in the northeastern portion of the site.

**Community #** 11 **Community Type:** Typha latifolia / **Acres:** 1.89

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

**Comments:**

Typha latifolia continues to expand around cell 1 and in cell 4. The acreage of this CT increased by 0.57 acres between 2022 and 2023.

**Community #** 13 **Community Type:** Leymus cinereus / Elymus trachycaulus **Acres:** 5.66

| 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 | 1 | Festuca ovina | 1 |
| Hordeum jubatum | 1 | Juncus balticus | 1 |
| Lepidium draba | 0 | Leymus cinereus | 4 |
| Linaria vulgaris | 0 | 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. This CT has become dominant within the area previously delineated as wetland in cell 6. The acreage of this CT decreased by 0.46 between 2022 and 2023 due to a CT change in the central-eastern portion of the site.

**Community #** 14 **Community Type:** Eleocharis palustris / Deschampsia caespitosa **Acres:** 0.64

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis stolonifera | 1 | Alopecurus aequalis | 1 |
| Bare Ground | 0 | Beckmannia syzigachne | 1 |
| Carex nebrascensis | 1 | Carex pellita | 1 |
| Carex rosea | 0 | Carex utriculata | 1 |
| Deschampsia caespitosa | 2 | Eleocharis palustris | 3 |
| Epilobium ciliatum | 1 | Hordeum jubatum | 1 |
| Juncus balticus | 3 | Mentha arvensis | 1 |
| Open Water | 1 | Persicaria amphibia | 1 |
| Poa palustris | 1 | Potentilla anserina | 2 |
| Sonchus arvensis | 0 | Typha latifolia | 1 |

**Comments:**

Located along the eastern, southern, and western edges of wetland cell 4. This CT increased by 0.03 acres in 2023.

**Community #** 15 **Community Type:** Poa pratensis / Elymus repens **Acres:** 0.25

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

**Comments:**

Located east of wetland cell 4, on the upland slope above the cell. This CT decreased by 0.04 acres between 2022 and 2023.

**Community #** 16 **Community Type:** Juncus balticus / Eleocharis palustris **Acres:** 1.21

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

**Comments:**

Located in wetland cell 2 and cell 3. Large patch of bare ground in the NE corner of cell 2, likely due to a large snow drift or possibly some sort of contamination from the railroad. Due to increased bare ground, the total cover for this CT decreased in 2023.

**Community #** 17 **Community Type:** Salix spp. / **Acres:** 0.77

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alnus incana | 1 | Carex pellita | 1 |
| Carex utriculata | 1 | Juncus balticus | 2 |
| Salix bebbiana | 2 | Salix boothii | 2 |
| Salix exigua | 5 | Salix geyeriana | 2 |
| Salix lutea | 2 | Veronica americana | 1 |

**Comments:**

CT expanded by 0.32 acres in the areas surrounding the creek between 2022 and 2023.

**Community #** 18 **Community Type:** Alopecurus arundinaceus / Juncus balticus **Acres:** 0.66

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis stolonifera | 1 | Alopecurus arundinaceus | 4 |
| Bare Ground | 0 | Bromus inermis | 1 |
| Carex aquatilis | 0 | Carex nebrascensis | 2 |
| Carex utriculata | 1 | Cicuta douglasii | 2 |
| Cirsium arvense | 1 | Cyrtorhyncha cymbalaria | 1 |
| Deschampsia caespitosa | 1 | Eleocharis palustris | 0 |
| Elymus repens | 1 | Epilobium ciliatum | 0 |
| Euphorbia esula | 1 | Glyceria striata | 0 |
| Hordeum jubatum | 0 | Iris missouriensis | 0 |
| Juncus balticus | 4 | Leymus cinereus | 0 |
| Mentha arvensis | 0 | Phalaris arundinacea | 1 |
| Poa palustris | 0 | Poa pratensis | 3 |
| Potentilla anserina | 2 | Salix bebbiana | 0 |
| Salix exigua | 2 | Salix lutea | 0 |
| Scirpus microcarpus | 0 | Sonchus arvensis | 1 |
| Symphyotrichum ciliatum | 0 | Typha latifolia | 0 |

**Comments:**

New wetland community type created in 2023 to document the vegetation in wetland cell 3 previously documented as WT16. The vegetation community is now dominated by creeping meadow-foxtail.

***Total Vegetation Community Acreage*** **49.79**

## VEGETATION TRANSECTS

**Site:** Silicon Mountain Date: 7/6/2023

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

**Interval Data:**

Ending Station 13 Community Type: Leymus cinereus / Elymus trachycaulus

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

Ending Station 35 Community Type: Juncus balticus / Eleocharis palustris

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

Ending Station 59 Community Type: Typha latifolia /

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

Ending Station 264 Community Type: Juncus balticus / Eleocharis palustris

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

Ending Station 306 Community Type: Leymus cinereus / Elymus trachycaulus

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Astragalus cicer | 1 | Bare Ground | 0 |
| Bromus inermis | 3 | Camelina microcarpa | 0 |
| Elymus repens | 2 | Elymus trachycaulus | 1 |
| Euphorbia esula | 0 | Juncus balticus | 2 |
| Lepidium draba | 0 | Leymus cinereus | 4 |
| Linaria vulgaris | 1 | Poa pratensis | 2 |
| Thlaspi arvense | 1 | Trifolium longipes | 1 |

Ending Station 537 Community Type: Alopecurus arundinaceus / Juncus balticus

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis stolonifera | 1 | Alopecurus arundinaceus | 3 |
| Bare Ground | 0 | Carex aquatilis | 2 |
| Carex nebrascensis | 1 | Cicuta douglasii | 1 |
| Cyrtorhyncha cymbalaria | 1 | Deschampsia caespitosa | 1 |
| Eleocharis palustris | 2 | Epilobium ciliatum | 0 |
| Glyceria striata | 1 | Hordeum jubatum | 1 |
| Juncus balticus | 3 | Mentha arvensis | 0 |
| Phalaris arundinacea | 1 | Poa palustris | 1 |
| Poa pratensis | 1 | Potentilla anserina | 1 |
| Salix exigua | 0 | Scirpus microcarpus | 1 |
| Symphyotrichum ciliatum | 1 | Typha latifolia | 0 |

Ending Station 564 Community Type: Bromus inermis / Poa pratensis

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis stolonifera | 2 | Alopecurus arundinaceus | 1 |
| Bare Ground | 1 | Bromus inermis | 4 |
| Cirsium arvense | 0 | Elymus repens | 1 |
| Elymus trachycaulus | 1 | Euphorbia esula | 1 |
| Juncus balticus | 1 | Leymus cinereus | 0 |
| Linaria vulgaris | 0 | Phalaris arundinacea | 0 |
| Poa palustris | 1 | Poa pratensis | 2 |
| Potentilla anserina | 1 | Sonchus arvensis | 1 |
| Thlaspi arvense | 0 | Trifolium hybridum | 2 |

Transect Notes:

Very little standing water along the trasect in 2023. Minimal change in species presence since 2022 but cover was reduced for the majority of species and bare ground increased.

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

## Interval Data:

Ending Station 8 Community Type: Poa pratensis / Elymus repens

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis stolonifera | 2 | Astragalus cicer | 2 |
| Bare Ground | 2 | Bromus inermis | 2 |
| Cirsium arvense | 1 | Elymus repens | 1 |
| Elymus trachycaulus | 1 | Euphorbia esula | 0 |
| Festuca ovina | 2 | Hordeum jubatum | 1 |
| Leymus cinereus | 0 | Poa palustris | 2 |
| Poa pratensis | 2 | Potentilla anserina | 0 |
| 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 |
| Bare Ground | 2 | Beckmannia syzigachne | 0 |
| Carex rosea | 1 | Deschampsia caespitosa | 0 |
| Eleocharis palustris | 1 | Epilobium ciliatum | 0 |
| Hordeum jubatum | 1 | Juncus balticus | 4 |
| Mentha arvensis | 0 | Persicaria amphibia | 0 |
| Poa palustris | 2 | Potentilla anserina | 2 |
| Sonchus arvensis | 0 | Typha latifolia | 0 |

Ending Station 206 Community Type: Typha latifolia /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alopecurus aequalis | 0 | Bare Ground | 1 |
| Calamagrostis canadensis | 0 | Carex nebrascensis | 0 |
| Carex pellita | 0 | Carex rosea | 0 |
| Deschampsia caespitosa | 1 | Eleocharis palustris | 2 |
| Juncus balticus | 3 | Mentha arvensis | 0 |
| Potentilla anserina | 1 | 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 | 0 | Bare Ground | 1 |
| Bromus inermis | 2 | Deschampsia caespitosa | 0 |
| Elymus repens | 1 | Euphorbia esula | 0 |
| Juncus balticus | 1 | Lactuca serriola | 1 |
| Leymus cinereus | 2 | Poa pratensis | 2 |
| Poa secunda | 1 | Sonchus arvensis | 0 |
| Thlaspi arvense | 1 | | |

Transect Notes:

No open water observed along transect in 2023, as emergent vegetation now dominates the cell. Otherwise, minimal changes in species presence and cover since 2022.

## 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. In 2023 woody plant density had increased enough that it was difficult to identify the planted individual.

Silicon Mountain

## WILDLIFE

### Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Cylinder

How many? 3

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Nesting structures at the migitation site were installed by the local conservation group Montana Wetland and Waterfowl. Two abandoned duck nests were observed on the installed platforms.

| Species | #Observed | Behavior | Habitat |
|---|---|---|---|
| American Coot | 6 | L | |
| American Robin | 2 | L | |
| Canada Goose | 1 | FO | |
| Cinnamon Teal | 1 | L | |
| Common Goldeneye | 5 | L | |
| Killdeer | 7 | L, F | |
| Magpie | 5 | L | |
| Mourning Dove | 2 | L | |
| Red-winged Blackbird | 17 | L | |
| Ruddy Duck | 3 | L | |
| Sandhill Crane | 2 | FO | |
| Tree Swallow | 1 | FO | |
| Western Meadowlark | 1 | L | |
| Yellow-headed Blackbird | 12 | L | |

**Bird Comments**

Female ruddy duck with 6 ducklings observed in the Sand Creek channel within the site. American Coot also observed observed with 5 young.

**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 |
|---|---|---|---|---|---|
| Garter Snake | 1 | No | No | No | |
| Muskrat | 2 | No | No | No | |

**Wildlife Comments:**

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

Silicon Mountain

## 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:**

Silicon Mountain

## 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 2023, including pre-existing wetland areas, was 18.59 acres, which is an increase of 0.66 acres since 2022. |

### 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? Yes

If yes, do they need to be repaired? No

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

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

into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

| |
|---|
| The outlet to wetland cell 1 looks as though it has experienced some degree of erosion in the last year. |

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP01U

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 46.00034 Long: -112.662608 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: Not mapped

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✔

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes ____ No ✔ |
| Hydric Soil Present? | Yes ____ | No ✔ | |
| Wetland Hydrology Present? | Yes ____ | No ✔ | |

Remarks:

Upland sample point located at north end of wetland cell 1. Although a hydrophytic vegetation indicator is met, the data is not supported by wetland hydrology and has not developed hydric soils (1987 COE Wetland Delineation Manual).

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. Artemisia tridentata | 15 | ✔ | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 15 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Juncus balticus | 65 | ✔ | FACW |
| 2. Bromus inermis | 15 | | UPL |
| 3. Euphorbia esula | 5 | | UPL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 85 | = Total Cover | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 15.0

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 65 | x 2 = | 130 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 35 | x 5 = | 175 |
| Column Totals: | 100 (A) | | 305 (B) |

Prevalence Index = B/A = 3.05

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ____ No ✔

Remarks:

This data point is located in a sagebrush shrubland and does not demonstrate a hydrophytic vegetation indicator. Although Juncus balticus is a dominant species at this sample point, it is a resilient, rhizomatous grass that easily creeps out of adjacent wetlands and persists in the adjacent uplands.

## SOIL

Sampling Point: DP01U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 4 | 10YR 3/4 | 100 | | | | | Loam | Fine roots |
| 4 - 7 | 10YR 5/3 | 100 | | | | | Loamy Sand | |
| 7 - 16 | 7.5YR 4/2 | 100 | | | | | Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** _____ **No** ✔

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present?** **Yes** _____ **No** ✔

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP01W

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 46.000344 Long: -112.662664 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, riverine wetland. Data point is located in wetland cell 1 along the stream channel fringe approximately 3' lower than the paired upland data point.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 5 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Carex lasiocarpa | 60 | ✔ | OBL |
| 2. Juncus balticus | 15 | | FACW |
| 3. Poa pratensis | 10 | | FAC |
| 4. Elymus lanceolatus | 5 | | FACU |
| 5. Thlaspi arvense | 3 | | UPL |
| 6. Lactuca serriola | 2 | | FACU |
| 7. Mentha arvensis | 1 | | FACW |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 96 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 30 ft r) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 4

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 60 | x 1 = | 60 |
| FACW species | 16 | x 2 = | 32 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 7 | x 4 = | 28 |
| UPL species | 3 | x 5 = | 15 |
| Column Totals: | 96 (A) | | 165 (B) |

Prevalence Index = B/A = 1.72

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Evidence of hydrophytic vegetation includes a positive rapid test, a positive dominance test, and a prevalence index score less than 3.

## SOIL

Sampling Point: DP01W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 16 | 10YR 4/2 | 98 | 7.5YR 5/6 | 2 | C | M | Sandy Clay Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Prominent redoximorphic concentrations 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 Vis ble 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): 6

Water Table Present? Yes ✔ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Adjacent channel is six inches deep. Evidence of wetland hydrology includes saturation, surface water, high water table, inundation visible on aerial imagery, geomorphic position, a positive FAC-neutral test, and saturation visible on aerial imagery.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP02U

Investigator(s): R Jones, K Kane Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.997742 Long: -112.662697 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: Not mapped

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Upland data point near railroad tracks and adjacent to wetland cell 2.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Leymus cinereus | 35 | ✔ | FAC |
| 2. Festuca ovina | 20 | ✔ | UPL |
| 3. Elymus repens | 10 | | FAC |
| 4. Pascopyrum smithii | 5 | | FACU |
| 5. Thlaspi arvense | 5 | | UPL |
| 6. Poa pratensis | 5 | | FAC |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 25 | x 5 = | 125 |
| Column Totals: | 80 (A) | | 295 (B) |

Prevalence Index = B/A = 3.69

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

Data point is dominated by upland pasture grasses.

## SOIL

Sampling Point: DP02U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 6 | 10YR 4/3 | 100 | | | | | Loam | Gravelly |
| 6 - 14 | 10YR 4/2 | 100 | | | | | Sandy Clay Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: Hard pan

Depth (inches): 14

**Hydric Soil Present?** Yes _____ No ✔

Remarks:

No hydric soil indicators observed. Hard pan encountered at 14" prohibited further excavation of the soil pit.

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present?** Yes _____ No ✔

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP02W

Investigator(s): R Jones Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.997779 Long: -112.662644 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: Not mapped

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

Wetland sample point located within wetland cell 2. Although a hydrophytic vegetation indicator was not met, obligate and FACW species were present, soils in the profile were observed to be hydric, and several indicators of wetland hydrology were observed.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Euphorbia esula | 20 | ✔ | UPL |
| 2. Sonchus arvensis | 20 | ✔ | FACU |
| 3. Juncus balticus | 15 | ✔ | FACW |
| 4. Carex pellita | 10 | | OBL |
| 5. Potentilla anserina | 10 | | OBL |
| 6. Elymus repens | 10 | | FAC |
| 7. Hordeum jubatum | 5 | | FAC |
| 8. Mentha arvensis | 3 | | FACW |
| 9. Plantago major | 2 | | FAC |
| 10. Polygonum douglasii | 2 | | FACU |
| 11. | | | |
| | 97 | = Total Cover | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 3

**Dominance Test worksheet:**

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 20 | x 1 = | 20 |
| FACW species | 18 | x 2 = | 36 |
| FAC species | 17 | x 3 = | 51 |
| FACU species | 22 | x 4 = | 88 |
| UPL species | 20 | x 5 = | 100 |
| Column Totals: | 97 (A) | | 295 (B) |

Prevalence Index = B/A = 3.04

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

Vegetation at the data point is dominated by weedy upland species. However, the data point is supported by wetland hydrology and has developed hydric soil indicators. Additionally, the dominant species Sonchus arvensis is reported in Montana to grow in wet meadows, marshes, ditch banks, and irrigated fields (Lesica 2012).

## SOIL

Sampling Point: DP02W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 4 | 10YR 4/1 | 100 | | | | | Sandy Clay Loam | |
| 4 - 10 | 10YR 4/2 | 100 | | | | | Sandy Clay | |
| 10 - 16 | 10YR 4/2 | 97 | N 2.5/0 | 3 | C | M | Clay | Slight sulfidic odor |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Distinct redoximorphic concentrations common within the depleted matrix. Sulfidic odor observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes sulfidic odor, algal mats, geomorphic position, and saturation to the soil surface.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP03U

Investigator(s): R Jones, K Kane Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.999096 Long: -112.663284 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Sample point located near the northeast end of cell 3. Although a hydrophytic vegetation indicator is met, the data is not supported by wetland hydrology and has not developed hydric soils (1987 COE Wetland Delineation Manual).

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Leymus cinereus | 60 | ✔ | FAC |
| 2. Thlaspi arvense | 15 | | UPL |
| 3. Descurainia sophia | 5 | | UPL |
| 4. Sisymbrium altissimum | 5 | | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 85 | = Total Cover | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 15

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 60 | x 3 = | 180 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 20 | x 5 = | 100 |
| Column Totals: | 85 (A) | | 300 (B) |

Prevalence Index = B/A = 3.53

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Leymus cinereus is the dominant species at this data point.

## SOIL

Sampling Point: DP03U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 8 | 10YR 4/3 | 100 | | | | | Sandy Clay Loam | |
| 8 - 16 | 10YR 4/3 | 100 | | | | | Sandy Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

Soil is extremely dry. No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-10

Applicant/Owner: MDT State: Montana Sampling Point: DP03W

Investigator(s): R Jones Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.999074 Long: -112.663356 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, depressional wetland at the northeast end of cell 3. Data point is 2' lower in elevation than paired upland point, DP03U.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Alopecurus arundinaceus | 25 | ✔ | FAC |
| 2. Potentilla anserina | 15 | ✔ | OBL |
| 3. Erigeron peregrinus | 10 | ✔ | FACW |
| 4. Juncus balticus | 10 | ✔ | FACW |
| 5. Carex nebrascensis | 10 | ✔ | OBL |
| 6. Elymus repens | 7 | | FAC |
| 7. Deschampsia caespitosa | 5 | | FACW |
| 8. Cirsium arvense | 3 | | FAC |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 85 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 15

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 25 | x 1 = | 25 |
| FACW species | 25 | x 2 = | 50 |
| FAC species | 35 | x 3 = | 105 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 85 (A) | | 180 (B) |

Prevalence Index = B/A = 2.12

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Alopecurus arundinaceus and Potentilla anserina are the most prevalent hydrophytic species at this data point.

## SOIL

Sampling Point: DP03W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 10YR 2/1 | 100 | | | | | Sandy Clay | 1 |
| 5 - 11 | 10YR 4/2 | 95 | 10YR 4/4 | 5 | C | M | Silty Clay Loam | Moist |
| 11 - 16 | 10YR 4/3 | 97 | 7.5YR 4/4 | 3 | C | M | Clay Loam | Moist |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Distinct redoximorphic concentrations common within the depleted matrix. Soil is very moist.

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes geomorphic position and a positive FAC-neutral test. Soil is very moist.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP04U

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 46.001307 Long: -112.662564 Datum: NAD 83

Soil Map Unit Name: 58B - 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 _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Low terrace approximately 5' higher in elevation than paired wetland data point. Located near the west end of cell 4.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. Artemisia tridentata | 4 | ✔ | UPL |
| 2. Ericameria nauseosa | 1 | ✔ | UPL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 5 = Total Cover | | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Bromus tectorum | 55 | ✔ | UPL |
| 2. Bromus inermis | 15 | | UPL |
| 3. Juncus balticus | 5 | | FACW |
| 4. Poa secunda | 3 | | FACU |
| 5. Pascopyrum smithii | 2 | | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 20.0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 5 | x 2 = | 10 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 75 | x 5 = | 375 |
| Column Totals: | 85 (A) | | 405 (B) |

Prevalence Index = B/A = 4.76

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

Data point is dominated by Bromus tectorum.

## SOIL

Sampling Point: DP04U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 10YR 3/2 | 100 | | | | | Sandy Loam | |
| 5 - 16 | 10YR 4/3 | 100 | | | | | Sand | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed. Soils dry.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP04W

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 46.001238 Long: -112.662536 Datum: NAD 83

Soil Map Unit Name: 58B - 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 ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, depressional wetland. Sample point is located at west end of wetland cell 4.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. Salix exigua | 5 | ✔ | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 5 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Eleocharis palustris | 35 | ✔ | OBL |
| 2. Typha latifolia | 12 | | OBL |
| 3. Elymus repens | 8 | | FAC |
| 4. Juncus balticus | 5 | | FACW |
| 5. Alisma plantago-aquatica | 3 | | OBL |
| 6. Euphorbia esula | 2 | | UPL |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 65 | = Total Cover | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 35.0

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 50 | x 1 = | 50 |
| FACW species | 10 | x 2 = | 20 |
| FAC species | 8 | x 3 = | 24 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 2 | x 5 = | 10 |
| Column Totals: | 70 (A) | | 104 (B) |

Prevalence Index = B/A = 1.49

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Evidence of hydrophytic vegetation includes a positive rapid test, a positive dominance test, and a prevalence index less than 3.0.

## SOIL

Sampling Point: DP04W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 2.5Y 2.5/1 | 100 | | | | | Mucky Loam/Clay | Hemic/mineral |
| 5 - 16 | 2.5Y 2.5/1 | 100 | | | | | Mucky Peat | Hemic/mineral |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Loamy mucky mineral observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✔ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble 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): 2

Water Table Present? Yes ✔ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes surface water, high water table, saturation to the soil surface, sulfidic odor, and iron deposits. Water stained leaves and muck observed in the wetland around the data point.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP05U

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

Landform (hillslope, terrace, etc.): Riser Local relief (concave, convex, none): Convex Slope (%): 100

Subregion (LRR): E 44 Lat: 46.002768 Long: -112.659508 Datum: NAD 83

Soil Map Unit Name: 114B - Varney loam, 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 _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Data point is located approximately 3' higher in elevation than paired wetland point.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. Artemisia tridentata | 10 | ✔ | |
| 2. Juniperus communis | 2 | | UPL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 12 = Total Cover | | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Juncus balticus | 30 | ✔ | FACW |
| 2. Symphyotrichum falcatum | 20 | ✔ | FACU |
| 3. Centaurea stoebe | 5 | | UPL |
| 4. Alyssum alyssoides | 3 | | UPL |
| 5. Schedonorus pratensis | 3 | | FACU |
| 6. Thlaspi arvense | 3 | | UPL |
| 7. Comandra umbellata | 2 | | FACU |
| 8. Linum lewisii | 2 | | UPL |
| 9. Pascopyrum smithii | 2 | | FACU |
| 10. Poa pratensis | 2 | | FAC |
| 11. Equisetum laevigatum | 1 | | FACW |
| | 73 = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 27

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 31 | x 2 = | 62 |
| FAC species | 2 | x 3 = | 6 |
| FACU species | 27 | x 4 = | 108 |
| UPL species | 15 | x 5 = | 75 |
| Column Totals: | 75 (A) | | 251 (B) |

Prevalence Index = B/A = 3.35

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

Juncus balticus and Symphyotrichum falcatum are the dominant vegetation at this upland sample point.

## SOIL

Sampling Point: DP05U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 2 | 7.5YR 2.5/1 | 100 | | | | | Loam | Fine roots |
| 2 - 16 | 7.5YR 2/2 | 100 | | | | | Sandy Clay Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed. Soil dry.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP05W

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 46.002807 Long: -112.659523 Datum: NAD 83

Soil Map Unit Name: 11A - 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 ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, riverine wetland. Data point is located in ditch/depression south of railroad track at the south end of cell 5.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 5 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Carex utriculata | 25 | ✔ | OBL |
| 2. Juncus balticus | 20 | ✔ | FACW |
| 3. Calamagrostis stricta | 10 | | FACW |
| 4. Mentha arvensis | 5 | | FACW |
| 5. Potentilla anserina | 5 | | OBL |
| 6. Rumex occidentalis | 5 | | FACW |
| 7. Alopecurus arundinaceus | 2 | | FAC |
| 8. Equisetum laevigatum | 1 | | FACW |
| 9. Sisyrinchium idahoense | 1 | | FACW |
| 10. | | | |
| 11. | | | |
| | 74 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: 30 ft r) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 26

**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: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 30 | x 1 = | 30 |
| FACW species | 42 | x 2 = | 84 |
| FAC species | 2 | x 3 = | 6 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 74 (A) | | 120 (B) |

Prevalence Index = B/A = 1.62

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Evidence of hydrophytic vegetation includes a positive rapid test, a positive dominance test, and a prevalence index less than 3.0.

## SOIL

Sampling Point: DP05W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 11 | 10YR 2/2 | 95 | 7.5YR 5/6 | 5 | C | PL / M | Mucky Loam/Clay | Organic and mineral |
| 11 - 14 | N 4/0 | 40 | 5YR 4/6 | 7 | C | PL | Clay | Mixed matrix. Clay pockets |
| 11 - 14 | 7.5YR 4/2 | 43 | 7.5YR 5/8 | 10 | CS | M | Sand | Course sand. Mixed matrix. |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Loamy mucky mineral observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✔ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble 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): 6

Water Table Present? Yes ✔ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Surface water and iron deposits observed in the wetland around the data point at the same elevation. Evidence of wetland hydrology at the data point includes saturation, high water table, water stained leaves, geomorphic position, and a positive FAC-neutral test.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP06U

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.997827 Long: -112.663582 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: Not mapped

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✔

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Upland sample point adjacent to cell 6.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 5 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Leymus cinereus | 40 | ✔ | FAC |
| 2. Sonchus arvensis | 10 | | FACU |
| 3. Elymus trachycaulus | 5 | | FAC |
| 4. Melilotus officinalis | 5 | | FACU |
| 5. Poa pratensis | 3 | | FAC |
| 6. Pascopyrum smithii | 2 | | FACU |
| 7. Puccinellia nuttalliana | 1 | | FACW |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 66 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 30 ft r) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 34

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | 48 | x 3 = | 144 |
| FACU species | 17 | x 4 = | 68 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 66 (A) | | 214 (B) |

Prevalence Index = B/A = 3.24

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Leymus cinereus is the dominant species at this data point.

## SOIL

Sampling Point: DP06U

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

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

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed. Soils dry.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP06W

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.997769 Long: -112.663534 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: Not mapped

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No ____ | **Is the Sampled Area within a Wetland?** Yes ✔ No ____ |
| Hydric Soil Present? | Yes ✔ | No ____ | |
| Wetland Hydrology Present? | Yes ✔ | No ____ | |

Remarks:

PEM, depressional wetland. Data point is located in cell 6.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. Salix exigua | 15 | ✔ | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 15 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Juncus balticus | 40 | ✔ | FACW |
| 2. Leymus cinereus | 15 | ✔ | FAC |
| 3. Cirsium arvense | 5 | | FAC |
| 4. Thlaspi arvense | 5 | | UPL |
| 5. Elymus trachycaulus | 2 | | FAC |
| 6. Euphorbea esula | 2 | | UPL |
| 7. Potentilla anserina | 1 | | OBL |
| 8. Sisymbrium altissimum | 1 | | FACU |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 71 | = Total Cover | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 29

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 1 | x 1 = | 1 |
| FACW species | 55 | x 2 = | 110 |
| FAC species | 22 | x 3 = | 66 |
| FACU species | 1 | x 4 = | 4 |
| UPL species | 7 | x 5 = | 35 |
| Column Totals: | 86 (A) | | 216 (B) |

Prevalence Index = B/A = 2.51

**Hydrophytic Vegetation Indicators:**

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

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

**Hydrophytic Vegetation Present?** Yes ✔ No ____

Remarks:

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

## SOIL

Sampling Point: DP06W

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

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 10YR 2/2 | 98 | 7.5YR 4/6 | 2 | C | PL | Sandy Clay Loam | Dense fine roots. |
| 5 - 15 | 10R 4/6 | 15 | | | | | Sand | Coarse sand grains |
| 5 - 15 | 10YR 4/2 | 18 | 10YR 5/6 | 2 | C | M | Sandy Loam | |
| 5 - 15 | 5YR 5/3 | 63 | 10YR 6/6 | 2 | CS | M | Sand | Coarse sand |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes** ✔ **No** _____

Remarks:

This soil exhibits a mixed matrix in the lower layer. The pockets of fine textured soils in this profile are depleted and have developed concentrations, indicating a hydric moisture regime. Although no hydric soil indicators were observed, wetland hydrology was present, all dominant plant species were hydrophytic, and the wetland boundary had an abrupt edge (1987 COE Wetland Delineation Manual).

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 10

**Wetland Hydrology Present? Yes** ✔ **No** _____

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

Remarks:

Evidence of wetland hydrology includes saturation and a positive FAC-neutral test.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP07U

Investigator(s): R Jones, K Kane Section, Township, Range: S24 T3N R9W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 20

Subregion (LRR): E 44 Lat: 45.998809 Long: -112.661834 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Upland data point located approximately 3' higher in elevation than paired wetland data point.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Bromus inermis | 30 | ✔ | UPL |
| 2. Astragalus cicer | 20 | ✔ | UPL |
| 3. Cirsium arvense | 10 | | FAC |
| 4. Taraxacum officinale | 5 | | FACU |
| 5. Euphorbia esula | 5 | | UPL |
| 6. Poa pratensis | 3 | | FAC |
| 7. Juncus balticus | 2 | | FACW |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 75 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 25

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 2 | x 2 = | 4 |
| FAC species | 13 | x 3 = | 39 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 55 | x 5 = | 275 |
| Column Totals: | 75 (A) | | 338 (B) |

Prevalence Index = B/A = 4.51

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

No evidence of hydrophytic vegetation observed.

## SOIL

Sampling Point: DP07U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 7 | 10YR 3/2 | 100 | | | | | Sandy Clay Loam | |
| 7 - 17 | 10YR 4/3 | 95 | 10YR 5/8 | 3 | C | M | Sandy Clay | |
| 7 - 17 | | | N 2.5/0 | 2 | C | M | | Mn concentration |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes** _____ **No** ✔

Remarks:

Although concentrations were observed, the soil profile does not meet the requirements to qualify as a hydric soil indicator. Additionally, the data point is not supported by wetland hydrology and supports an upland vegetation community.

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes** _____ **No** ✔

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP07W

Investigator(s): R Jones Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.998837 Long: -112.661849 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

Wetland sample point located at southern edge of open water in cell 1.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Juncus balticus | 30 | ✔ | FACW |
| 2. Salix geyeriana | 15 | ✔ | FACW |
| 3. Cirsium arvense | 10 | | FAC |
| 4. Sonchus arvensis | 10 | | FACU |
| 5. Potentilla anserina | 5 | | OBL |
| 6. Veronica americana | 5 | | OBL |
| 7. Nasturtium microphyllum | 5 | | OBL |
| 8. Linaria vulgaris | 3 | | UPL |
| 9. Carex pellita | 2 | | OBL |
| 10. | | | |
| 11. | | | |
| | 85 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 15

**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: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 17 | x 1 = | 17 |
| FACW species | 45 | x 2 = | 90 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 10 | x 4 = | 40 |
| UPL species | 3 | x 5 = | 15 |
| Column Totals: | 85 (A) | | 192 (B) |

Prevalence Index = B/A = 2.26

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Evidence of hydrophytic vegetation includes a positive rapid test, a positive dominance test, and a prevalence index less than 3.0.

## SOIL

Sampling Point: DP07W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 10YR 2/2 | 100 | | | | | Silt Loam | High content of organic matter |
| 5 - 10 | 10YR 3/3 | 100 | | | | | Sand | |
| 10 - 16 | 2.5Y 5/1 | 100 | | | | | Loamy Sand | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Depleted matrix below dark surface observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ✔ Inundation Vis ble 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): 5

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes high water table, saturation, inundation visible on aerial imagery, geomorphic position, a positive FAC-neutral test, and saturation visible on aerial imagery.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP08U

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 46.002288 Long: -112.657701 Datum: NAD 83

Soil Map Unit Name: 11A - 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 ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Upland sample point near preservation wetland/cell 13 in the northeast leg of the mitigation site.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. Artemisia tridentata | 5 | ✔ | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 5 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Juncus balticus | 40 | ✔ | FACW |
| 2. Leymus cinereus | 18 | ✔ | FAC |
| 3. Poa pratensis | 15 | | FAC |
| 4. Schedonorus arundinaceus | 7 | | FAC |
| 5. Koeleria macrantha | 3 | | UPL |
| 6. Descurainia sophia | 2 | | UPL |
| 7. Iris missouriensis | 2 | | FACW |
| 8. Thlaspi arvense | 2 | | UPL |
| 9. Lactuca serriola | 1 | | FACU |
| 10. | | | |
| 11. | | | |
| | 90 | = Total Cover | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 10.0

**Dominance Test worksheet:**

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 42 | x 2 = | 84 |
| FAC species | 40 | x 3 = | 120 |
| FACU species | 1 | x 4 = | 4 |
| UPL species | 12 | x 5 = | 60 |
| Column Totals: | 95 (A) | | 268 (B) |

Prevalence Index = B/A = 2.82

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Although Juncus balticus is the dominant species at the data point, it is a resilient, rhizomatous grass-like species that easily creeps out of wetlands and persists in adjacent uplands. The data point is not supported by wetland hydrology and has not developed hydric soil indicators.

## SOIL

Sampling Point: DP08U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 5 | 7.5YR 2.5/1 | 100 | | | | | Sandy Clay Loam | Many fine roots. |
| 5 - 14 | 10YR 2/2 | 100 | | | | | Clay Loam | Clay increases with depth |
| 14 - 16 | 7.5YR 4/6 | 40 | | | | | Sandy Clay | |
| 14 - 16 | 10YR 2/2 | 60 | | | | | Sandy Clay | Mixed matrix |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✔

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present?** Yes _____ No ✔

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

Remarks:

No evidence of wetland hydrology observed. Soils very dry and compact.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-06

Applicant/Owner: MDT State: Montana Sampling Point: DP08W

Investigator(s): S Weyant Section, Township, Range: S24 T3N R9W

Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): E 44 Lat: 46.002393 Long: -112.657605 Datum: NAD 83

Soil Map Unit Name: 11A - Mannixlee-Bonebasin complex, 0 to 4 percent slopes, frequently flooded NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, riverine/depressional wetland. Data point is located in preservation wetland approximately 3-4' lower than paired upland data point.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 5 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Juncus balticus | 50 | ✔ | FACW |
| 2. Potentilla anserina | 15 | | OBL |
| 3. Epilobium ciliatum | 7 | | FACW |
| 4. Carex utriculata | 5 | | OBL |
| 5. Deschampsia caespitosa | 2 | | FACW |
| 6. Poa pratensis | 2 | | FAC |
| 7. Ribes oxyacanthoides | 1 | | FACW |
| 8. Schedonorus arundinaceus | 1 | | FAC |
| 9. Thlaspi arvense | 1 | | UPL |
| 10. | | | |
| 11. | | | |
| | 84 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: 30 ft r) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 16

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 20 | x 1 = | 20 |
| FACW species | 60 | x 2 = | 120 |
| FAC species | 3 | x 3 = | 9 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 1 | x 5 = | 5 |
| Column Totals: | 84 (A) | | 154 (B) |

Prevalence Index = B/A = 1.83

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Ribes oxyacanthoides contributes less than 5% cover and is therefore included in the herb stratum.

## SOIL

Sampling Point: DP08W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 8 | 10YR 2/2 | 100 | | | | | Peat | Decomposing root material present |
| 8 - 18 | 10YR 2/1 | 65 | | | | | Clay Loam | Mixed matrix |
| 8 - 18 | 10YR 5/3 | 30 | 10YR 5/8 | 5 | C | PL | Clay Loam | Mixed matrix. |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Histic epipedon observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ✔ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble 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): 10

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes high water table, saturation, water marks, geomorphic position, and a positive FAC-neutral test.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP09U

Investigator(s): R Jones, K Kane Section, Township, Range: S24 T3N R9W

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Linear Slope (%): 10

Subregion (LRR): E 44 Lat: 45.99723 Long: -112.661076 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: Not mapped

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Sample point is 3 feet higher in elevation than paired wetland data point.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Festuca ovina | 30 | ✔ | UPL |
| 2. Festuca ovina | 10 | ✔ | UPL |
| 3. Elymus trachycaulus | 10 | ✔ | FAC |
| 4. Elymus canadensis | 10 | ✔ | FAC |
| 5. Bromus inermis | 10 | ✔ | UPL |
| 6. Leymus cinereus | 5 | | FAC |
| 7. Unidentified grass | 5 | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 = Total Cover | | |
| **Woody Vine Stratum (Plot size: _____)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 25 | x 3 = | 75 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 50 | x 5 = | 250 |
| Column Totals: | 75 (A) | | 325 (B) |

Prevalence Index = B/A = 4.33

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

No evidence of hydrophytic vegetation observed.

## SOIL

Sampling Point: DP09U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 9 | 10YR 3/4 | 100 | | | | | Sandy Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: Hard pan

Depth (inches): 9

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

No evidence of hydric soils observed. Soil pit could not be reasonably excavated further due to the presence of a hard pan layer.

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed. Soil dry and extremely compacted.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP09W

Investigator(s): R Jones Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.997296 Long: -112.661045 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, depressional/riverine wetland. Data point located at southern end of cell 1.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 15 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Carex praegracilis | 40 | ✔ | FACW |
| 2. Juncus balticus | 20 | ✔ | FACW |
| 3. Erigeron peregrinus | 15 | | FACW |
| 4. Deschampsia caespitosa | 4 | | FACW |
| 5. Potentilla anserina | 3 | | OBL |
| 6. Euphorbia eusla | 2 | | UPL |
| 7. Equisetum arvense | 1 | | FAC |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 85 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 15

**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: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 3 | x 1 = | 3 |
| FACW species | 79 | x 2 = | 158 |
| FAC species | 1 | x 3 = | 3 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 2 | x 5 = | 10 |
| Column Totals: | 85 (A) | | 174 (B) |

Prevalence Index = B/A = 2.05

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Vegetation at the data point is dominated by hydrophytic species.

## SOIL

Sampling Point: DP09W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 2 | 10YR 2/2 | 100 | | | | | Peat | Fibric |
| 2 - 5 | 10YR 3/2 | 95 | 10YR 3/6 | 5 | C | PL / M | Clay Loam | Mn concentrations |
| 5 - 10 | 2.5Y 2.5/1 | 100 | | | | | Sandy Clay | |
| 10 - 16 | 10YR 4/2 | 80 | 7.5YR 3/4 | 20 | C | M | Sandy Clay | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Prominent redoximorphic concentrations 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 Vis ble on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes geomorphic position and a positive FAC-neutral test.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP10U

Investigator(s): S Weyant, K Kane Section, Township, Range: S24 T3N R9W

Landform (hillslope, terrace, etc.): Valley Floor Local relief (concave, convex, none): Linear Slope (%): 0

Subregion (LRR): E 44 Lat: 45.995943 Long: -112.661473 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✔ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Upland data point located on bench approximately 1' higher in elevation than DP10W.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 5 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum (Plot size: 5 ft r)** | | | |
| 1. Bromus inermis | 60 | ✔ | UPL |
| 2. Descurainia sophia | 15 | | UPL |
| 3. Juncus balticus | 15 | | FACW |
| 4. Euphorbia esula | 5 | | UPL |
| 5. Thlaspi arvense | 5 | | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 100 | = Total Cover | |
| **Woody Vine Stratum (Plot size: 30 ft r)** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 85 | x 5 = | 425 |
| Column Totals: | 100 (A) | | 455 (B) |

Prevalence Index = B/A = 4.55

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes _____ No ✔

Remarks:

Data point is dominated by Bromus inermis.

## SOIL

Sampling Point: DP10U

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 6 | 10YR 4/2 | 100 | | | | | Loam | |
| 6 - 16 | 10YR 4/2 | 100 | | | | | Sandy Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP10W

Investigator(s): S Weyant, K Kane Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.99597 Long: -112.661387 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

PEM, riverine wetland.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 5 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Carex aquatilis | 50 | ✔ | OBL |
| 2. Juncus balticus | 20 | ✔ | FACW |
| 3. Leymus cinereus | 10 | | FAC |
| 4. Euphorbia esula | 5 | | UPL |
| 5. Thlaspi arvense | 5 | | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 90 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: 30 ft r) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 10.0

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 50 | x 1 = | 50 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 90 (A) | | 170 (B) |

Prevalence Index = B/A = 1.89

**Hydrophytic Vegetation Indicators:**

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Evidence of hydrophytic vegetation includes a positive dominance test, a positive rapid test, and a prevalence index less 3.0.

## SOIL

Sampling Point: DP10W

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 6 | 7.5YR 4/2 | 100 | | | | | Loam | Many roots |
| 6 - 12 | 10YR 4/2 | 95 | 10YR 5/8 | 5 | C | PL / M | Loam | C along living roots |
| 12 - 16 | 10YR 3/2 | 90 | 7.5YR 4/6 | 10 | C | PL / M | Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Prominent redoximorphic concentrations 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 Vis ble on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes oxidized rhizopheres along living roots, geomorphic position, and positive FAC-neutral test. Soil moist.

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

Project/Site: Silicon Mountain | City/County: Silver Bow County | Sampling Date: 2023-07-07

Applicant/Owner: MDT | State: Montana | Sampling Point: DP11U

Investigator(s): R Jones, K Kane | Section, Township, Range: S24 T3N R9W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Linear | Slope (%): 0

Subregion (LRR): E 44 | Lat: 45.99627 | Long: -112.661715 | Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes | NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✔ |
| Hydric Soil Present? | Yes _____ | No ✔ | |
| Wetland Hydrology Present? | Yes _____ | No ✔ | |

Remarks:

Sample point is located approximately 1' foot higher in elevation than paired wetland point.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 15 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Elymus trachycaulus | 20 | ✔ | FAC |
| 2. Poa pratensis | 20 | ✔ | FAC |
| 3. Juncus balticus | 15 | ✔ | FACW |
| 4. Thlaspi arvense | 10 | | UPL |
| 5. Sisymbrium altissimum | 5 | | FACU |
| 6. Veronica americana | 1 | | OBL |
| 7. Taraxacum officinale | 1 | | FACU |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 72 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 28

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 1 | x 1 = | 1 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 40 | x 3 = | 120 |
| FACU species | 6 | x 4 = | 24 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 72 (A) | | 225 (B) |

Prevalence Index = B/A = 3.13

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Vegetation at the data point is dominated by facultative species and Juncus balticus, a rhizomatous grass-like plant that often creeps out of adjacent wetlands to persist in non-wetland areas.

## SOIL

Sampling Point: DP11U

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

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 9 | 10YR 3/2 | 100 | | | | | Sandy Loam | |
| 9 - 17 | 10YR 3/2 | 98 | 10YR 5/8 | 2 | C | M | Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✔**

Remarks:

No hydric soil indicators observed.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

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

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

**Wetland Hydrology Present? Yes _____ No ✔**

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

Remarks:

No evidence of wetland hydrology observed. Soil extremely dry.

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

Project/Site: Silicon Mountain City/County: Silver Bow County Sampling Date: 2023-07-07

Applicant/Owner: MDT State: Montana Sampling Point: DP11W

Investigator(s): R Jones Section, Township, Range: S24 T3N R9W

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

Subregion (LRR): E 44 Lat: 45.996282 Long: -112.661791 Datum: NAD 83

Soil Map Unit Name: 12A - Riverrun, occasionally flooded-Mannixlee, frequently flooded complex, 0 to 4 percent slopes NWI classification: PEM1A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✔ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✔ No _____ |
| Hydric Soil Present? | Yes ✔ | No _____ | |
| Wetland Hydrology Present? | Yes ✔ | No _____ | |

Remarks:

Data point is located in the southernmost cell of the mitigation project area.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 15 ft r) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Juncus balticus | 75 | ✔ | FACW |
| 2. Poa pratensis | 10 | | FAC |
| 3. Erysimum inconspicuum | 5 | | UPL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 90 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 10

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 75 | x 2 = | 150 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 90 (A) | | 205 (B) |

Prevalence Index = B/A = 2.28

**Hydrophytic Vegetation Indicators:**

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

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

**Hydrophytic Vegetation Present?** Yes ✔ No _____

Remarks:

Juncus balticus is the dominant species at the data point.

## SOIL

Sampling Point: DP11W

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

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 - 4 | 10YR 4/2 | 100 | | | | | Silt Loam | |
| 4 - 10 | 10YR 3/2 | 88 | 7.5YR 3/6 | 7 | C | PL / M | Clay Loam | |
| 4 - 10 | | | 7.5YR 2.5/1 | 5 | C | PL / M | | |
| 10 - 16 | 10YR 4/2 | 95 | 7.5YR 5/8 | 5 | C | PL / M | Silty Clay Loam | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |

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

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

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

**Indicators for Problematic Hydric Soils[3]:**

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

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ___

Remarks:

Prominent redoximorphic concentrations 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 Vis ble on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✔ No ___

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

Remarks:

Evidence of wetland hydrology includes oxidized rhizospheres on living roots and a positive FAC-neutral test.

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project Name:** Silicon Mountain Wetland Mitigation Site **2. MDT Project #:** STPX 47(024)56 **Control #:** 50340000

**3. Evaluation Date:** 11/30/2023 **4. Evaluator(s):** R Jones, S Weyant, K Kane **5. Wetlands/Site #(s):** AA1 - Created Cells 2,3,4

**6. Wetland Location(s): i. Legal:** T3N,R9W,24 **Latitude/Longitude:** 45.998062, -112.662144 : Centroid of Cell 2
45.998721, -112.663225 : Centroid of Cell 3
46.001174, -112.661948 : Centroid of Cell 4

**ii. Approx. Stationing or Mileposts:** NA

**iii. Watershed:** 2

**Watershed Name, County:** Upper Clark Fork, Silver Bow

**7. a. Evaluating Agency:** CCI for MDT

**b. Purpose of Evaluation:**

1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other:

**8. Wetland size:** 5.210 acres (measured)

**9. Assessment area (AA):** 5.210 acres (measured)

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

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| D | AB | E | PP | 3.00 |
| D | EM | E | SI | 92.00 |
| D | SS | E | SI | 4.00 |
| D | UB | E | PP | 1.00 |

Abbreviations: *(see manual for definitions)*

**HGM Classes:** Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

**Cowardin Classes:** Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

**Modifiers:** Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

**Water Regimes:** Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

**11. Estimated relative abundance:** (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

ABUNDANT

**12. General condition of AA:**

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

| *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 <= | 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 site is stable since construction in 2015. Wetland habitat is well developed and continues to expand. The area surrounding the site is primarily rural with railroad tracks adjacent to cells 2 and 3. Cell 4 is adjacent to the bike path, a home, and a public access parking area.

**ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species:** Euphorbia esula, Centaurea stoebe, Cirsium arvense, and Linaria vulgaris.

**iii. Provide brief descriptive summary of AA and surrounding land use/habitat:** The AA consists of three constructed wetland cells that are supported by groundwater. Cell 4 contained 0.04-acre of perennial open water/aquatic bed habitat in 2023. Sand Creek is excluded from this AA due to the berms surrounding the wetland cells prohibiting the creek from accessing the wetlands. The surrounding area is comprised of low rolling hills dominated by a sagebrush ecosystem.

**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 (circle one based on definitions contained in instructions): No usable habitat

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [circle] 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 | .8M | .7M | .3L | .1L | **0L** |

Sources for documented use (e.g. observations, records, etc): No threatened or endangered species have been reported in the assessment area or the mitigation site (USFWS 2023; MTNHP 2023).

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

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

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

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

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

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

Sources for documented use (e.g. observations, records, etc): Observation of the Preble's shrew was confirmed in the vicinity of the mitigation site in 2018. Observations of the additional S3 species have been confirmed in the vicinity of the mitigation site in 2023 (MTNHP 2023).

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

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

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

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

**ii. Wildlife habitat features** (Working from top to bottom, circle 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 interms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

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

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

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

**Comments:** The site demonstrates 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 mark **X NA** and proceed to 14E.)

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

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

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .2L |
| **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? ___ If yes, reduce score in i above by 0.1.*

*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? ___ If yes, add 0.1 to the adjusted score in **i** or **iia.***

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

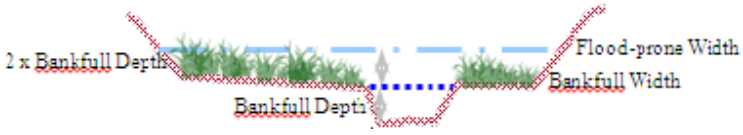
**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, mark **X NA** and proceed to 14F.)

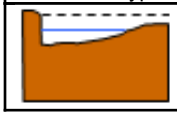
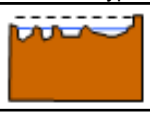
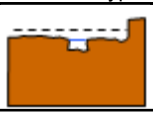
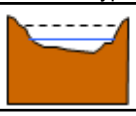
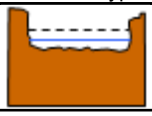
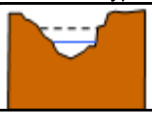
**i. Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

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

**Entrenchment ratio (ER) estimation** – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width) Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

| / | = | |
|---|---|---|
| *Flood-prone width* | *Bankfull width* | *Entrenchment ratio (ER)* |




| **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 |
|  |  |  |  |  |  |  |

**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 (circle)? ___ **Comments:** The AA is less than 10 acres and berms act as barriers around the wetland cells preventing 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, ___ **NA** and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [circle] 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:** The wetland cells intercept groundwater seasonally and demonstrate between 1.1 and 5 acres of periodic flooding. Additionally, wetland cell 4 contains 0.04-acre of perennial ponded water.

**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, ___ **NA** and proceed to 14H.)

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

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

**Comments:** Cells have the potential to receive compounds from the adjacent railroad, roads, and residential area through groundwater and overland flow.

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

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

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

**Comments:** Wave action is possible during seasonal flooding events and in the perennial open water habitat in cell 4. Shoreline vegetation includes species with root stability ratings of 6 or greater. Dominant species includes Juncus balticus, Typha latifolia, Eleocharis palustris, and Salix spp.

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

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

| **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 [circle] 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** | 1H | .7M | .8H | .5M | .6M | .4M | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .6M | .6M | .4M | .3L | .2L |
| **S/I** | .9H | .6M | .7M | .4M | .5M | .3L | **.8H** | .5M | .6M | .3L | .4M | .2L | .7M | .5M | .5M | .3L | .3L | .2L |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .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?* ___**X**___ *If yes, add 0.1 to the score in ii above.*

**iv. Final Score and Rating: 0.90H** **Comments:** Wetland cells contain a subsurface outlet and 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
_____ AA permanently flooded during drought periods
_____ Wetland contains an outlet, but no inlet
__X__ Shallow water table and the site is saturated to the surface
_____ Other:

**ii. Recharge Indicators**

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

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

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

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

**14K. Uniqueness:**

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

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

**Comments:** The relative abundance of these wetland types in the watershed basin is abundant (>50%). Structural diversity at the site 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:** (circle) **X** (if 'Yes' continue with the evaluation; if 'No' then mark ___ **NA** and proceed to the overall summary and rating page)

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

**iii. Rating:**

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

**Comments:** This AA is at a mitigation site that has potential to be used for educational purposes, has public ownership, and allows general public access. The site is used for educational studies by students at Montana State University and Montana Tech.

| **General Site Notes** |
|---|
| AA-1 includes 5.17 acres of wetland habitat and 0.04 acre of aquatic bed/open water habitat in 2023. |

**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 Wetland Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | L | 0.00 | 1 | 0.00 | |
| B. MT Natural Heritage Program Species Habitat | M | 0.50 | 1 | 2.61 | |
| C. General Wildlife Habitat | H | 0.90 | 1 | 4.69 | * |
| D. General Fish Habitat | NA | | | | |
| E. Flood Attenuation | NA | | | | |
| F. Short and Long Term Surface Water Storage | M | 0.60 | 1 | 3.13 | |
| G. Sediment/Nutrient/Toxicant Removal | H | 1.00 | 1 | 5.21 | * |
| H. Sediment/Shoreline Stabilization | M | 0.60 | 1 | 3.13 | |
| I. Production Export/Food Chain Support | H | 0.90 | 1 | 4.69 | * |
| J. Groundwater Discharge/Recharge | M | 0.70 | 1 | 3.65 | * |
| K. Uniqueness | M | 0.50 | 1 | 2.61 | |
| L. Recreation/Education Potential (bonus points) | H | 0.20 | 1 | 1.04 | |
| Totals: | | 5.90 | 9.00 | 30.76 | |
| Percent of Possible Score | | | 66% | | |

**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**
__X__ 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**
__X__ 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: II**

**Summary Comments:** AA-1 is comprised of excavated wetland cells which rate as Category II.

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project Name:** Silicon Mountain Wetland Mitigation Site **2. MDT Project #:** STPX 47(024)56 **Control #:** 50340000

**3. Evaluation Date:** 10/01/2021 **4. Evaluator(s):** R Jones, S Weyant, K Kane **5. Wetlands/Site #(s):** AA2 - Created Cells 1 and 5

**6. Wetland Location(s): i. Legal:** T3N,R9W,24 **Latitude/Longitude:** 45.999417, -112.661816 : Centroid of Cell 1
46.00231, -112.660885 : Centroid of Cell 5

**ii. Approx. Stationing or Mileposts:** NA

**iii. Watershed:** 2

**Watershed Name, County:** Upper Clark Fork, Silver Bow

**7. a. Evaluating Agency:** CCI for MDT

**b. Purpose of Evaluation:**

**1.** ___ Wetlands potentially affected by MDT project
**2.** ___ Mitigation wetlands; pre-construction
**3.** X Mitigation wetlands; post-construction
**4.** ___ Other:

**8. Wetland size:** 3.920 acres (measured)

**9. Assessment area (AA):** 3.920 acres (measured)

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

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| D | AB | E | PP | 5.00 |
| D | EM | E | SI | 15.00 |
| D | SS | E | SI | 5.00 |
| D | UB | E | PP | 75.00 |

Abbreviations: *(see manual for definitions)*

**HGM Classes:** Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

**Cowardin Classes:** Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

**Modifiers:** Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

**Water Regimes:** Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

**11. Estimated relative abundance:** (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

COMMON

**12. General condition of AA:**

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

| *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 <= | 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.): In year 9 post-construction, wetland cells 1 and 5 have established desirable perennial grass, forb, and shrub cover with minimal weeds present. The level of disturbance has declined and the site has stabilized with increasing cover provided by perennial species.

**ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species:** Linaria vulgaris, Euphorbia esula, Cirsium arvense, and Centaurea stoebe.

**iii. Provide brief descriptive summary of AA and surrounding land use/habitat:** The AA is composed of wetland cells 1 and 5 which are designed to intercept groundwater and include 2.37 acres of open water habitat. The cells 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 around the excavated cells.

**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 (circle one based on definitions contained in instructions): No usable habitat

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [circle] 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 | .8M | .7M | .3L | .1L | **0L** |

Sources for documented use (e.g. observations, records, etc): No threatened or endangered species have been reported in the assessment area or the mitigation site (USFWS 2023; MTNHP 2023).

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

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

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

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

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

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

Sources for documented use (e.g. observations, records, etc): Observation of the Preble's shrew was confirmed in the vicinity of the mitigation site in 2018. Observations of the additional species have been confirmed in the vicinity of the mitigation site in 2023 (MTNHP 2023).

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

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

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

__ observations of abundant wildlife #s or high species diversity (during any period)
__ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
__ presence of extremely limiting habitat features not available in the surrounding area
__ 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]):

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

**ii. Wildlife habitat features** (Working from top to bottom, circle 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 interms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

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

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

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

**Comments:** The site demonstrates moderate wildlife use and exceptional 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 mark **X NA** and proceed to 14E.)

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

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

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .2L |
| **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? ___ If yes, reduce score in i above by 0.1.*

*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? ___ If yes, add 0.1 to the adjusted score in **i** or **iia.***

**iii. Final Score and Rating:** NA **Comments:** Fish have not been observed in and are not suspected in the AA; Cell 1 drains to Sand Creek, but is upslope and outside of Sand Creek's active floodplain.

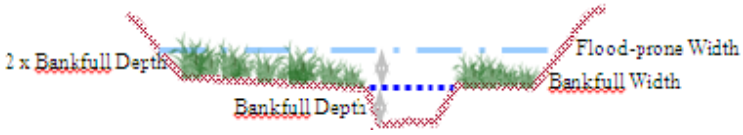
**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, mark **X NA** and proceed to 14F.)

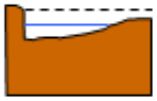
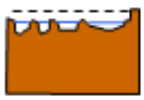
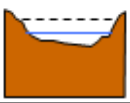
**i. Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

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

**Entrenchment ratio (ER) estimation** – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width) Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

| / | = | |
|---|---|---|
| *Flood-prone width* | *Bankfull width* | *Entrenchment ratio (ER)* |




| **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 |
|  |  |  |  |  |  |  |

**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 (circle)? ___ **Comments:** Cells 1 and 5 are upslope/outside of Sand Creek's active floodplain area and not subject to overbank flooding. Cell 1 allows groundwater to outlet to Sand Creek and perpetuate flows in the stream during low water years.

**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, ___**NA** and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [circle] 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:** Cell 1 and cell 5 support 2.37 acres of open water habitat with an estimated average depth of 1.5 feet. (2.37-acres x 1.5 ft = 3.55 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, ___**NA** and proceed to 14H.)

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

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

**Comments:** Does not achieve 70% wetland vegetation threshold due to the majority of the AA comprising of aquatic bed/open water habitat.

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

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

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

**Comments:** 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 [circle])

| **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 [circle] 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** | **1H** | .7M | .8H | .5M | .6M | .4M | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .6M | .6M | .4M | .3L | .2L |
| **S/I** | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .5M | .5M | .3L | .3L | .2L |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .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?* ___**X** *If yes, add 0.1 to the score in ii above.*

**iv. Final Score and Rating: 1.00H** **Comments:** The AA is surrounded by a 50 foot-wide vegetated upland buffer.

**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 |
| X | AA permanently flooded during drought periods |
| | Wetland contains an outlet, but no inlet |
| X | Shallow water table and the site is saturated to the surface |
| | Other: |

**ii. Recharge Indicators**

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

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

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

**Comments:** Wetland cells 1 and 5 are designed to intercept groundwater.

**14K. Uniqueness:**

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

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

**Comments:** The relative abundance of these wetland types in the watershed basin is common 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:** (circle) **X** (if 'Yes' continue with the evaluation; if 'No' then mark ___ **NA** and proceed to the overall summary and rating page)

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

**iii. Rating:**

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

**Comments:** This AA is at a mitigation site that has potential to be used for educational purposed, has public ownership, and allows general public access. The site is used for educational studies by students at Montana State University and Montana Tech. The open water habitat attracts a variety of waterfowl and other bird species valuable for non-consumptive recreational activities (i.e. bird watching).

| **General Site Notes** |
|---|
| AA-2 includes 3.11 acres of wetland habitat and 2.37 acres of aquatic bed/open water habitat in 2023. |

**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 Wetland Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | L | 0.00 | 1 | 0.00 | |
| B. MT Natural Heritage Program Species Habitat | M | 0.50 | 1 | 1.96 | |
| C. General Wildlife Habitat | H | 0.90 | 1 | 3.53 | * |
| D. General Fish Habitat | NA | | | | |
| E. Flood Attenuation | NA | | | | |
| F. Short and Long Term Surface Water Storage | H | 0.80 | 1 | 3.14 | |
| G. Sediment/Nutrient/Toxicant Removal | M | 0.70 | 1 | 2.74 | |
| H. Sediment/Shoreline Stabilization | H | 1.00 | 1 | 3.92 | * |
| I. Production Export/Food Chain Support | H | 1.00 | 1 | 3.92 | * |
| J. Groundwater Discharge/Recharge | H | 1.00 | 1 | 3.92 | * |
| K. Uniqueness | M | 0.60 | 1 | 2.35 | |
| L. Recreation/Education Potential (bonus points) | H | 0.20 | 1 | 0.78 | |
| Totals: | | 6.70 | 9.00 | 26.26 | |
| Percent of Possible Score | | | 74% | | |

**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**
__X__ 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**
__X__ 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: II**

**Summary Comments:** AA-2 is comprised of excavated wetland cells which rate as Category II.

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project Name:** Silicon Mountain Wetland Mitigation Site **2. MDT Project #:** STPX 47(024)56 **Control #:** 50340000

**3. Evaluation Date:** 11/30/2023 **4. Evaluator(s):** R Jones, S Weyant, K Kane **5. Wetlands/Site #(s):** AA3 - Preservation

**6. Wetland Location(s): i. Legal:** T3N,R9W,24

**ii. Approx. Stationing or Mileposts:** NA

**iii. Watershed:** 2

**Watershed Name, County:** Upper Clark Fork, Silver Bow

**Latitude/Longitude:** 45.999026, -112.661162 : Centroid of
45.998304, -112.663249 : Centroid of
46.002752, -112.659714 : Centroid of
46.002921, -112.657097 : Centroid of

**7. a. Evaluating Agency:** CCI for MDT

**b. Purpose of Evaluation:**

1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other:

**8. Wetland size:** 10.380 acres (measured)

**9. Assessment area (AA):** 10.380 acres (measured)

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

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| D | AB | NA | PP | 4.00 |
| D | EM | NA | SI | 35.00 |
| D | EM | NA | PP | 52.00 |
| D | SS | NA | SI | 3.00 |
| D | UB | NA | PP | 6.00 |

Abbreviations: *(see manual for definitions)*

**HGM Classes:** Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

**Cowardin Classes:** Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

**Modifiers:** Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

**Water Regimes:** Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

**11. Estimated relative abundance:** (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

COMMON

**12. General condition of AA:**

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

| *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 <= | moderate disturbance | moderate disturbance | high disturbance |
| AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is > 30%. | high disturbance | high disturbance | high disturbance |

**Comments:** (types of disturbance, intensity, season, etc.): Construction of the wetland mitigation site in 2014 included substantial excavation to create new wetlands as well as channel realignment/restoration. In 2016, the area surrounding the preserved wetlands was disturbed as a result of the new trail and bridge. Disturbed areas surrounding the preserved wetland areas are stable and well vegetated with desirable species in 2023.

**ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species:** Cirsium arvense, Centaurea stoebe, Linaria vulgaris, and Euphorbia esula.

**iii. Provide brief descriptive summary of AA and surrounding land use/habitat:** The AA includes pre-existing depressional wetlands adjacent to Sand Creek and south of Silver Bow Creek, and 0.66 acre of open water 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:** 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 (circle one based on definitions contained in instructions): No usable habitat

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [circle] 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 | .8M | .7M | .3L | .1L | **0L** |

Sources for documented use (e.g. observations, records, etc): No threatened or endangered species have been reported in the assessment area or the mitigation site (USFWS 2023; MTNHP 2023).

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

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

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

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

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

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

Sources for documented use (e.g. observations, records, etc): Observation of the Preble's shrew was confirmed in the vicinity of the mitigation site in 2018. Observations of the additional S3 species have been confirmed in the vicinity of the mitigation site in 2023 (MTNHP 2023).

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

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

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

___ observations of abundant wildlife #s or high species diversity (during any period)
___ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
___ presence of extremely limiting habitat features not available in the surrounding area
___ 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]):

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

**ii. Wildlife habitat features** (Working from top to bottom, circle 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 interms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

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

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

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

**Comments:** The site demonstrates moderate use by 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 mark **X NA** and proceed to 14E.)

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

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

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .2L |
| **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? ___ If yes, reduce score in i above by 0.1.*

*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? ___ If yes, add 0.1 to the adjusted score in **i** or **iia.***

**iii. Final Score and Rating:** NA **Comments:** No fish habitat within AA.

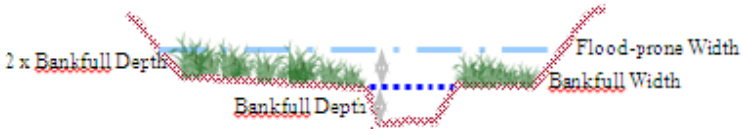
**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, mark **X NA** and proceed to 14F.)

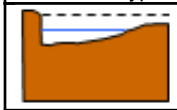
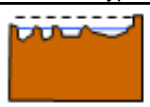
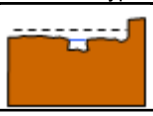
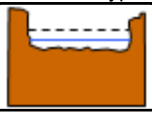
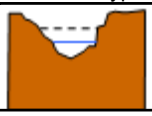
**i. Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

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

**Entrenchment ratio (ER) estimation** – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width) Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

| / | = | |
|---|---|---|
| *Flood-prone width* | *Bankfull width* | *Entrenchment ratio (ER)* |




| **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 |
|  |  |  |  |  |  |  |

**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 (circle)? ___ **Comments:** The AA is 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, ___**NA** and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [circle] 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:** A majority of the preservation wetlands in this AA have a permanent/perennial water regime and demonstrate an estimated average depth of 1 foot of water during high water events.

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

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

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

**Comments:** Evidence of flooding and ponding is present in the preservation wetlands.

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

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

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

**Comments:** 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 [circle])

| **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 [circle] 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** | 1H | **.7M** | .8H | .5M | .6M | .4M | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .6M | .6M | .4M | .3L | .2L |
| **S/I** | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .5M | .5M | .3L | .3L | .2L |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .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?* ___**X** *If yes, add 0.1 to the score in ii above.*

**iv. Final Score and Rating: 0.80H** **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 |
| X | Springs or seeps are known or observed |
| X | Vegetation growing during dormant season/drought |
| | Wetland occurs at the toe of a natural slope |
| X | AA permanently flooded during drought periods |
| | Wetland contains an outlet, but no inlet |
| X | Shallow water table and the site is saturated to the surface |
| | Other: |

**ii. Recharge Indicators**

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

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

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

**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 [circle] the functional points and rating)

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

**Comments:** The relative abundance of these wetland types in the watershed basin is common. Structural diversity at the site 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:** (circle) **X** (if 'Yes' continue with the evaluation; if 'No' then mark ___ **NA** and proceed to the overall summary and rating page)

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

**iii. Rating:**

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

**Comments:** This AA is at a mitigation site that has potential to be used for educational purposes, has public ownership, and allows general public access. The site is used for educational studies by students at Montana State University and Montana Tech.

| **General Site Notes** |
|---|
| AA-3 includes 9.71 acres of wetland habitat and 0.66 acre of aquatic bed/open water habitat in 2023. |

**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 Wetland Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | L | 0.00 | 1 | 0.00 | |
| B. MT Natural Heritage Program Species Habitat | M | 0.50 | 1 | 5.19 | |
| C. General Wildlife Habitat | H | 0.90 | 1 | 9.34 | |
| D. General Fish Habitat | NA | | | | |
| E. Flood Attenuation | NA | | | | |
| F. Short and Long Term Surface Water Storage | H | 1.00 | 1 | 10.38 | * |
| G. Sediment/Nutrient/Toxicant Removal | H | 1.00 | 1 | 10.38 | * |
| H. Sediment/Shoreline Stabilization | H | 1.00 | 1 | 10.38 | |
| I. Production Export/Food Chain Support | H | 0.80 | 1 | 8.30 | |
| J. Groundwater Discharge/Recharge | H | 1.00 | 1 | 10.38 | * |
| K. Uniqueness | M | 0.60 | 1 | 6.23 | * |
| L. Recreation/Education Potential (bonus points) | H | 0.20 | 1 | 2.08 | |
| Totals: | | 7.00 | 9.00 | 72.66 | |
| Percent of Possible Score | | | 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**
__X__ 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**
__X__ 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: II**

**Summary Comments:** AA-3 is comprised of preservation wetlands across the mitigation site.

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project Name:** Silicon Mountain Wetland Mitigation Site **2. MDT Project #:** STPX 47(024)56 **Control #:** 50340000

**3. Evaluation Date:** 11/30/2023 **4. Evaluator(s):** R Jones, S Weyant, K Kane **5. Wetlands/Site #(s):** AA4 - Created Cell 6

**6. Wetland Location(s): i. Legal:** T3N,R9W,24 **Latitude/Longitude:**

**ii. Approx. Stationing or Mileposts:** NA

**iii. Watershed:** 2

**Watershed Name, County:** Upper Clark Fork, Silver Bow

**7. a. Evaluating Agency:** CCI for MDT

**b. Purpose of Evaluation:**

1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other:

**8. Wetland size:** 0.017 acres (measured)

**9. Assessment area (AA):** 0.017 acres (measured)

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

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| D | EM | E | SI | 100.00 |

Abbreviations: *(see manual for definitions)*

**HGM Classes:** Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

**Cowardin Classes:** Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

**Modifiers:** Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

**Water Regimes:** Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

**11. Estimated relative abundance:** (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

ABUNDANT

**12. General condition of AA:**

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

| *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 <= | 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.): Wetland Cell 6 is within the old road alignment. Construction of the wetland included excavation, regrading, and revegetation. Water has not been observed in the excavated portion of the wetland cell during monitoring events since 2020.

**ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species:** Cirsium arvense, Euphorbia esula, and Centaurea stoebe.

**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 (circle one based on definitions contained in instructions): No usable habitat

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [circle] 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 | .8M | .7M | .3L | .1L | **0L** |

Sources for documented use (e.g. observations, records, etc): No threatened or endangered species have been reported in the assessment area or the mitigation area (USFWS 2023; MTNHP 2023).

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

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

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

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

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

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

Sources for documented use (e.g. observations, records, etc): Observation of the Preble's shrew was confirmed in the vicinity of the mitigation site in 2018. Observations of the additional S3 species have been confirmed in the vicinity of the mitigation site in 2023 (MTNHP 2023).

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

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

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

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

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

X few or no wildlife observations during peak use periods
X 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, circle 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 interms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

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

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

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

**Comments:** Small wetland with limited value to wildlife. Surface water may be present temporarily during precipitation events.

**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 mark **X NA** and proceed to 14E.)

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

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

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .2L |
| **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?* ___ *If yes, reduce score in i above by 0.1.*

*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?* ___ *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia.***

**iii. Final Score and Rating:** NA **Comments:** No fish habitat within AA.

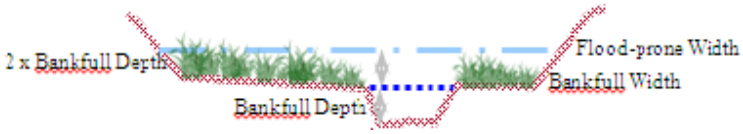
**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, mark **X NA** and proceed to 14F.)

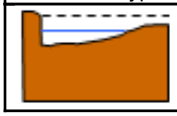
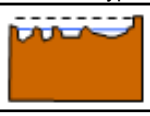
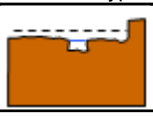
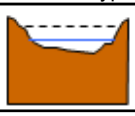
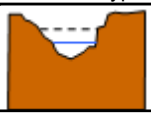
**i. Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

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

**Entrenchment ratio (ER) estimation** – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width) Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

| / | = | |
|---|---|---|
| *Flood-prone width* | *Bankfull width* | *Entrenchment ratio (ER)* |




| **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 |
|  |  |  |  |  |  |  |

**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 (circle)? ___ **Comments:** 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, mark ___ **NA** and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [circle] 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 ephemeral ponding from precipitation, and overland 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, mark ___ **NA** and proceed to 14H.)

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

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

**Comments:** No evidence of flooding or ponding was observed in the wetland cell during the monitoring event.

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

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

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

**Comments:** This section is no longer applicable due to the lack of evidence or observations of surface water retention.

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

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

| **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 [circle] 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** | 1H | .7M | .8H | .5M | .6M | .4M | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .6M | .6M | .4M | .3L | .2L |
| **S/I** | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .5M | .5M | .3L | .3L | .2L |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .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?* **X** *If yes, add 0.1 to the score in ii above.*

**iv. Final Score and Rating:** **0.30L** **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
_____ AA permanently flooded during drought periods
_____ Wetland contains an outlet, but no inlet
_____ Shallow water table and the site is saturated to the surface
__X__ Other: Seasonally high groundwater

**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 [circle] the functional points and rating)

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

**Comments:** Wetland with seasonal surface water supported by runoff and precipitation.

**14K. Uniqueness:**

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

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

**Comments:** Wetlands of this type are abundant in the area.

**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:** (circle) ___ (if 'Yes' continue with the evaluation; if 'No' then mark **X** **NA** 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:**

| *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:** The site is very close to active railroad tracks and difficult to access. This site has limited potential to be used for recreation or education.

| **General Site Notes** |
|---|
| The hydrologic source for this cell appears to have been disrupted and the wetland size has significantly decreased. This observation is consistent with reports in 2022, and is trending toward extinguishing. |

**FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA4 - Created Cell 6**

| Function & Value Variables | Rating | Actual Functional Points | Possible Functional Points | Functional Units: (Actual Points x Wetland Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | L | 0.00 | 1 | 0.00 | |
| B. MT Natural Heritage Program Species Habitat | M | 0.50 | 1 | 0.01 | * |
| C. General Wildlife Habitat | M | 0.40 | 1 | 0.01 | * |
| D. General Fish Habitat | NA | | | | |
| E. Flood Attenuation | NA | | | | |
| F. Short and Long Term Surface Water Storage | L | 0.20 | 1 | 0.00 | |
| G. Sediment/Nutrient/Toxicant Removal | M | 0.50 | 1 | 0.01 | * |
| H. Sediment/Shoreline Stabilization | NA | | | | |
| I. Production Export/Food Chain Support | L | 0.30 | 1 | 0.01 | |
| J. Groundwater Discharge/Recharge | M | 0.70 | 1 | 0.01 | * |
| K. Uniqueness | L | 0.30 | 1 | 0.01 | |
| L. Recreation/Education Potential (bonus points) | NA | | | | |
| Totals: | | 2.90 | 8.00 | 0.06 | |
| Percent of Possible Score | | | 36% | | |

**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)
**X** "Low" rating for Uniqueness; **and**
**X** 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: III**

**Summary Comments:** AA-4 is comprised of a small excavated wetland cell.

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project Name:** Silicon Mountain Wetland Mitigation Site **2. MDT Project #:** STPX 47(024)56 **Control #:** 50340000

**3. Evaluation Date:** 07/06/2023 **4. Evaluator(s):** R Jones, S Weyant **5. Wetlands/Site #(s):** AA5 - Establishment along Sand Creek

**6. Wetland Location(s): i. Legal:** T3N,R9W,24 **Latitude/Longitude:** 45.994964, -112.661128 : Upstream Sand
45.996343, -112.661762 : Downstream Sand
45.997197, -112.662137 : Upstream Sand
46.002869, -112.661537 : Downstream Sand

**ii. Approx. Stationing or Mileposts:** NA

**iii. Watershed:** 2

**Watershed Name, County:** Upper Clark Fork, Silver Bow

**7. a. Evaluating Agency:** CCI for MDT

**b. Purpose of Evaluation:**

1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other:

**8. Wetland size:** 1.960 acres (measured)

**9. Assessment area (AA):** 1.960 acres (measured)

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

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| D | EM | NA | PP | 5.00 |
| R | SS | NA | PP | 20.00 |
| R | UB | NA | PP | 75.00 |

Abbreviations: *(see manual for definitions)*

**HGM Classes:** Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

**Cowardin Classes:** Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

**Modifiers:** Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

**Water Regimes:** Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

**11. Estimated relative abundance:** (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

COMMON

**12. General condition of AA:**

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

| *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 <= | 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. Sand Creek comprises approximately 75% of the AA (1.47 acres).

**ii. Prominent noxious, aquatic nuisance, & other exotic vegetation 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 (circle one based on definitions contained in instructions): No usable habitat

**Primary or critical habitat (list species)** **Secondary habitat (list species)** **Incidental habitat (list species)**

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [circle] 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 | .8M | .7M | .3L | .1L | **0L** |

Sources for documented use (e.g. observations, records, etc): USFWS IPaC

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

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

| **Primary or critical habitat (list species)** | **Secondary habitat (list species)** | **Incidental habitat (list species)** |
|---|---|---|
| Westslope cuthroat trout (S2)(S) - S2S3 | Hoary bat (S3)(S) - S2S3 | Hoary bat (S3)(S) - S2S3 |
| | | Large flowered beardtongue (S1)(S) - S1 |

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

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

Sources for documented use (e.g. observations, records, etc): MTNHP Environmental Summary

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

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

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

__ observations of abundant wildlife #s or high species diversity (during any period)
__ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
__ presence of extremely limiting habitat features not available in the surrounding area
__ 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]):

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

**ii. Wildlife habitat features** (Working from top to bottom, circle 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 interms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

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

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

| *Evidence of wildlife use (i)* | *Wildlife habitat features rating (ii)* | | | |
|---|---|---|---|---|
| | Exceptional | High | Moderate | Moderate |
| **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 mark ___ **NA** and proceed to 14E.)

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

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

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | **.6M** | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .2L |
| **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:* ENTER SOURCES

**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? ___ If yes, reduce score in i above by 0.1.*

*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? ___ If yes, add 0.1 to the adjusted score in **i** or **iia.***

**iii. Final Score and Rating:** 0.6M **Comments:** Potential habitat for Westslope Cutthroat Trout

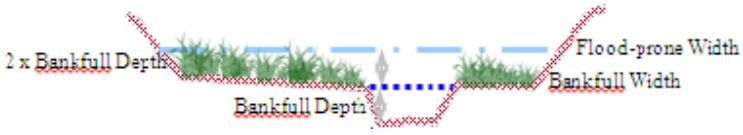
**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, mark ___ **NA** and proceed to 14F.)

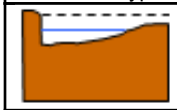
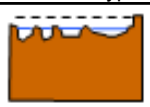
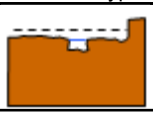
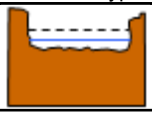
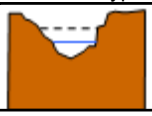
**i. Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

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

**Entrenchment ratio (ER) estimation** – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width) Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

| 17 / | 12 = | **1.42** |
|---|---|---|
| *Flood-prone width* | *Bankfull width* | *Entrenchment ratio (ER)* |




| **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 |
|  |  |  |  |  |  |  |

**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 (circle)? ___ **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, ___**NA** and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [circle] 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, ___**NA** and proceed to 14H.)

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

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

**Comments:** Railroad and roadways have high potential to contribute contaminants

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

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

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

**Comments:** AA dominated by Salix, Juncus, and Carex species with high stability index ratings.

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

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

| **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 [circle] 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** | 1H | .7M | .8H | .5M | .6M | .4M | **.9H** | .6M | .7M | .4M | .5M | .3L | .8H | .6M | .6M | .4M | .3L | .2L |
| **S/I** | .9H | .6M | .7M | .4M | .5M | .3L | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .5M | .5M | .3L | .3L | .2L |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | .7M | .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?* ___**X** *If yes, add 0.1 to the score in ii above.*

**iv. Final Score and Rating: 1.00H** **Comments:** AA contains surface outlet, and the upland buffer contains high amounts of non-noxious weed vegetation 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 |
| X | AA permanently flooded during drought periods |
| X | Wetland contains an outlet, but no inlet |
| X | Shallow water table and the site is saturated to the surface |
| | Other: |

**ii. Recharge Indicators**

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

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

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

**Comments:** high water table present

**14K. Uniqueness:**

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

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

**Comments:** Habitat types range from an a perennial lotic system to emergent wetlands 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:** (circle) **X** (if 'Yes' continue with the evaluation; if 'No' then mark ___ **NA** and proceed to the overall summary and rating page)

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

**iii. 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 Wetland Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | L | 0.00 | 1 | 0.00 | |
| B. MT Natural Heritage Program Species Habitat | M | 0.70 | 1 | 1.37 | |
| C. General Wildlife Habitat | H | 0.90 | 1 | 1.76 | * |
| D. General Fish Habitat | M | 0.60 | 1 | 1.18 | |
| E. Flood Attenuation | M | 0.70 | 1 | 1.37 | * |
| F. Short and Long Term Surface Water Storage | M | 0.70 | 1 | 1.37 | |
| G. Sediment/Nutrient/Toxicant Removal | M | 0.70 | 1 | 1.37 | |
| H. Sediment/Shoreline Stabilization | H | 1.00 | 1 | 1.96 | |
| I. Production Export/Food Chain Support | H | 1.00 | 1 | 1.96 | * |
| J. Groundwater Discharge/Recharge | H | 1.00 | 1 | 1.96 | * |
| K. Uniqueness | M | 0.60 | 1 | 1.18 | |
| L. Recreation/Education Potential (bonus points) | H | 0.20 | 1 | 0.39 | |
| Totals: | | 8.10 | 11.00 | 15.87 | |
| Percent of Possible Score | | | 74% | | |

**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**
__X__ 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**
__X__ 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: II**

**Summary Comments:** Healthy, robust riparian zone with dense willow cover in many places. Evidence of large flood observed within the AA during the 2023 site visit. The AA includes comprises 1.96 acres of wetland habitat and 1.47 acres of the active Sand Creek channel.

**Table B-1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2023.

| Scientific Name | Common Name | WMVC Indicator Status[(1)] |
|---|---|---|
| *Achillea millefolium* | Common Yarrow | FACU |
| *Agoseria glauca* | Pale Goat Chicory | FAC |
| *Agropyron cristatum* | Crested Wheatgrass | UPL |
| *Agrostis stolonifera* | Spreading Bent | FAC |
| Algae, green | Algae, green | N/A |
| *Alisma plantago-aquatica* | Eurpean Water-Plantain | OBL |
| *Alllium cernuum* | Nodding Onion | FACU |
| *Alnus incana* | Speckled Alder | FACW |
| *Alopecurus aequalis* | Short-Awn Meadow-Foxtail | OBL |
| *Alopecurus arundinaceus* | Creeping Meadow-Foxtail | FAC |
| *Alopecurus pratensis* | Field Meadow Foxtail | FAC |
| *Alyssum alyssoides* | Pale or Yellow Alyssum | UPL |
| *Alyssum desestorum* | Dwarf Alyssum | UPL |
| *Antennaria neglecta* | Field Pussytoes | FACU |
| *Artemisia campestris* | Pacific Wormwood | FACU |
| *Artemisia frigida* | Fringed Sage | UPL |
| *Artemisia ludovicinana* | White Sagebrush | FACU |
| *Artemisia tridentata* | Big Sagebrush | UPL |
| *Astragalus agrestis* | Cock's-Head/Purple Milkvetch | FACW |
| *Astragalus bisulcatus* | Two-Grooved Milkvetch | UPL |
| *Astragalus cicer* | Chickpea Milkvetch | UPL |
| *Astragalus miser* | Milkvetch | UPL |
| *Bassia scoparia* | Mexican-Fireweed | FAC |
| *Beckmannia syzigachne* | American Slough Grass | OBL |
| *Bidens cernua* | Nodding Burr-Marigold | OBL |
| *Bromus inermis* | Smooth Brome | UPL |
| *Bromus japonicus* | Japanese Brome | UPL |
| *Bromus tectorum* | Cheatgrass | UPL |
| *Calamagrostis canadensis* | Bluejoint | FACW |
| *Camelina microcarpa* | Little-Pod False Flax | FACU |
| *Cardaria draba* | Whitetop | UPL |
| *Carex aquatilis* | Leafy Tussock Sedge | OBL |
| *Carex filifolia* | Thread-leaved Sedge | UPL |
| *Carex nebrascensis* | Nebraska Sedge | OBL |
| *Carex pellita* | Woolly Sedge | OBL |
| *Carex praegracilis* | Clustered Field Sedge | FACW |
| *Carex praticola* | Northern Meadow Sedge | FACW |
| *Carex simulata* | Analogue Sedge | OBL |
| *Carex utriculata* | Northwest Territory Sedge | OBL |
| *Catabrosa aquatica* | Water Whorl Grass | OBL |
| *Centaurea stoebe* | Spotted Knapweed | UPL |

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| Scientific Name | Common Name | WMVC Indicator Status[(1)] |
|---|---|---|
| *Chaenactis douglasii* | Douglas's Dustymaiden | UPL |
| *Chenopodium album* | Lamb's-Quarters | FACU |
| *Cicuta douglasii* | Western Water-Hemlock | OBL |
| *Cirsium arvense* | Canadian Thistle | FAC |
| *Cirsium foliosum* | Elk Thistle | FAC |
| *Cirsium scariosum* | Meadow Thistle | FAC |
| *Collomia linearis* | Narrow-Leaf Mountain-Trumpet | FACU |
| *Crepis runcinata* | Fiddleleaf Hawk's Beard | FACU |
| *Crepis tectorum* | Narrowleaf Hawksbeard | UPL |
| *Cyrtorhyncha cymbalaria* | Alkali Buttercup | OBL |
| *Dasiphora fruticosa* | Golden-Hardhack | FAC |
| *Deschampsia caespitosa* | Tufted Hair Grass | FACW |
| *Descurainia richardsonii* | Western Tansy Mustard | UPL |
| *Descurainia sophia* | Herb Sophia | UPL |
| *Distichlis spicata* | Coastal/Inland Saltgrass | FACW |
| *Eleocharis palustris* | Common Spike-Rush | OBL |
| *Elymus canadensis* | Nodding Wild Rye | FAC |
| *Elymus lanceolatus* | Streamside Wild Rye | FACU |
| *Elymus repens* | Creeping Wild Rye | FAC |
| *Elymus trachycaulus* | Slender Wild Rye | FAC |
| *Epilobium ciliatum* | Fringed Willowherb | FACW |
| *Equisetum arvense* | Field Horsetail | FAC |
| *Equisetum laevigatum* | Smooth Scouring-Rush | FACW |
| *Ericameria nauseosa* | Rubber Rabbitbrush | UPL |
| *Erigeron* sp. | Fleabane | N/A |
| *Erysimum inconspicuum* | Small-flowered Wallflower | UPL |
| *Euphorbia esula* | Leafy Spurge | UPL |
| *Festuca ovina* | Sheep Fescue | UPL |
| *Filago arvenvis* | Field Cudweed | UPL |
| *Geum macrophyllum* | Large-Leaf Avens | FAC |
| *Glyceria grandis* | American Manna Grass | OBL |
| *Glyceria striata* | Fowl Manna Grass | OBL |
| *Grindelia squarrosa* | Curly-Cup Gumweed | FACU |
| *Gutierrezia sarothrae* | Matchbrush | UPL |
| *Hesperostipa comata* | Needle-and-Thread | UPL |
| *Heterotheca villosa* | Hairy Golden Aster | UPL |
| *Hordeum brachyantherum* | Meadow Barley | FACW |
| *Hordeum jubatum* | Fox-Tail Barley | FAC |
| *Hyoscyamus niger* | Black Henbane | UPL |
| *Ionactis alpina* | Crag Aster | UPL |
| *Iris missouriensis* | Rocky Mountain Iris | FACW |

**Table B-1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2023.

| Scientific Name | Common Name | WMVC Indicator Status[(1)] |
|---|---|---|
| *Juncus balticus* | Baltic Rush | FACW |
| *Juncus bufonius* | Toad Rush | FACW |
| *Juncus effusus* | Lamp Rush | FACW |
| *Juncus longistylis* | Long-Style Rush | FACW |
| *Juncus mertensianus* | Mertens' Rush | OBL |
| *Juniperus scopulorum* | Rocky Mountain Juniper | UPL |
| *Koeleria macrantha* | Prairie Junegrass | UPL |
| *Lemna minor* | Common Duckweed | OBL |
| *Lepidium campestre* | Field Pepper-grass | UPL |
| *Lepidium perfoliatum* | Clasping Pepperwort | FACU |
| *Leymus cinereus* | Great Basin Wild Rye | FAC |
| *Linaria vulgaris* | Butter-and-Eggs | UPL |
| *Linum lewisii* | Prairie Flax | UPL |
| *Lupinus sericeus* | Silky Lupine | UPL |
| *Madia glomerata* | Mountain Tarplant | FACU |
| *Medicago lupulina* | Black Medic | FACU |
| *Melilotus officinalis* | Yellow Sweet-Clover | FACU |
| *Mentha arvensis* | American Wild Mint | FACW |
| *Mimulus guttatus* | Seep Monkey-Flower | OBL |
| *Myosotis laxa* | Bay Forget-Me-Not | OBL |
| *Nasturtium officinale* | Watercress | OBL |
| *Orthocarpus tenuifolius* | Thin-leaved Owl's-clover | UPL |
| *Oxytropis deflexa* | Pendant-pod Locoweed | FACU |
| *Pascopyrum smithii* | Western-Wheat Grass | FACU |
| *Penstemon eriantherus* | Fuzzy-Tongue Penstemon | UPL |
| *Penstemon nitidus* | Wax-leaf Beardtongue | UPL |
| *Penstemon procerus* | Pincushion Beardtongue | FAC |
| *Penstemon strictus* | Rocky Mountain Penstemon | UPL |
| *Peritoma serrulata* | Rocky Mountain Beeplant | FACU |
| *Persicaria amphibia* | Water Smartweed | OBL |
| *Phacelia hastata* | Silverleaf Scorpion-weed | UPL |
| *Phalaris arundinacea* | Reed Canary Grass | FACW |
| *Phleum pratense* | Common Timothy | FAC |
| ***Phlox longifolia*** | **Longleaf Phlox** | **UPL** |
| *Phlox muscoides* | Moss Phlox | UPL |
| *Plantago eriopoda* | Red-Wooly or Redwool Plantain | FACW |
| *Plantago major* | Great Plantain | FAC |
| *Poa ampla (= P. secunda, P. junicifolia)* | Big Bluegrass | FACU |
| *Poa compressa* | Flat-stem Bluegrass | FACU |
| *Poa palustris* | Fowl Blue Grass | FAC |
| *Poa pratensis* | Kentucky Blue Grass | FAC |

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| Scientific Name | Common Name | WMVC Indicator Status[(1)] |
|---|---|---|
| *Poa secunda* | Curly Blue Grass | FACU |
| *Polemonium pulcherrimum* | Showy Jacob's-ladder | UPL |
| *Polygonum aviculare* | Yard Knotweed | FAC |
| *Polypogon monspeliensis* | Annual Rabbit's Foot Grass | FACW |
| *Potentilla anserina* | Silverweed | OBL |
| *Potentilla gracilis* | Graceful Cinquefoil | FAC |
| *Pseudoroegneria spicata* | Bluebunch Wheatgrass | UPL |
| *Puccinellia distans* | Spreading Alkali Grass | FACW |
| *Puccinellia nuttalliana* | Nuttall's Alkali Grass | FACW |
| *Pyrrocoma integrifolia* | Goldenweed | UPL |
| *Ranunculus sceleratus* | Cursed Buttercup | OBL |
| *Ranunculus* sp. | Buttercup | N/A |
| *Ribes aureum* | Golden Currant | FAC |
| *Ribes irriguum* | Idaho Gooseberry | UPL |
| *Rorippa palustris* | Bog Yellow Cress | OBL |
| *Rumex crispus* | Curly Dock | FAC |
| *Rumex salicifolius* | Willow Dock | FACW |
| *Salix bebbiana* | Gray Willow | FACW |
| *Salix boothii* | Booth's Willow | FACW |
| *Salix exigua* | Narrow-Leaf Willow | FACW |
| *Salix geyerianna* | Geyer Willow | FACW |
| *Salix lasiandra* | Pacific Willow | FACW |
| *Salix lutea (=S. eriocephala)* | Yellow Willow | OBL |
| *Schedonorus pratensis* | Meadow False Rye Grass | FACU |
| *Schoenocrambe linifolia* | Plains Mustard | UPL |
| ***Schoenoplectus pungens*** | **Three-Square** | **OBL** |
| *Schoenoplectus tabernaemontani* | Soft-Stem Club-Rush | OBL |
| *Scirpus microcarpus* | Red-Tinge Bulrush | OBL |
| *Shephardia argentea* | Silver Buffalo-Berry | FACU |
| *Silene latifolia* | White Cockle/Campion | UPL |
| *Sisymbrium altissimum* | Tall Hedge-Mustard | FACU |
| *Sisymbrium loeselii* | Smallpod Tumble Mustard | UPL |
| *Sisyrinchium montanum* | Strict Blue-eyed Grass | FAC |
| *Solidago canadensis* | Canadian Goldenrod | FACU |
| *Solidago gigantea* | Late Goldenrod | FACW |
| *Sonchus arvensis* | Field Sow-Thistle | FACU |
| *Sphaeralcea coccinea* | Scarlet Globemallow | UPL |
| *Stachys pilosa* | Hairy Hedge-Nettle | FACW |
| *Stellaria longipes* | Long-Stalk Starwort | FACW |
| *Symphyotrichum ascendens* | Western American-Aster | FACU |
| *Symphyotrichum ciliatum* | Alkali American-Aster | FACW |

**Table B-1.** Silicon Mountain Wetland Mitigation Site. Comprehensive vegetation species list 2015-2023.

| Scientific Name | Common Name | WMVC Indicator Status[(1)] |
|---|---|---|
| *Symphyotrichum falcatum* | Rough White Prairie American-Aster | FACU |
| *Symphyotrichum lanceolatum* | White Panicled American-Aster | OBL |
| *Tanacetum vulgare* | Common Tansy | FACU |
| *Taraxacum officinale* | Common Dandelion | FACU |
| *Thlaspi arvense* | Field Pennycress | UPL |
| *Tragopogon dubius* | Meadow Goat's-beard | UPL |
| ***Trifolium aureum*** | **Golden Clover** | **UPL** |
| *Trifolium hybridum* | Alsike Clover | FAC |
| *Trifolium longipes* | Long-Stalk Clover | FAC |
| *Trifolium pratense* | Red Clover | FACU |
| *Trifolium repens* | White Clover | FAC |
| *Typha latifolia* | Broad-Leaf Cat-Tail | OBL |
| *Valeriana edulis* | Tobacco-Root | FAC |
| *Verbascum thapsus* | Great Mullein | FACU |
| *Veronica americana* | American Brooklime or Speedwell | OBL |
| *Veronica anagallis-aquatica* | Blue Water Speedwell | OBL |
| *Veronica arvensis* | Corm Speedwell | FACU |

[1] 2020 NWPL (USACE 2020)
New species identified in 2023 are **bolded.**

# APPENDIX C
# PROJECT AREA PHOTOGRAPHS

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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

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: 2023

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: 2023

## 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: 2023

Transect 1: End
looking S/SE
Bearing: 177 degrees
Location: North end of cell 3
Year: 2015

Transect 1: End
looking S/SE
Bearing: 177 degrees
Location: North end of cell 3
Year: 2023

## 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: 2023

Transect 2: End Location: W/NW side of cell 4, looking east/southeast
Bearing:106 degrees Year: 2015

Transect 2: End Location: W/NW side of cell 4, looking east/southeast
Bearing: 106 degrees Year: 2023

## Silicon Mountain: Data Points

Data Point: DP01w Location: Veg Comm. 3 along Sand Creek channel. Year: 2023

Data Point: DP01u Location: Veg Comm. 8 along Sand Creek channel. Year 2023

Data Point: DP02w Location: Wetland cell 2 Year: 2023

Data Point: DP02u Location: Veg Comm. 13 Year: 2023

Data Point: DP03w Location: Wetland Cell 3 Year: 2023

Data Point: DP03u Location: Veg Comm. 16 Year: 2023

## Silicon Mountain: Data Points

Data Point: DP04w Location: Constructed wetland cell 4. Year: 2023

Data Point: DP04u Location: Veg Comm. 13. Year: 2023

Data Point: DP05w Location: Constructed wetland cell 5. Year: 2023

Data Point: DP05u Location: Veg Comm. 13. Year: 2023

## Silicon Mountain: Data Points

Data Point: DP06w Location: Constructed wetland cell 6. Year: 2023

Data Point: DP06u Location: Veg Comm. 13. Year: 2023

Data Point: DP07w Location: Wetland cell 1. Year: 2023

Data Point: DP07u Location: Veg Comm. 9. Year: 2023

## Silicon Mountain: Data Points

Data Point: DP08w Location: Constructed wetland cell 13. Year: 2023

Data Point: DP08u Location: Veg Comm. 10. Year: 2023

Data Point: DP09w Location: South of constructed wetland cell 1. Year: 2023

Data Point: DP09u Location: Veg Comm 10. Year: 2023

Data Point: DP10w Location: Along Sand Creek Channel, at south end of project area. Year: 2023

Data Point: DP10u Location: Veg Comm. 5. Year: 2023

## Silicon Mountain: Data Points

Data Point: DP011w Location: Constructed wetland cell 13. Year: 2023

Data Point: DP011u Location: Veg Comm. 10. Year: 2023

## Silicon Mountain: Cross-Section Photographs

Cross-section 1: At center looking upstream.
Year: 2017

Cross-section 1: At center looking upstream.
Year: 2023

Cross-section 1: At center looking downstream.
Year: 2017

Cross-section 1: At center looking downstream.
Year: 2023

Cross-section 2: At center looking upstream.
Year: 2017

Cross-section 2: At center looking upstream.
Year: 2023

## Silicon Mountain: Cross-Section Photographs

Cross-section 2: At center looking downstream.
Year: 2017

Cross-section 2: At center looking downstream.
Year: 2023

Cross-section 3: At center looking upstream.
Year: 2017

Cross-section 3: At center looking upstream.
Year: 2023

Cross-section 3: At center looking downstream.
Year: 2017

Cross-section 3: At center looking downstream.
Year: 2023

## Silicon Mountain: Cross-Section Photographs

Cross-section 4: At center looking upstream.
Year: 2017

Cross-section 4: At center looking upstream.
Year: 2023

Cross-section 4: At center looking downstream.
Year: 2017

Cross-section 4: At center looking downstream.
Year: 2023

Cross-section 5: At center looking upstream.
Year: 2017

Cross-section 5: At center looking upstream.
Year: 2023

## Silicon Mountain: Cross-Section Photographs

Cross-section 5: At center looking downstream.
Year: 2017

Cross-section 5: At center looking downstream.
Year: 2023

Cross-section 6: At center looking upstream.
Year: 2017

Cross-section 6: At center looking upstream.
Year: 2023

Cross-section 6: At center looking downstream.
Year: 2017

Cross-section 6: At center looking downstream.
Year: 2023

## Silicon Mountain: Cross-Section Photographs

Cross-section 7: At center looking upstream.
Year: 2017

Cross-section 7: At center looking upstream.
Year: 2023

Cross-section 7: At center looking downstream.
Year: 2017

Cross-section 7: At center looking downstream.
Year: 2023

Cross-section 8: At center looking upstream.
Year: 2017

Cross-section 8: At center looking upstream.
Year: 2023

## Silicon Mountain: Cross-Section Photographs

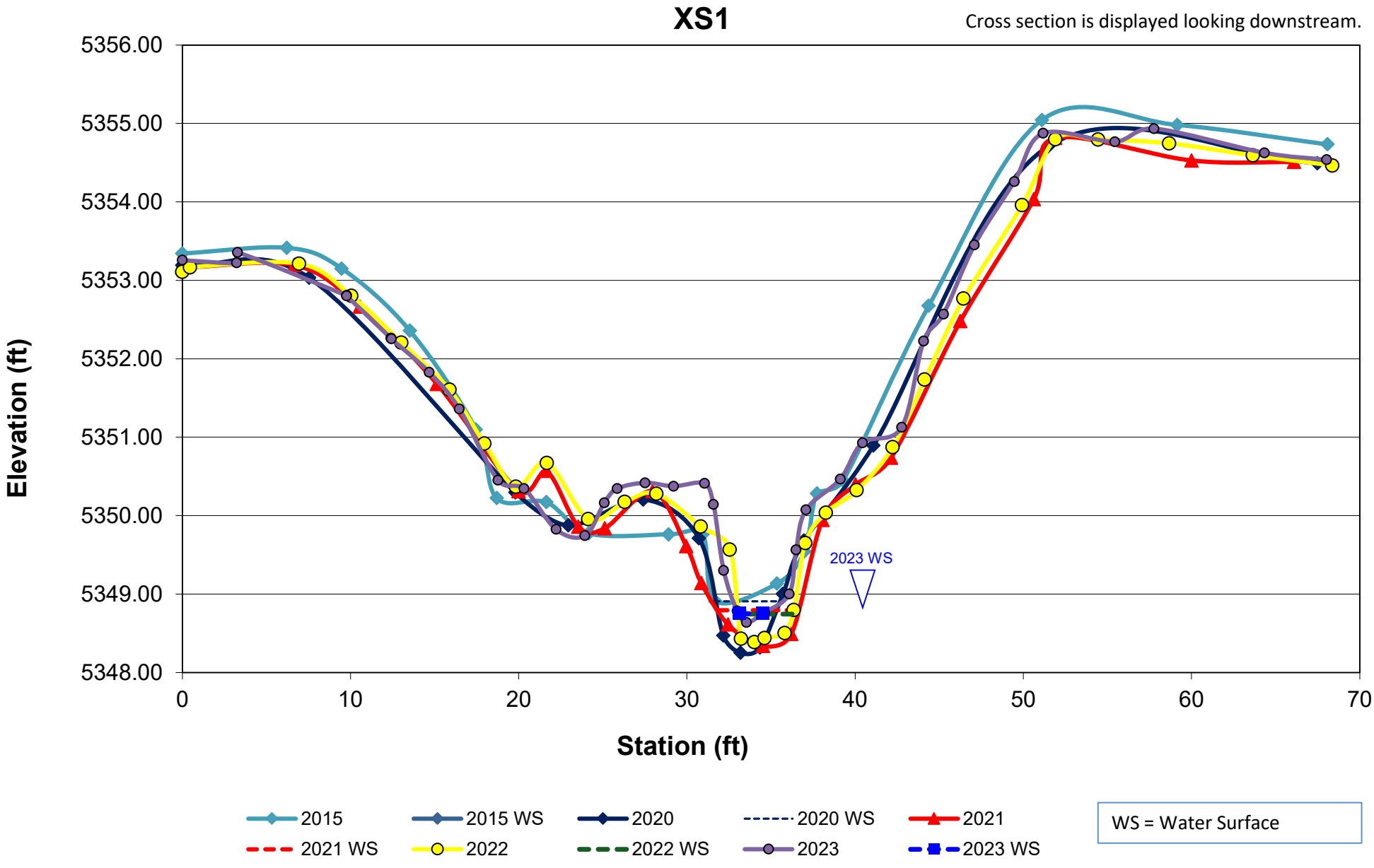
Cross-section 8: At center looking downstream.
Year: 2017

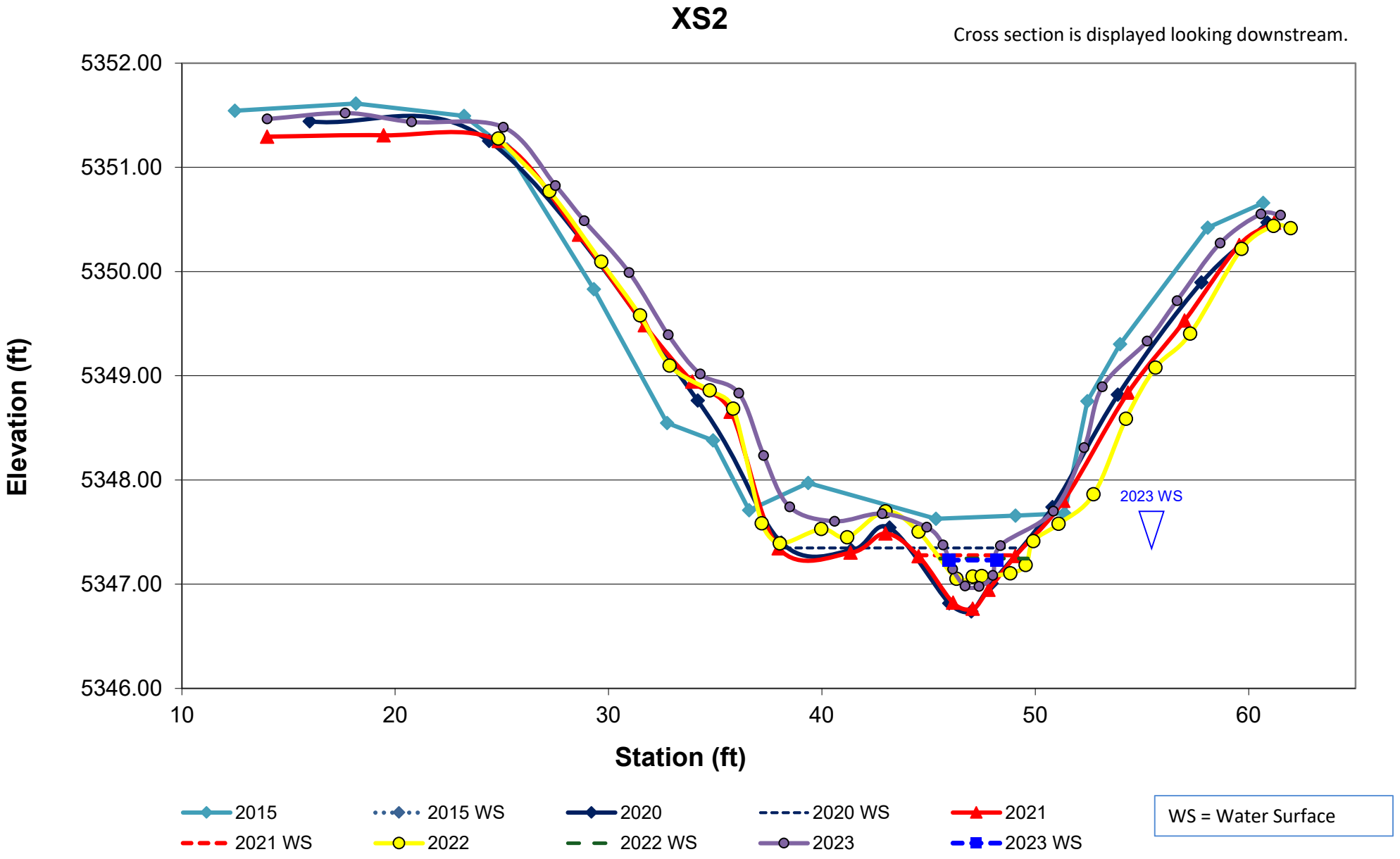
Cross-section 8: At center looking downstream.
Year: 2023

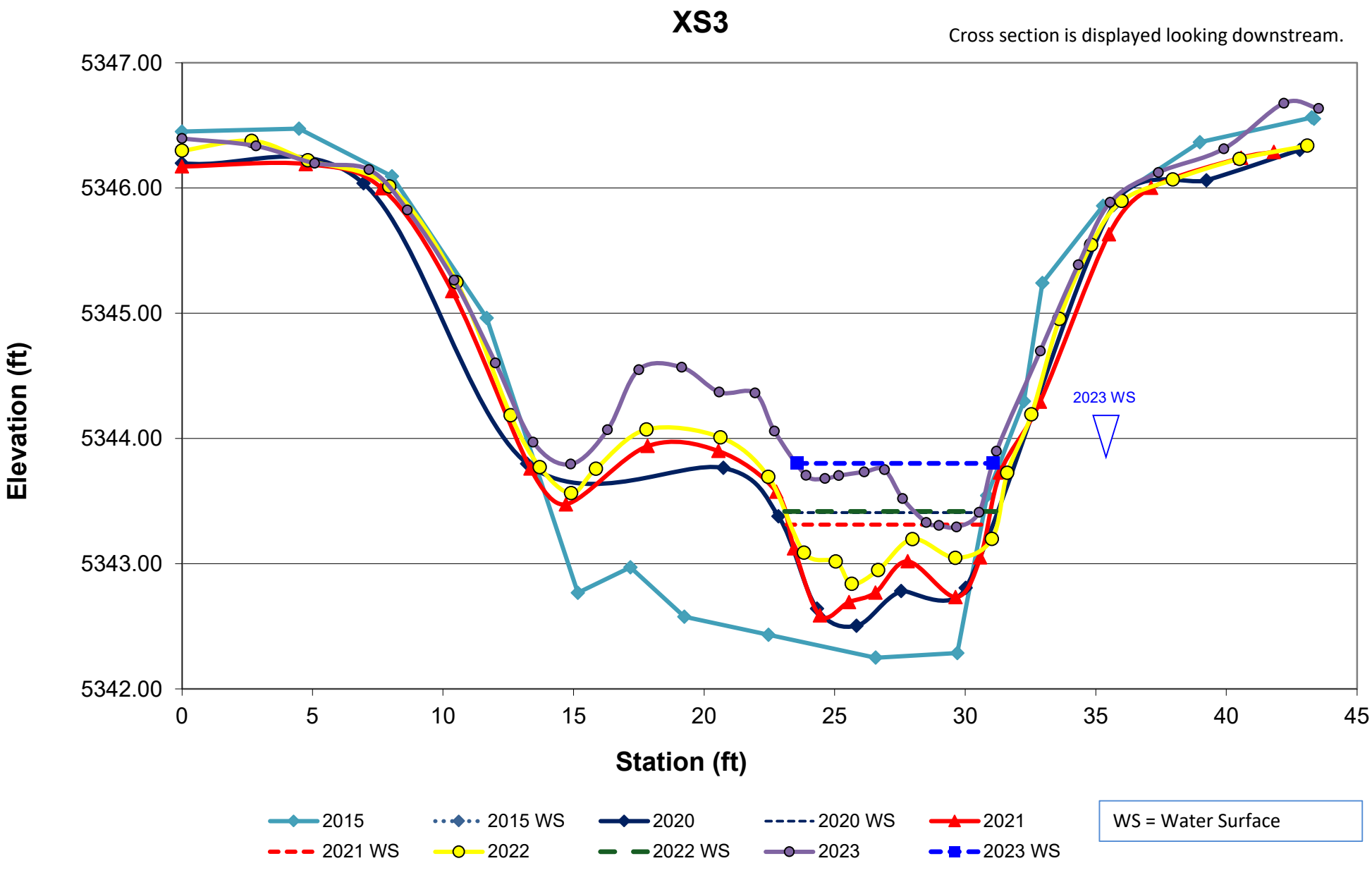
APPENDIX D

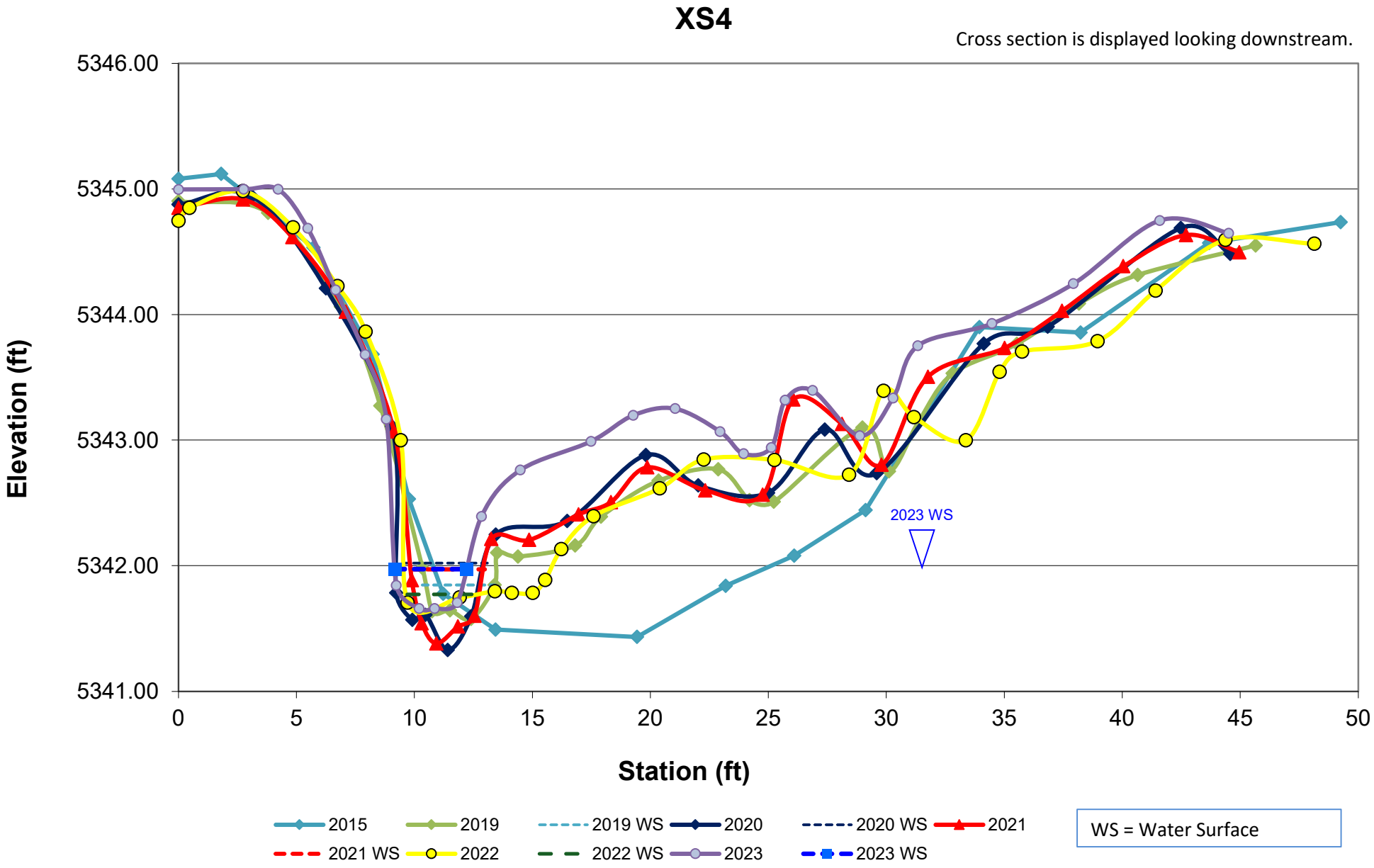
Surveyed Stream Cross Sections

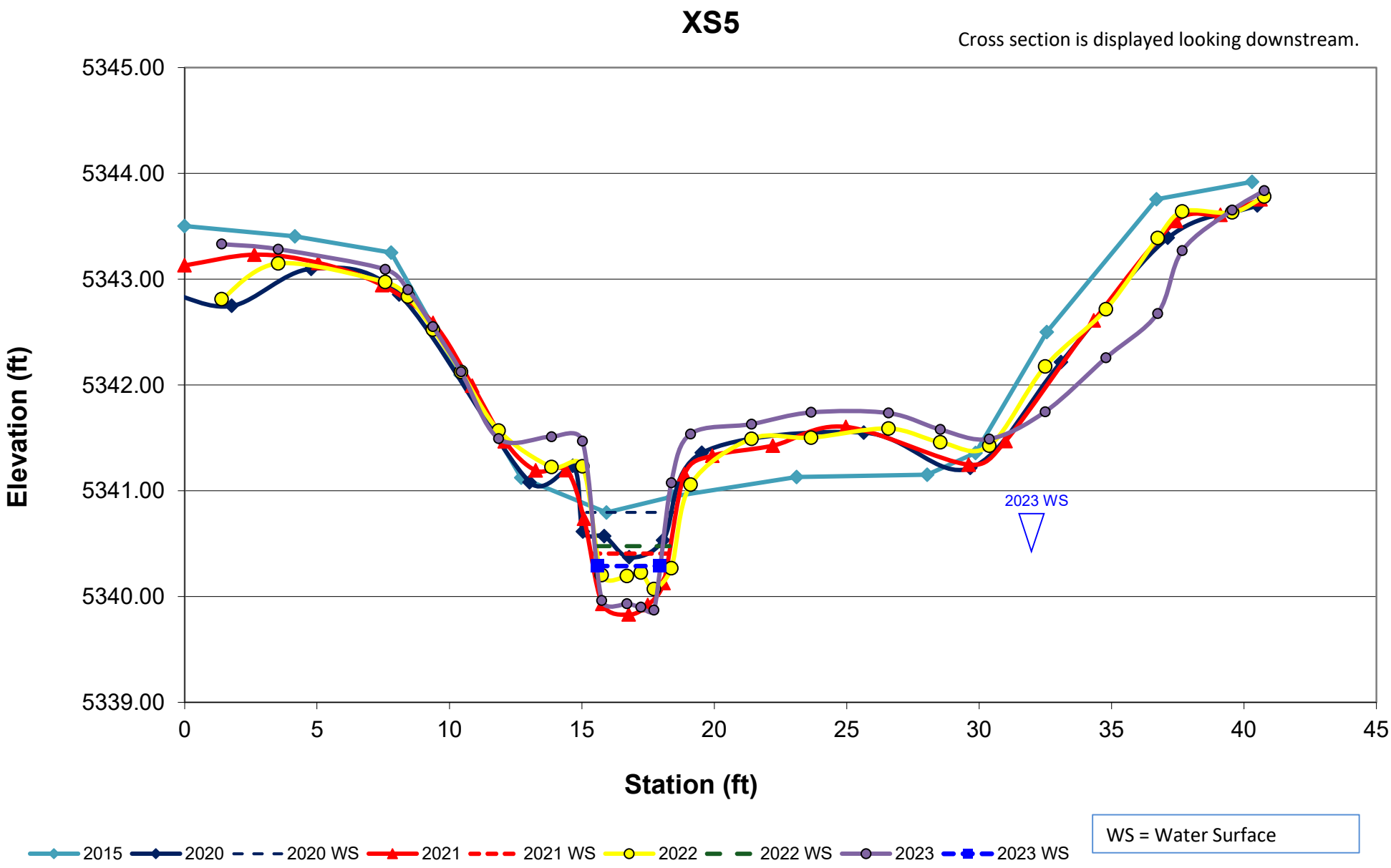
MDT Wetland Mitigation Monitoring
Silicon Mountain
Butte Silver Bow County, Montana

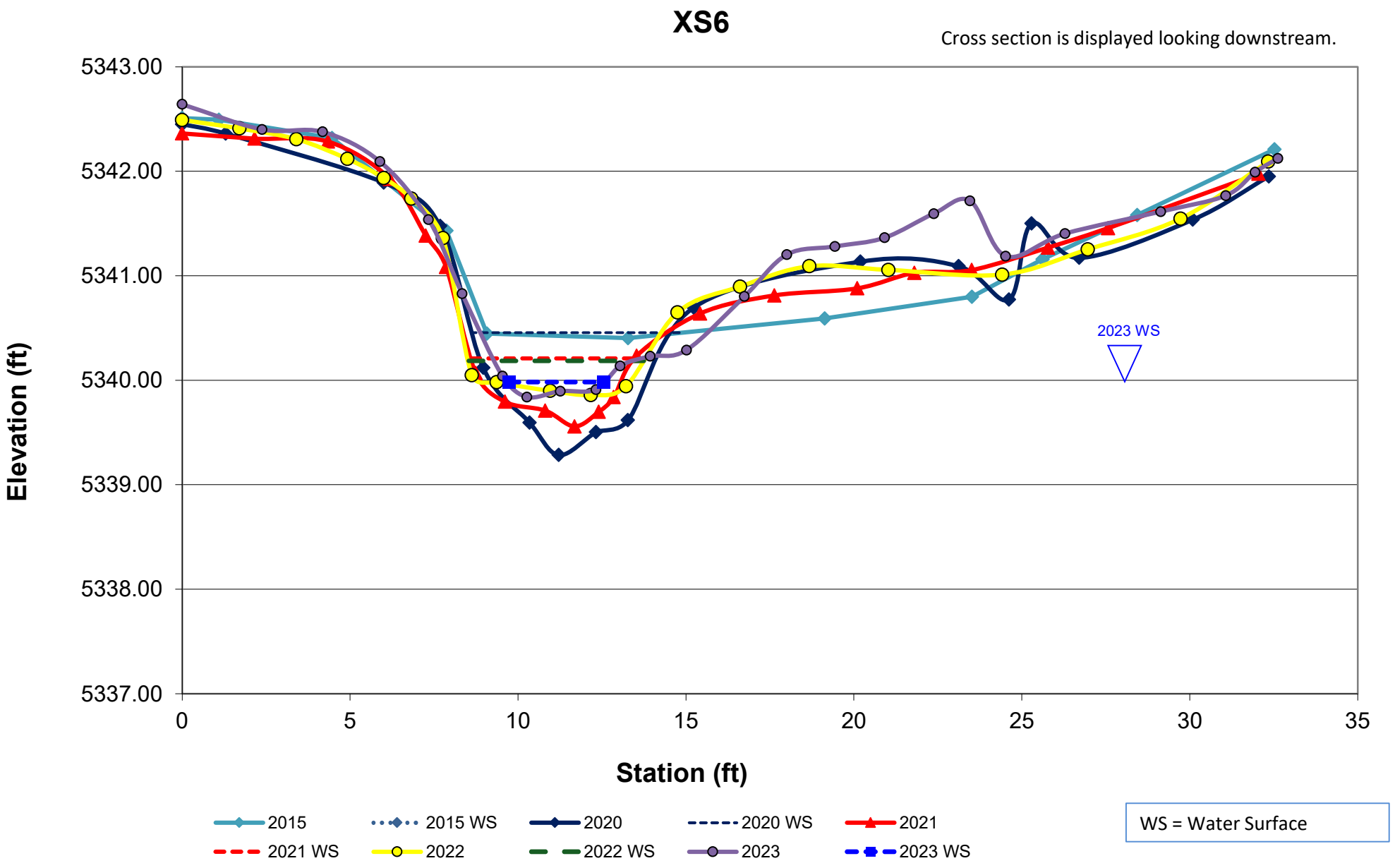

XS1
Cross section is displayed looking downstream.
Elevation (ft)
5356.00
5355.00
5354.00
5353.00
5352.00
5351.00
5350.00
5349.00
5348.00
0
10
20
30
40
50
60
70
Station (ft)
2023 WS
2015
2015 WS
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface

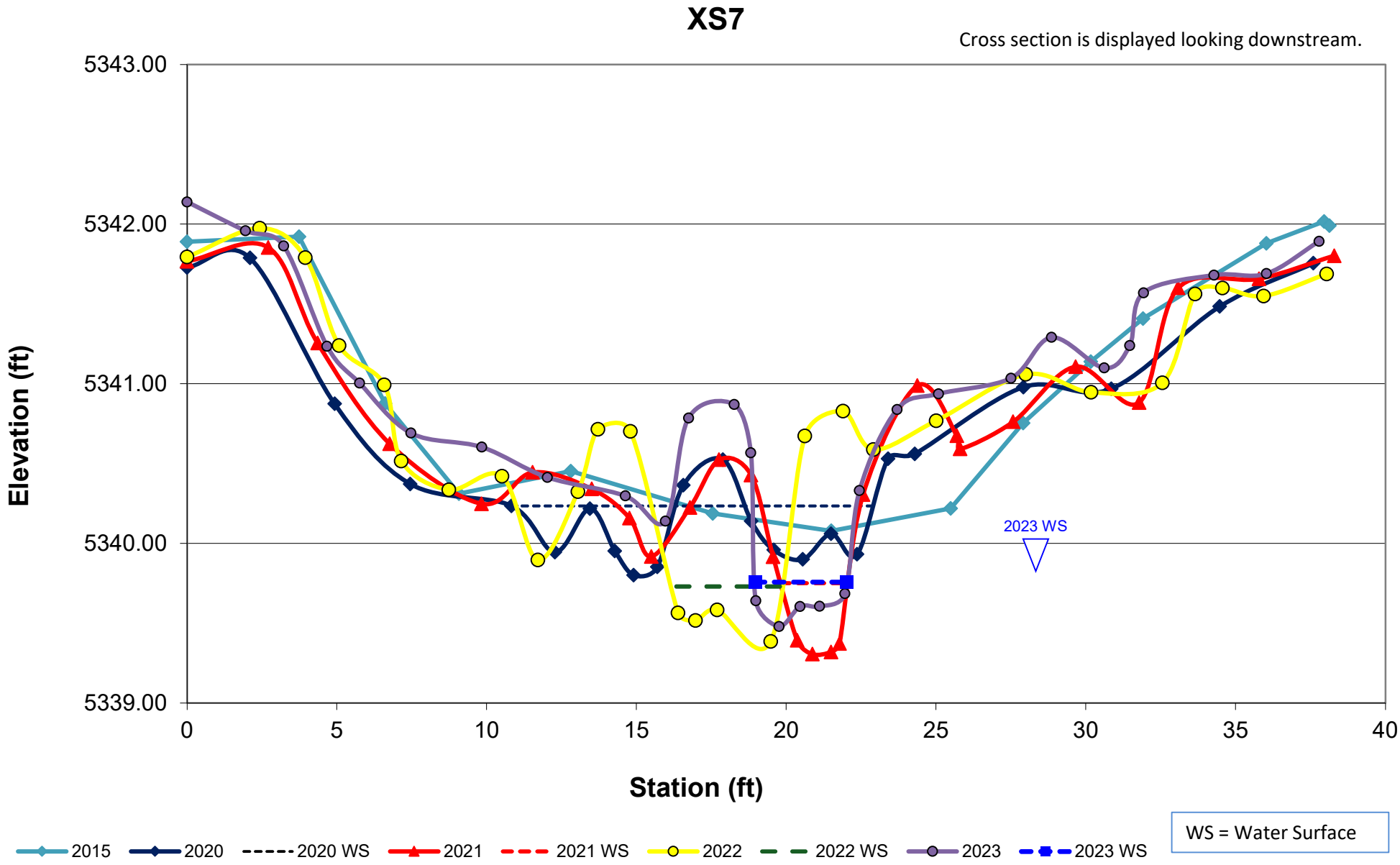

XS2
Cross section is displayed looking downstream.
Elevation (ft)
5352.00
5351.00
5350.00
5349.00
5348.00
5347.00
5346.00
10
20
30
40
50
60
Station (ft)
2023 WS
2015
2015 WS
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface

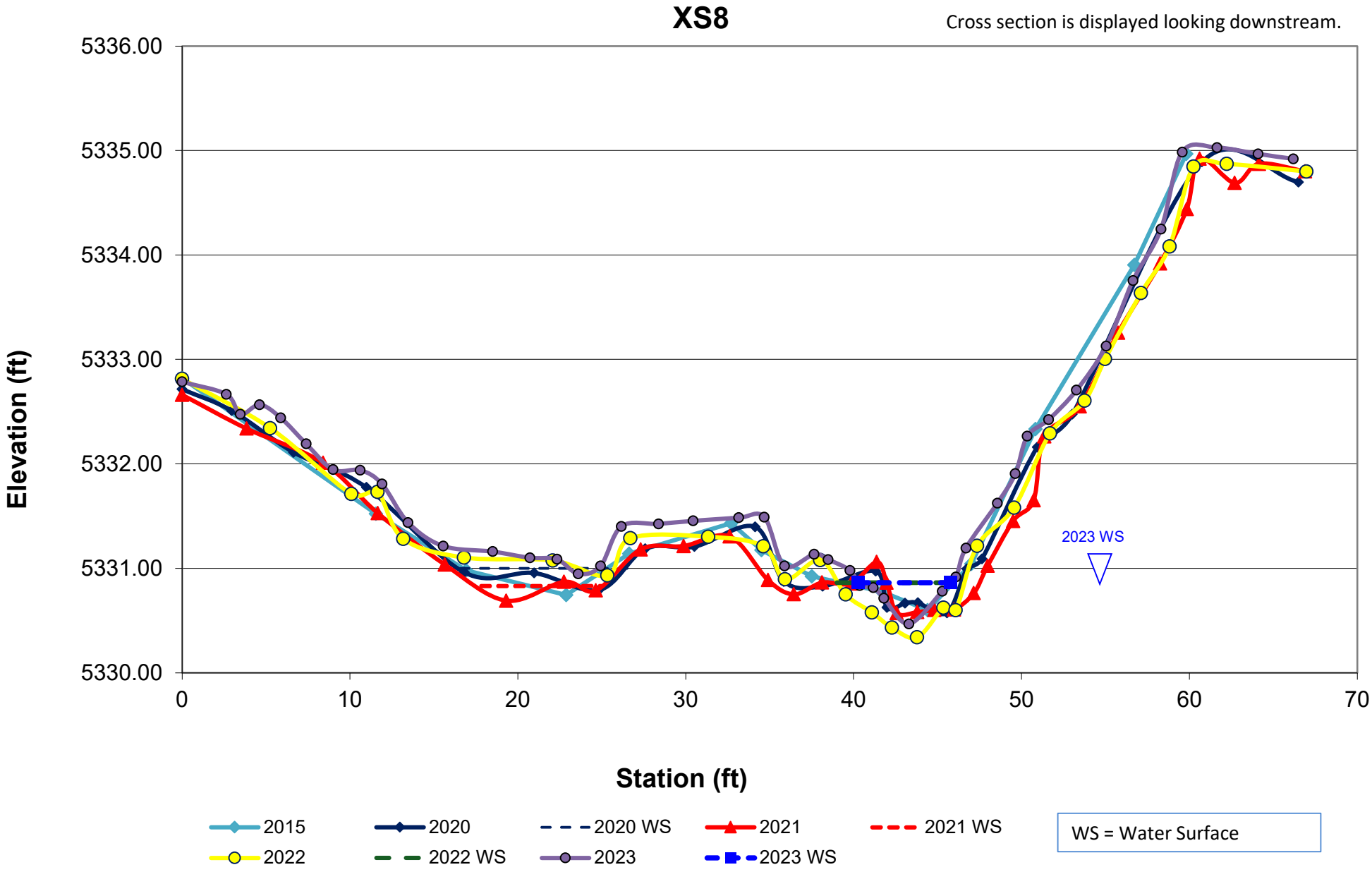

XS3
Cross section is displayed looking downstream.
Elevation (ft)
5347.00
5346.00
5345.00
5344.00
5343.00
5342.00
0
5
10
15
20
25
30
35
40
45
Station (ft)
2023 WS
2015
2015 WS
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface


XS4
Cross section is displayed looking downstream.
Elevation (ft)
5346.00
5345.00
5344.00
5343.00
5342.00
5341.00
0
5
10
15
20
25
30
35
40
45
50
Station (ft)
2023 WS
2015
2019
2019 WS
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface


XS5
Cross section is displayed looking downstream.
Elevation (ft)
5345.00
5344.00
5343.00
5342.00
5341.00
5340.00
5339.00
0
5
10
15
20
25
30
35
40
45
Station (ft)
2023 WS
2015
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface


XS6
Cross section is displayed looking downstream.
Elevation (ft)
5343.00
5342.00
5341.00
5340.00
5339.00
5338.00
5337.00
0
5
10
15
20
25
30
35
Station (ft)
2023 WS
2015
2015 WS
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface


XS7
Cross section is displayed looking downstream.
5343.00
5342.00
5341.00
5340.00
5339.00
Elevation (ft)
0
5
10
15
20
25
30
35
40
Station (ft)
2023 WS
2015
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface


XS8
Cross section is displayed looking downstream.
Elevation (ft)
5336.00
5335.00
5334.00
5333.00
5332.00
5331.00
5330.00
0
10
20
30
40
50
60
70
Station (ft)
2023 WS
2015
2020
2020 WS
2021
2021 WS
2022
2022 WS
2023
2023 WS
WS = Water Surface