

Montana Department of Transportation Stream Mitigation Monitoring Report
SWAMP CREEK EAST MITIGATION SITE

Project Overview

Watershed: Watershed #1 - Kootenai

Monitoring Year: 2020

Years Monitored: 2nd year of monitoring

Corps Permit Number: NWO-2012-00146-MTM

Monitoring Conducted By: Confluence Consulting Inc.

Monitoring Dates: August 4 – 5, 2020

Purpose of the approved project:

As part of the U.S. Highway 2 – Swamp Creek East road reconstruction project (NH 1-1(35)49 F), the Montana Department of Transportation (MDT) modified two reaches of Swamp Creek to allow for highway widening and roadway improvements. MDT mitigated for these impacts on-site by reconstructing 1,069 feet of Swamp Creek adjacent to U.S. Highway 2. The project was broken up into “upper” and “lower” reaches. The lower reach is located east of the U.S. Highway 2 corridor and is approximately 170 linear feet. The upper reach is located west of the U.S. Highway 2 corridor and is approximately 899 linear feet. Construction was completed on the lower reach prior to the 2019 monitoring event and was assessed in 2019. The upper reach was completed in 2020 and assessed for the first time during the 2020 monitoring event.

Site Location:

Upper Reach Upstream Coordinates: 48.1341951, -115.432838

Upper Reach Downstream Coordinates: 48.135767, -115.4337009

Lower Reach Upstream Coordinates: 48.135914, -115.4335097

Lower Reach Downstream Coordinates: 48.137279, -115.4341232

County: Lincoln **Nearest Town:** Libby

Map Included: Yes, see Appendix A

Mitigation Site Construction Started: Summer 2018 **Construction Ended:** Winter 2020

Dates of any recent corrective or maintenance activities (since previous report):

Activity: None **Date:** NA

Specific recommendations for additional corrective actions: Weed control for riparian areas within each reach.

Previous Monitoring Reports and Methods Descriptions:

<https://www.mdt.mt.gov/publications/brochures/stream-mitigation.shtml>

Monitoring methods followed are described in the 2019 monitoring report, with the exception of two new transects and three new photo points that were established in the upper reach. These transects and photo points were installed to establish baseline monitoring locations along the upper reach, that was only recently completed in the spring of 2020.

Requirements (from approved mitigation plan, banking instrument, or DA permit conditions)

Monitoring Period: Minimum of 3 years from construction completion or until concurrence by US Army Corps of Engineers (USACE).

Performance Standards:

Results from the 2020 monitoring event indicate the lower reach of the site is meeting the single quantitative success criteria, while the upper reach is not. The upper reach was completed in early 2020, after the initial 2019 monitoring effort; therefore, these results represent the baseline conditions for the upper reach.

Table 1. Summary of performance standards

Performance Standard	Success Criteria	Criteria Achieved?	Discussion
Vegetation Success	Areal cover of riparian and streambank vegetation is $\geq 75\%$	Yes	The lower reach exhibits an average of 77% areal vegetation cover.
		No	The upper reach exhibits an average of 48% areal vegetation cover.

Summary Data

Riparian Vegetation Inventory

In 2020, the total areal vegetation cover, averaged across transects, was 77% for the lower reach (Table 2). The dominant species recorded along the vegetation transects within this reach included ripgut brome (*Bromus diandrus*) and reed canary grass (*Phalaris arundinacea*). The total areal vegetation cover, averaged across transects, was 48% for the upper reach (Table 2). The dominant species recorded along the vegetation transects in the upper reach included tall hedge-mustard (*Sisymbrium altissimum*) and creeping wild rye (*Elymus repens*). Fourteen of the 35 plant species observed in 2020 were hydrophytic (Appendix C), based on the 2018 National Wetland Plant List (USACE 2018). Half of the plant species observed were native and considered beneficial to the restoration efforts within the project area. Four Montana state-listed Priority 2B noxious weed species, including Canada thistle (*Cirsium arvense*), ox-eye daisy (*Leucanthemum vulgare*), common tansy (*Tanacetum vulgare*), and spotted knapweed (*Centaurea stoebe*) were observed on site in 2020.

Table 2. Percent cover of vegetation transects within the Lower and Upper Reaches of Swamp Creek East in 2019 and 2020.

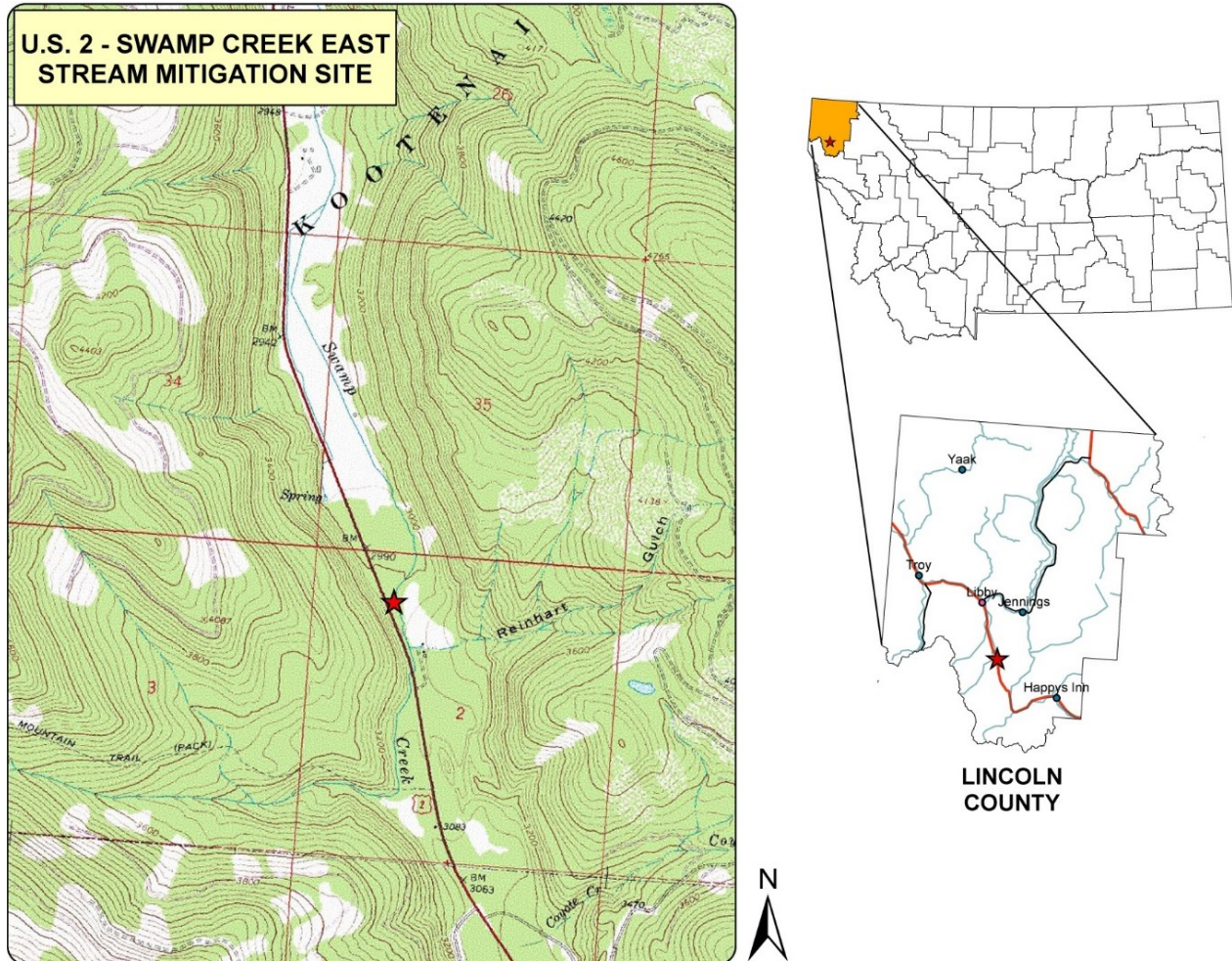
Reach	Location	Length (ft)	% Cover			
			2019		2020	
			Bare Ground/ Fabric	Vegetation	Bare Ground/ Fabric	Vegetation
Lower	Transect 1	42	25	75	18	82
	Transect 2	42	17	83	27	73
	Total	84	21	79	23	77
Upper	Transect 3	40	--	--	59	41
	Transect 4	36	--	--	46	55
	Total	76	--	--	52	48

Conclusions

Vegetation cover was relatively high in both the upper and lower reaches, given how recently the project was completed. The vegetation observed throughout the majority of both reaches was dominated by early successional non-native annual to perennial species which generally provide some stability over bare ground and cover for small animals. Plant cover is expected to increase within both reaches during subsequent monitoring years which will allow the site to meet the established success criteria.

Maps, Plans, Photos:

Figure 1. Site Location Map



Project Area Maps/Figures: See Appendix A

Photos: See Appendix B

Comprehensive Plant List: See Appendix C

Plans: See Appendix D of 2019 Monitoring Report

https://www.mdt.mt.gov/other/webdata/external/planning/STREAM-MITIGATION/2019_REPORTS/2019-FINAL-Swamp-Creek-East.PDF

References

- Montana Department of Agriculture.** June 2019. *Montana Noxious Weed List*. Accessed October 2020 at:
<https://agr.mt.gov/Portals/168/Documents/Weeds/2019%20Montana%20Noxious%20Weed%20List.pdf?ver=2019-07-02-095540-487>
- U.S. Army Corps of Engineers (USACE).** 2018. *National Wetland Plant List* (Version 3.4), prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH

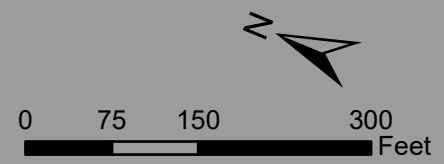
APPENDIX A

PROJECT AREA MAPS

MDT Stream Mitigation Monitoring
Swamp Creek East
Lincoln County, Montana



- Legend**
- Approximate Channel Reach Breaks
 - Vegetation Transects
 - Photo Points



Swamp Creek East 2020 Monitoring Features
Map 1
Date: 11/30/2020
<i>SwampEast_monitor2020.mxd</i>

APPENDIX B

PROJECT AREA PHOTOGRAPHS

MDT Stream Mitigation Monitoring
Swamp Creek East
Lincoln County, Montana

Monitoring Photo Log

SITE NAME: Swamp Creek East
MONITORING YEAR: 2020



2019



2020

Photo Point 1: Looking south (upstream) of lower reach.



2019



2020

Photo Point 2: Looking north (downstream) of lower reach.



2019



2020

Photo Point 3: Looking south (upstream) from the bottom of upper reach during (2019) and after construction (2020).



2020

Photo Point 4: Looking north (downstream) at the downstream end of the upper reach.



2020

Photo Point 5.1: Looking south (upstream) from below the culvert mid-way up the upper reach.



2020

Photo Point 5.2: Looking east at the culvert mid-way up the upper reach.



2020

Photo Point 5.3: Looking north (downstream) from the culvert mid-way up the upper reach.



2020

Photo Point 5.4: Looking south (upstream) from the culvert mid-way up the upper reach.

SITE NAME: Swamp Creek East

MONITORING YEAR: 2020



2020

Photo Point 6.1: Looking southwest (upstream) from the upper end of up upper reach.



2020

Photo Point 6.2: Looking west from the upper end of the upper reach.



2020

Photo Point 6.3: Looking northwest (upstream) from the upper end of the upper reach.



2020

Photo Point 6: Looking north (downstream) from the top of the upper reach.



2019



2020

Additional Photo 1: View looking west across Vegetation Transect #1.

SITE NAME: Swamp Creek East
MONITORING YEAR: 2020



2019



2020

Additional Photo 2: View looking east across Vegetation Transect #1



2019



2020

Additional Photo 3: View looking west across Vegetation Transect #2.



2019



2020

Additional Photo 4: View looking east across Vegetation Transect #2.

SITE NAME: Swamp Creek East

MONITORING YEAR: 2020



2020

Additional Photo 5: View looking west across vegetation transect #3.



2020

Additional Photo 6: View looking east across vegetation transect #3.



2020

Additional Photo 7: View looking west across vegetation transect #4.



2020

Additional Photo 8: View looking west across vegetation transect #4.

APPENDIX C
2019 – 2020 COMPREHENSIVE PLANT SPECIES LIST

MDT Stream Mitigation Monitoring
Swamp Creek East
Lincoln County, Montana

Comprehensive list of plant species observed at the Swamp Creek East Stream Mitigation Site from 2019 through 2020.

Scientific Name	Common Name	WMVC Indicator Status*
<i>Achillea millefolium</i>	Common Yarrow	FACU
<i>Agrostis stolonifera</i>	Spreading Bent	FAC
<i>Alnus incana</i>	Speckled Alder	FACW
<i>Amelanchier alnifolia</i>	Saskatoon Service-Berry	FACU
<i>Bromus diandrus</i>	Ripgut Brome	UPL
<i>Bromus inermis</i>	Smooth Brome	UPL
<i>Bromus japonicus</i>	Japanese Brome	UPL
<i>Bromus squarrosus</i>	Corn Brome	UPL
<i>Bromus tectorum</i>	Cheatgrass	UPL
<i>Centaurea stoebe</i>	Spotted Knapweed	UPL
<i>Cerastium fontanum</i>	Common Mouse-Ear Chickweed	FACU
<i>Chenopodium album</i>	Lamb's-Quarters	FACU
<i>Chenopodium capitatum</i>	Strawberry Goosefoot	UPL
<i>Cirsium arvense</i>	Canada Thistle	FAC
<i>Cornus alba</i>	Red Osier	FACW
<i>Elymus repens</i>	Creeping Wild Rye	UPL
<i>Elymus trachycaulus</i>	Slender Wild Rye	FAC
<i>Epilobium brachycarpum</i>	Willowherb	FAC
<i>Heuchera parviflora</i>	Littleleaf Alumroot	UPL
<i>Lactuca serriola</i>	Prickly Lettuce	FACU
<i>Leucanthemum vulgare</i>	Ox-Eye Daisy	FACU
<i>Maianthemum racemosum</i>	Feathery False Solomon's-Seal	FAC
<i>Phalaris arundinacea</i>	Reed Canary Grass	FACW
<i>Plantago major</i>	Great Plantain	FAC
<i>Poa palustris</i>	Fowl Blue Grass	FAC
<i>Populus balsamifera</i>	Balsam Poplar	FAC
<i>Potentilla norvegica</i>	Norwegian Cinquefoil	FAC
<i>Salix exigua</i>	Narrow-leaf Willow	FACW
<i>Salix lasiandra</i>	Pacific Willow	FACW
<i>Sisymbrium altissimum</i>	Tall Hedge-Mustard	FACU
<i>Sonchus arvensis</i>	Field Sow-Thistle	FACU
<i>Spiraea betulifolia</i>	Shiny-Leaf Meadowsweet	FACU
<i>Symphoricarpos albus</i>	Common Snowberry	FACU
<i>Tanacetum vulgare</i>	Common Tansy	FACU
<i>Thlaspi arvense</i>	Field Pennycress	UPL
<i>Verbascum thapsus</i>	Great Mullein	FACU
<i>xTriticale</i>	Triticale	UPL

* 2018 National Wetland Plant List; Western Mountains, Valleys, and Coast Region (WMVC) (USACE 2018)