
MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2001

*Stillwater River
Absarokee, Montana*



Prepared for:

MONTANA DEPARTMENT OF TRANSPORTATION
2701 Prospect Avenue
Helena, MT 59620-1001

Prepared by:

WETLANDS WEST INC.
P.O. Box 6786
Bozeman, MT 59771

Compiled and Edited by:

LAND & WATER CONSULTING, INC.
P.O. Box 8254
Missoula, MT 59807

July 2002

Project No: 130091.032



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TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 METHODS	1
2.1 Monitoring Dates and Activities	1
2.2 Hydrology	1
2.3 Vegetation.....	3
2.4 Soils	3
2.5 Wetland Delineation.....	3
2.6 Reptiles, Mammals and Amphibians	3
2.7 Birds.....	4
2.8 Macroinvertebrates	4
2.9 Functional Assessment	4
2.10 Photographs	4
2.11 GPS Data	4
2.12 Maintenance Needs.....	5
3.0 RESULTS	5
3.1 Hydrology	5
3.2 Vegetation.....	5
3.3 Soils	7
3.4 Wetland Delineation.....	7
3.5 Wildlife	7
3.6 Macroinvertebrates	8
3.7 Functional Assessment	8
3.8 Photographs	9
3.9 Maintenance Needs/Recommendations	9
3.10 Current Credit Summary.....	10
4.0 REFERENCES	10

TABLES

Table 1	<i>2001 Stillwater River Vegetation Species List</i>
Table 2	<i>Fish and Wildlife Species Observed on the Stillwater River Mitigation Site</i>
Table 3	<i>Summary of 2001 Wetlands Function/Value Ratings and Functional Points at the Stillwater River Wetland Mitigation Project</i>

FIGURES

Figure 1	<i>Project Site Location Map</i>
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APPENDICES

Appendix A:	<i>Figures 2 and 3</i>
Appendix B:	<i>Completed 2001 Wetland Mitigation Site Monitoring Form</i> <i>Completed 2001 Bird Survey Forms</i> <i>Completed 2001 Wetland Delineation Forms</i> <i>Completed 2001 Field and Full Functional Assessment Forms</i> <i>Completed 2001 Macroinvertebrate Sampling Results</i>
Appendix C:	<i>MDT Pre-construction Wetland Delineation Report</i> <i>Pre-construction Functional Assessment</i> <i>Stillwater River Wetland Mitigation Plan</i> <i>Wetland Mitigation Site Map</i>
Appendix D:	<i>Bird Survey Protocol</i> <i>Macroinvertebrate Sampling Protocol</i> <i>GPS Protocol</i>
Appendix E:	<i>Representative Photographs</i>

1.0 INTRODUCTION

The Stillwater River wetland was constructed and filled in the spring of 1999 to mitigate wetland impacts associated with a proposed Federal Aviation Administration expansion of the Columbus airport and a proposed MDT roadway improvement project between Absarokee and Columbus in watershed #13 in the Billings District. The site is located in Stillwater County approximately two miles southwest of the town of Columbus and three miles north of the town of Absarokee, Section 22, Township 3 South, Range 19 East (**Figure 1**). Elevations within the assessment area range from approximately 3,382 to 3,387 feet above sea level. The surrounding land uses include grazing, cropland and residential areas.

The project was anticipated to create approximately 11 acres of wetlands within a conservation easement owned by Virginia K. Thompson. Two dikes were constructed across a former channel of the Stillwater River to impound return irrigation water from the nearby Whitebird irrigation ditch. Excavation was completed to reach groundwater flows from the adjacent Stillwater River. The two dikes were to create 3.79 acres of wetland behind Dike #1 and 6.90 acres of wetland behind Dike #2. The mitigation activities were to impact approximately 3.77 acres of existing wetlands.

The impoundments have standing water with depths ranging from 0-6 feet. Outflow from the larger to the smaller impoundment is through a cattle guard/outflow device through the dike. A similar device allows outflow through the second dike into a small stream connecting to the Stillwater River. The site boundary is illustrated on **Figure 2, Appendix A**.

2.0 METHODS

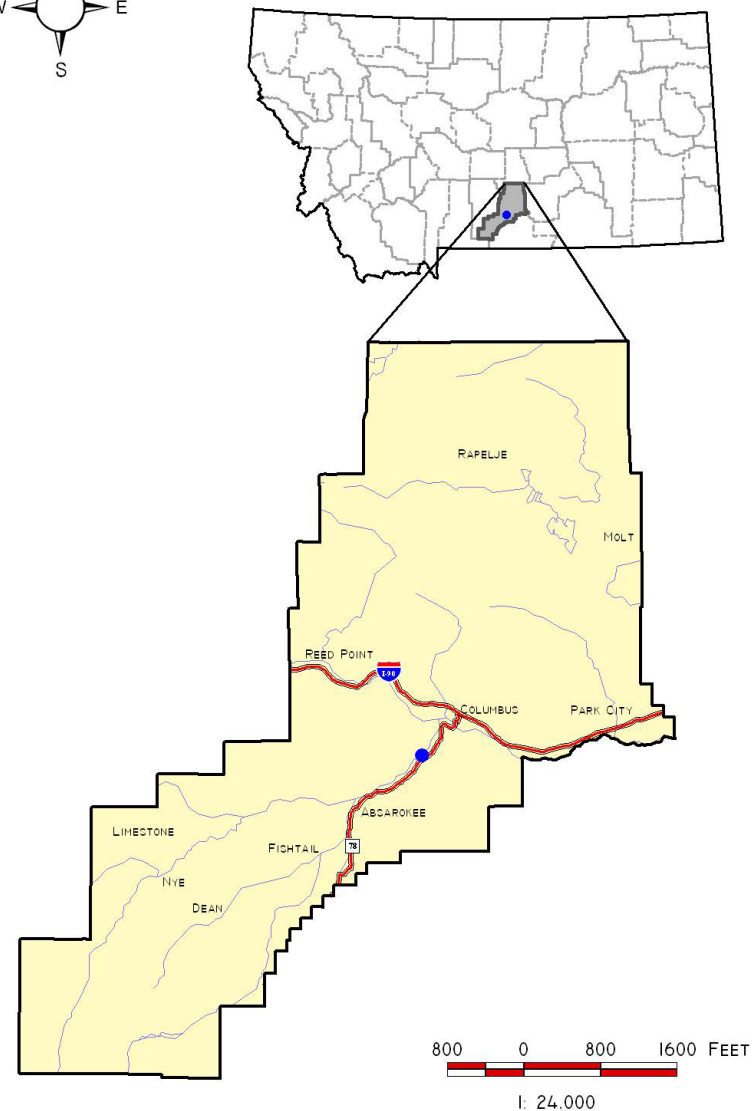
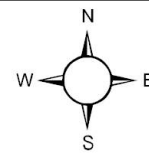
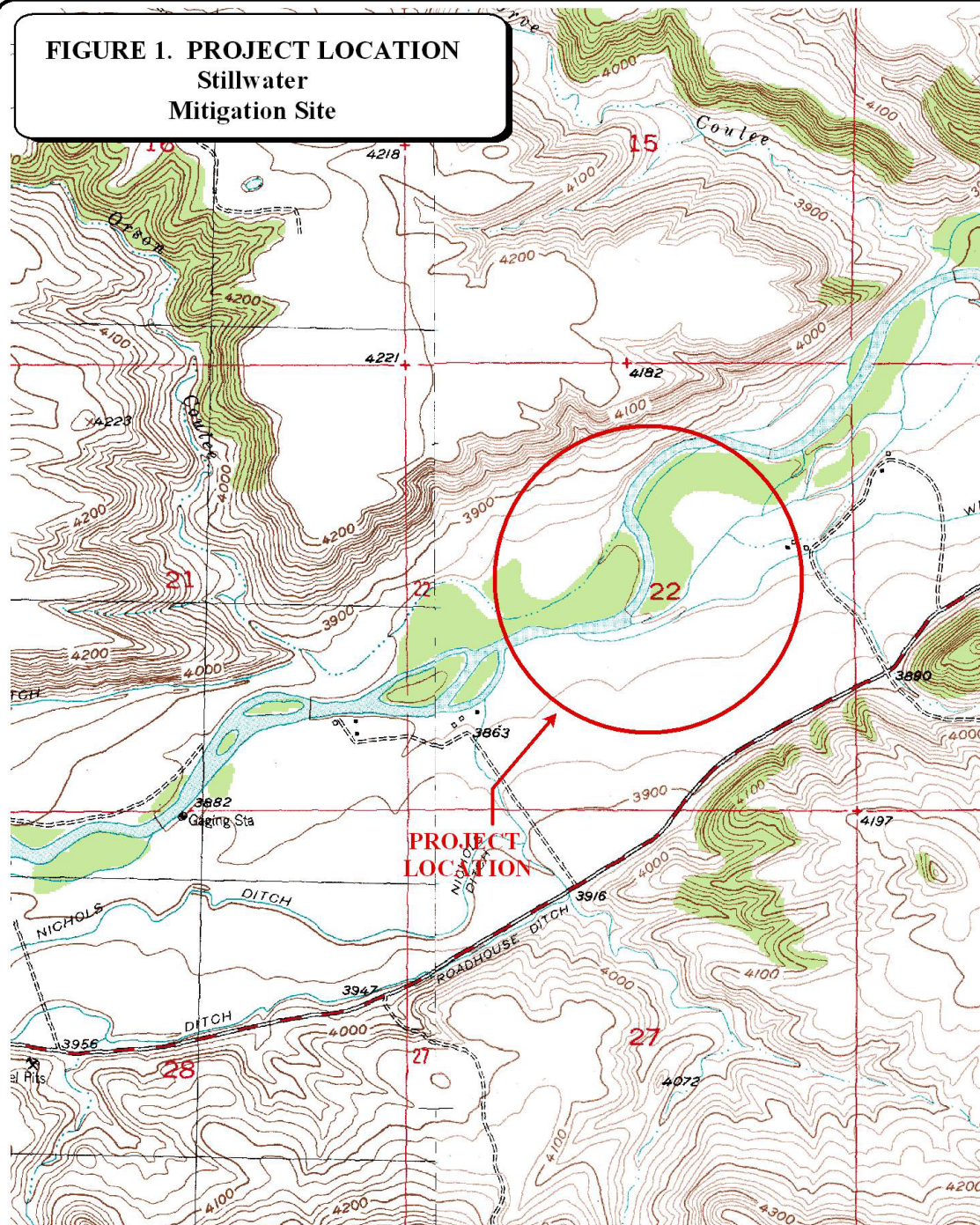
2.1 Monitoring Dates and Activities

The site was visited on the April 25, 2001 for a spring bird use survey and again on August 6, 2001 to monitor the development of wetland functions, values and acreage. All information contained within the Wetland Mitigation Site Monitoring Form (**Appendix B**) and macroinvertebrate samples were collected during the August visit. Activities and information conducted/collected included: wetland delineation; wetland/open water boundary mapping; vegetation community mapping; vegetation transects; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; GPS data points; functional assessment; and, maintenance needs of any bird nesting structures and inflow and outflow structures (non-engineering).

2.2 Hydrology

Wetland hydrology indicators were recorded using procedures outlined in the COE 1987 Wetland Delineation Manual. Hydrology data were recorded on the COE Routine Wetland Delineation Data Form (**Appendix B**) at each wetland determination point.

FIGURE 1. PROJECT LOCATION
Stillwater
Mitigation Site



PROJECT #: 130091.032
DATE: APRIL 2001
LOCATION:
PROJECT MANAGER: B. DUTTON
DRAWN BY: B. NOECKER
M. ARTHUR

LAND & WATER CONSULTING, INC.
1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). The boundary between emergent vegetation and open water was mapped on the air photograph (**Figure 3, Appendix A**). There are no groundwater monitoring wells within the assessment area.

2.3 Vegetation

General vegetation types were delineated on an air photograph during the site visit (**Figure 3, Appendix A**). Coverage of the dominant species in each community type is listed on the monitoring form (**Appendix B**). A comprehensive plant species list for the entire site was compiled and will be updated as new species are encountered. Observations from past years will be compared with new data to document vegetation changes over time. The assessment area is fenced and woody species were not planted on this site.

Two (2) transects were established during the 2001 monitoring event to represent the range of current vegetation conditions. These transects locations are shown on **Figure 2, Appendix A**. Percent cover for each species was recorded on the vegetation transect form within the monitoring form (**Appendix B**). The transects will be used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. Transect ends were marked with metal fence posts and their locations recorded with the GPS unit. Photos of each transect were taken during the site visit.

2.4 Soils

Soils were evaluated during the site visit according to the procedure outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Form (**Appendix B**). The most current terminology used by NRCS was used to describe hydric soils.

2.5 Wetland Delineation

A wetland delineation was conducted within the assessment area according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The information was recorded on the COE Routine Wetland Delineation Forms (**Appendix B**). The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). The wetland/upland and open water boundaries were used to calculate the wetland area developed at the Stillwater River wetland. A pre-construction wetland delineation report and map was completed by the MDT (Urban 1998) and is included in **Appendix C**.

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations were recorded on the wetland monitoring form during each visit (**Appendix B**). Indirect use indicators were also recorded including tracks, scat and burrows. A comprehensive wildlife species list for the entire site was compiled

and will be updated as new species are encountered. Observations from past years will be compared with new data to determine if wildlife use is changing over time.

2.7 Birds

Bird observations were recorded during the site visit according to the established bird survey protocol (**Appendix D**). A general, qualitative bird list has been compiled using these observations. Observations will be compared between years in future studies.

2.8 Macroinvertebrates

One (1) macroinvertebrate sample was collected during the site visit following the 2001 protocol (**Appendix D**). Samples were preserved as outlined in the sampling procedure and sent to a laboratory for analysis. The collections from the two (2) locations indicated on the map were mixed into one sample. The approximate sampling locations are indicated on **Figure 2, Appendix A**.

2.9 Functional Assessment

A functional assessment form was completed for the site using the 1999 MDT Montana Wetland Assessment Method. Field data necessary for this assessment were collected on a condensed data sheet included in the mitigation site monitoring form (**Appendix B**). The remainder of the assessment was completed in the office. Pre-construction functional assessments were completed by MDT and are included in **Appendix C**.

2.10 Photographs

Photographs were taken showing the current land use surrounding the site, the wetland buffer, the monitored area, and the vegetation transects (**Appendix E**). A description and compass direction for each photograph were recorded on the wetland monitoring form.

During the 2001 monitoring season, each photograph point was marked on the ground with a wooden stake and the location recorded with a resource grade GPS. The approximate locations are shown on **Figure 2, Appendix A**. All photographs were taken using a 50 mm lens.

2.11 GPS Data

During the 2001 monitoring season survey points were collected using a resource grade Trimble, Geoplotter III hand-held GPS unit. Points collected included: the beginning and end locations of the vegetation transects; photograph locations; bird box locations; and the jurisdictional wetland boundary. In addition, during the August 2001 monitoring season survey points were collected at four (4) landmarks recognizable on the air photo for purposes of line fitting to the topography.

2.12 Maintenance Needs

The condition of inflow and outflow structures, habitat enhancement structures or other mitigation related structures were evaluated. Minor maintenance needs/recommendations can be found in **Section 3.9**. This examination did not entail an engineering-level analysis.

3.0 RESULTS

3.1 Hydrology

The Stillwater River wetland source of hydrology is groundwater from the river and irrigation return water from the nearby Whitebird irrigation ditch. The historic river channel where the wetlands are located has been diked from receiving natural river flows over the last 30 years (Urban 1998). Water is conveyed from the first to the second impoundment through a “beaver-proofed” outflow device. A similar device allows outflow through the second dike into a small stream connecting to the Stillwater River.

During the August 6, 2001 assessment visit approximately 55% of the assessment area was inundated with 0-6 feet of standing water. Water in the ponded areas was approximately six (6) inches below the high water mark. Open water, or the area without emergent vegetation, is depicted on **Figure 3, Appendix A**.

According to the Western Regional Climate Center, Columbus yearly precipitation totals for 2000 (13 inches) and 2001 (11.5 inches) were 90 and 80 percent, respectively, of the total annual mean precipitation (14.3 inches) in this area.

3.2 Vegetation

Vegetation species identified on the site are presented in **Table 1** and in the monitoring form (**Appendix B**). Six (6) vegetation communities were mapped on the mitigation area map (**Figure 3, Appendix A**). Community types (CT) 4, 5, and 6 are labeled on the map as high concentration areas of knapweed (CT 4), leafy spurge (CT 5), and submerged islands of dead cottonwood in the central areas of the pond (CT 6). There are several areas of submerged (drowned) cottonwoods within the shallow open water areas northwest of the ponds that were not mapped; the main reason for mapping the dead cottonwoods within the central areas was to identify these isolated and observable areas on the aerial photo. The Stillwater vegetation types include: Type 1, *Typha latifolia*.; Type 2, *Carex* spp./*Typha latifolia*; Type 3, *Agropyron* spp./*Populus deltoides*; Type 4, *Centaurea maculosa*; Type 5, *Euphorbia esula*; and, Type 6, dead *Populus deltoides*. Dominant species within each community are listed on the monitoring form (**Appendix B**).

The site has developed wetland vegetation along >50% of the open water periphery and along several shallow lobes or arms of water to the northwest side of the main impoundments. This area is comprised of a forested overstory (largely cottonwoods), and emergent vegetation such as cattail, bulrush, rush, spiked rush, sedge, manna grass, and reed canary grass. The assessment

area (AA) is fenced to exclude livestock however, during the site visit on August 6, five (5) sheep were present within the AA and had evidently broken through the fence to graze.

Table 1: 2001 Stillwater River Vegetation Species List

Scientific Name	Common Name	Indicator Status
<i>Agropyron spp.</i>	Wheatgrass	FAC- - UPL
<i>Agrostis alba</i>	Redtop	FACW
<i>Cynoglossum officinale</i>	houndstongue	FACU
<i>Bromus japonicus</i>	Japanese brome	FACU
<i>Bromus inermis</i>	Smooth brome	NI
<i>Carex aquatilis</i>	Water sedge	OBL
<i>Carex nebrascensis</i>	Nebraska sedge	OBL
<i>Cirsium arvense</i>	Canadian thistle	FACU
<i>Dactylis glomerata</i>	orchard grass	FACU
<i>Eleocharis acicularis</i>	Least spikerush	OBL
<i>Eleocharis rostellata</i>	Beaked spikerush	OBL
<i>Euphorbia esula</i>	leafy spurge	NI
<i>Glyceria grandis</i>	Manna grass	OBL
<i>Juncus balticus</i>	Baltic rush	FACW+
<i>Juniperus spp.</i>	Juniper	--
<i>Phalaris arundinacea</i>	reed canary grass	FACW+
<i>Phleum pratense</i>	timothy	FAC-
<i>Poa spp.</i>	bluegrass	FAC+-FACU
<i>Populus deltoids</i>	cottonwood	FAC-FACW
<i>Salix exigua</i>	Sand bar willow	OBL
<i>Scirpus validus</i>	Soft-stemmed bulrush	OBL
<i>Symphoricarpos albus</i>	snowberry	FACU
<i>Typha latifolia</i>	Cattail	OBL

The vegetation transect results are detailed in the monitoring form (**Appendix B**) and are summarized below. Both transects are located on the northwest side of the impoundments. Transect 1 is located between the west impoundment (#1) and an open water/emergent area; the end of that transect is on the edge an inundated finger of water, however wetland vegetation was scant and considered incidental. This transect will be lengthened in a northwest direction during the 2002 field season to monitor changes to the wetland within the shallow inundation areas. Transect 2 is located almost entirely in an upland area as a result of aerial photo placement prior to the field work. The site has been determined inappropriate because it is in an area that will remain upland over time; the transect will be moved to the area of soil pits 1 and 2 during 2002 to more efficiently represent changes in the wetland over time.

Transect 1 Start	Vegetation Type 2 (9')	Vegetation Type 3 (36')	Total 45'	End Transect 1
Transect 2 Start	Vegetation Type 3 (75')		Vegetation Type 2 (2')	Total 77' End Transect 2

3.3 Soils

The site was mapped as part of the Carter County Stillwater Soil Survey (USDA 1980). The dominant soil on the site is mapped as the undifferentiated Lolo and Nesda soils, flooded (38). These soils are found on low stream terraces and flood plains. Lolo is a very gravelly loam that is taxonomically classified as a Pachic Haploboroll and Nesda is a gravelly loam with the classification of Fluventic Haploboroll. The Lolo-Nesda soil complex has four inclusions with only the “Larry” inclusion being hydric; neither component is hydric. The “Larry” inclusion is typical of wooded terraces like the Stillwater site.

Soils were sampled at two (2) wetland sample points (SP-1 and SP-2). Soils at SP-1 (wetland) were greenish black (Gley 2.5/10Y) clay loam from 0-6 inches. Below six (6) inches an impenetrable rock layer was encountered. The soils at SP-2 (upland) were black (10YR 2/1) fine loams from 0-3 inches and very dark brown (10YR 3/2) sandy loams from 3-18 inches, which matches fairly closely to the Lolo series pedon description.

3.4 Wetland Delineation

The delineated wetland boundary is depicted on **Figure 3, Appendix A**. The COE data forms are included in **Appendix B**. Though the impoundments were constructed to be less than 6 feet deep, very little emergent vegetation has developed beyond the edge of the water or into the shallows. The wetland boundary encompasses 8.49 acres of wetland in total with 6.54 acres of open water <6 feet deep included in that figure.

3.5 Wildlife

Wildlife species are listed in **Table 2**. Activities and densities associated with these observations area are included on the monitoring form in **Appendix B**. Observations included rabbit scat and recent beaver sign such as chewed and fallen trees. In the past, beavers have caused problems at this site by damaging trees and altering the outflow. Beaver numbers have been reduced through shooting and trapping, some trees have been fenced, and “beaver relievers” have been placed around the outflow structures. Fencing appears to have successfully curtailed beaver impacts on trees and no beavers were observed during either visit; however the landowner reports that beavers are still common at the site.

Ten (10) blue bird boxes were installed along the perimeter of the fence encompassing the wetland, all these boxes were in good condition. Utilization of the boxes was evaluated during the both 2001 site visits. Eight (8) of the ten (10) boxes were occupied by tree swallows or other unidentifiable birds in April and five (5) of the ten (boxes) were occupied by tree swallows in August. No bluebirds were observed on site.

A total of seven (7) wood duck boxes were reportedly installed; six (6) in the trees and one (1) on dike #2 (downstream end of wetland). Only three (3) of these boxes were located during the April and August, 2001 visits and none were occupied.

Table 2. Fish and Wildlife Species Observed on the Stillwater River Wetland Mitigation Site

BIRDS	
American Robin (<i>Turdus migratorius</i>)	Red-winged Blackbird (<i>Agelaius phoeniceus</i>)
American Coot (<i>Fulica americana</i>)	Sandhill Crane (<i>Grus canadensis</i>)
Belted Kingfisher (<i>Ceryle alcyon</i>)	Song Sparrow (<i>Melospiza melodia</i>)
Black-capped Chickadee (<i>Poecile atricapillus</i>)	Spotted Sandpiper (<i>Actitis macularia</i>)
Canada Goose (<i>Branta canadensis</i>)	Starling (<i>Sturnus vulgaris</i>)
Downy Woodpecker (<i>Picoides villosus</i>)	Tree Swallow (<i>Tachycineta bicolor</i>)
Green-winged Teal (<i>Anas crecca</i>)	Western Meadowlark (<i>Sturnella neglecta</i>)
Killdeer (<i>Charadrius vociferous</i>)	Willet (<i>Catoptrophorus semipalmatus</i>)
Mallard (<i>Anas platyrhynchos</i>)	Wood Duck (<i>Aix sponsa</i>)
Mourning Dove (<i>Zenaida macroura</i>)	
MAMMALS	
Beaver (<i>Castor Canadensis</i>)	
Rabbit (<i>Lepus spp.</i>)	

3.6 Macroinvertebrates

The macroinvertebrate sampling results are included in **Appendix B**. Rhithron, Inc. summarized the results as stated below.

This analysis suggested sub-optimal biologic conditions at this site (Rhithron, Inc.). The biotic index value was somewhat elevated, suggesting mildly impaired water quality, perhaps by warm temperatures and/or nutrients. The sample was overwhelmed by the ubiquitous worm *Nais variabilis*, which was probably a neutral finding, but which may have skewed the bioassessment result, at least as far as water quality is concerned. Taxa richness and the midge fauna were within expectations, suggesting ample available habitats.

The sample taken from the east end of pond 1 was very warm and just downstream for an active grazing area. Cattle and sheep are allowed to graze within the Whitebird ditch and the ponded area upstream of pond 1. Excrement in these source waterways may be the cause of the impaired water quality. It may be possible to fence out the small ponded area upstream of pond 1 and fence out part of the ditch system. An offstream watering trough may also be a solution.

3.7 Functional Assessment

Completed functional assessment forms are included in **Appendix B** and summarized in **Table 3**. Pre-construction functional assessments were completed for the wetlands by the MDT (Urban 1998) and results of that assessment are included in **Table 3**. At that time of the pre-construction assessment, the wetland acreage was estimated as 3.77 acres and included an “upper” impoundment (per L. Urban). Though the wetland acreage observed during 2001 (8.49 acres) is not directly comparable, there is a definite increase in overall wetland acreage. The functional assessment data indicate that there has been a net gain of 4.72 acres of wetland, including the open water component, and an overall increase in the rating from a Category III wetland in 1998 to a Category II wetland in 2001. The net functional units have gained 58.82 points as a result of

the mitigation efforts. This increase in rating is due to the water storage potential of the site after construction modifications and the sediment/shoreline stabilization.

Table 3: Summary of 2001 Wetland Function/Value Ratings and Functional Points at the Stillwater River Wetland Mitigation Project

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	Pre-construction 1998	Post-construction 2001
Listed/Proposed T&E Species Habitat	High (1.0)	Moderate (0.80)
MNHP Species Habitat	Low (0.1)	Moderate (0.7)
General Wildlife Habitat	Moderate (0.5)	Moderate (0.7)
General Fish/Aquatic Habitat	High (0.8)	Moderate (0.6)
Flood Attenuation	Moderate (0.5)	Moderate (0.6)
Short and Long Term Surface Water Storage	NA	High (1.0)
Sediment, Nutrient, Toxicant Removal	Moderate (0.5)	Moderate (0.6)
Sediment/Shoreline Stabilization	NA	High (1.0)
Production Export/Food Chain Support	High (1.0)	High (0.9)
Groundwater Discharge/Recharge	Low (0.1)	High (1.0)
Uniqueness	Moderate (0.4)	Moderate (0.5)
Recreation/Education Potential	Low (0.1)	Low (0.3)
Actual Points/Possible Points	5/10	8.7/12
% of Possible Score Achieved	50%	73%
Overall Category	III* See Notes of Data Sheet	II
Total Acreage of Assessed Wetlands within Easement	3.77	8.49 ac
Functional Units (acreage x actual points)	15fu	73.82 fu
Net Acreage Gain	NA	4.72 ac
Net Functional Unit Gain		58.82 fu
Total Functional Unit "Gain"		58.82 fu

3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix E**.

3.9 Maintenance Needs/Recommendations

All inflow and outflow structures were functioning satisfactorily. Although seven (7) wood duck boxes were reportedly installed, only three were located. Two of the wood duck boxes are in need of maintenance because they have partially or completely fallen out of the trees. One of the boxes located near transect #2 is in an upland area approximately 100 feet from open water.

The assessment area has been fenced to exclude livestock; however during both visits, sheep had crossed through the fence and were grazing within the wetland. Impacts from grazing appear to

be minimal, however, repairs to the fence would prevent further impacts to this developing wetland.

Management concerns regard the minor infestations of knapweed and leafy spurge (**Figure 3**); weed control in these isolated areas is recommended.

3.10 Current Credit Summary

Approximately 3.77 acres of wetland were impacted to create the Stillwater River impoundments (MDT 1998). Using GPS surveying during delineation, the current gross wetland boundary was measured at 8.49 acres (**Figure 3**). To be consistent with other reports, the Wetland Area information on **Figure 3** subtracts 6.54 acres of open water [<6 feet deep] from the total wetland acreage to accurately illustrate the map areas.

MDT anticipated creating 10.69 acres of wetland within a 15 to 20-acre conservation easement (MDT 1998). The report does not state whether or not this includes enhancement of the 3.77 acres affected by mitigation or if it is in addition to the existing acreage. The mitigation efforts have thus far resulted in 80% of the creation goal (8.49 created/10.69 goal).

In summary, the 2001 field data indicate a net gain of 4.7 acres of wetland / open water at the Stillwater River mitigation site, an overall increase in the functional rating from Category III wetland to a Category II wetland, and an increase of approximately 60 functional units in 2001.

4.0 REFERENCES

- Berglund, J. 1999. *MDT Montana Wetland Assessment Method*. Prepared for Montana Department of Transportation. May 1999.
- Montana Dept. of Transportation. 1996. *MDT Biological Resources Report: Alzada South*. Helena, MT.
- Reed, P.B. 1988. National list of plant species that occur in wetlands: North West (Region 9). Biological Report 88(26.9), May 1988. U.S. Fish and Wildlife Service. Washington, D.C.
- Urban, L. 1998. *Montana Department of Transportation Stillwater Wetland Mitigation Site Wetland Report*.
- US Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual*. US Army Corps. Washington, DC.
- USDA Natural Resource Conservation Service. 1980. *Soil Survey of Stillwater County, Montana*.

Appendix A

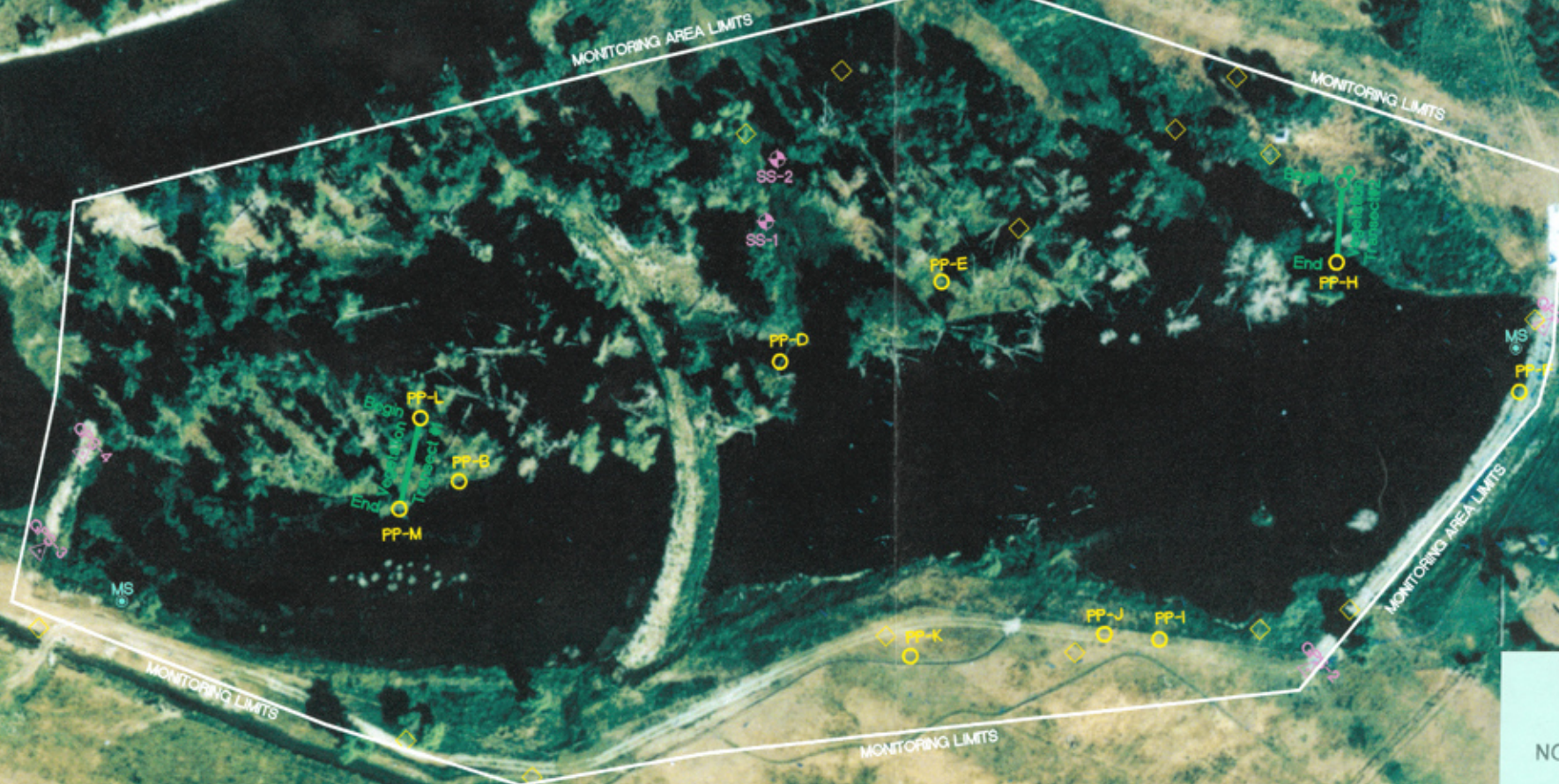
FIGURES 2 - 3

MDT Wetland Mitigation Monitoring
Stillwater River
Absarokee, Montana

Figure-2 Monitoring Activity Locations

Legend

- Monitoring Area Limit
- Vegetation Transect
- Photograph Point
- Aerial Reference Point
- Bird Box
- Soil Sample
- Macro-invertebrate Sample point



NOT TO SCALE

PROJECT NAME		MDT Stillwater Wetland Mitigation	
DRAWN		RA	
FILE NAME: TASKBASE.dwg		CHECKED	
SCALE: 1"= 100 ft		APPROV	
LOCATION: Stillwater River		BD	
SHEET NUMBER		2	
REV		DATE	
DATE		DATE	

LAND & WATER CONSULTING, INC.
P.O. BOX 104
Mankato, MN 56001

Figure 3 - Mapped Site Features

Legend

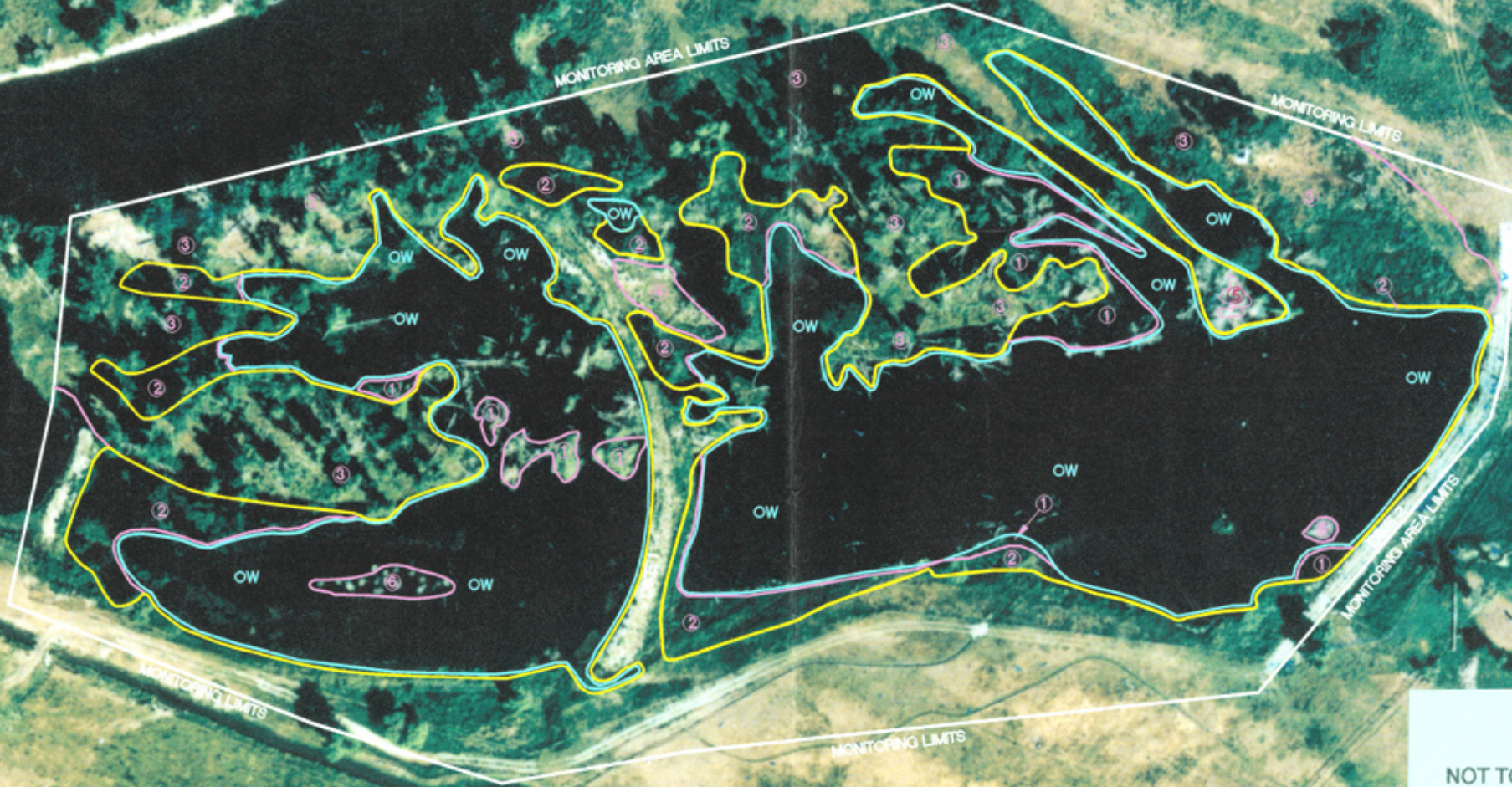
- Monitoring Area Limit
- Wetland Boundary
- Vegetation Community Boundary
- Open Water Boundary

Vegetation Types:

- 1 Typha latifolia
- 2 Carex spp./Typha latifolia
- 3 Agropyron spp./Populus deltoides
- 4 Centaurea maculosa
- 5 Euphorbia esula
- 6 Dead Populus deltoides

Wetland Area
Gross Wetland Area
Open Water
Net Wetland Area

8.49 Acres
-8.54 Acres
195 Acres



NOT TO SCALE

Appendix B

**COMPLETED 2001 WETLAND MITIGATION SITE MONITORING
FORM**

COMPLETED 2001 BIRD SURVEY FORMS

COMPLETED 2001 WETLAND DELINEATION FORMS

**COMPLETED 2001 FIELD AND FUNCTIONAL ASSESSMENT
FORMS**

**COMPLETED 2001 MACROINVERTEBRATE SAMPLING
RESULTS**

*MDT Wetland Mitigation Monitoring
Stillwater River
Absarokee, Montana*



DRAFT - MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Stillwater Project Number: 32 Assessment Date: 8/6/01
 Location: 2 miles SW of Columbus MDT District: _____ Milepost: 37.31
 Legal description: T 35 R 19 E Section 22 Time of Day: 9:30 AM
 Weather Conditions: Clear Person(s) conducting the assessment: LeCain & Bacon
 Initial Evaluation Date: 24 July 1998 Visit #: 2 Monitoring Year: 2001
 Size of evaluation area: 11 acres Land use surrounding wetland: Ranch/grazing

HYDROLOGY

Surface Water

Inundation: Present 2-4 Absent _____ Average depths: 2-3 ft Range of depths: 0 - 6 ft

Assessment area under inundation: 55% (none - 1, 2)

Depth at emergent vegetation-open water boundary: 1 ft

If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes Yes No No

Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): Water in ponds ~ 6" below HWM; in inner channel (detritus enhanced, water lines extend beyond current H2O level - nice w/ inside forest)

Groundwater

Monitoring wells: Present _____ Absent ✓

Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:

- ✓ Map emergent vegetation-open water boundary on air photo
 _____ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)
 _____ GPS survey groundwater monitoring wells locations if present

COMMENTS/PROBLEMS: There is a recently installed monitoring well to the east & west of assessment area. MDT personnel will be asked about these wells. The wells were not measured because they were outside the AA.

There is very little emergent vegetation. The open water/emergent vegetation boundary and the shoreline are functionally the same.

MDT WETLAND MONITORING - VEGETATION TRANSECT (back of form)



Cover Estimate

+ = <1% 3 = 11-20%
1 = 1-5% 4 = 21-50%
2 = 6-10% 5 = >50%

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

Percent of perimeter 100% % developing wetland vegetation - excluding dam/berm structures.

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

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

Notes:

Transect #2 in upland outer fringe, it was marked on map so I placed transect as indicated

WETLAND DELINEATION



At each site conduct the items on the checklist below:

- ☒ Delineate wetlands according to the 1987 Army Corps manual.
- ☒ Delineate wetland-upland boundary on the air photo
- ☒ Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: Remove white areas on dikes from wetland acreage. They are surveyed in with GPS.

FUNCTIONAL ASSESSMENT

Complete Jeff's abbreviated MDT Function and Values Assessment field form.

MAINTENANCE

Were man-made nesting structures installed at this site? YES ☒ NO ☐

If yes, do they need to be repaired? YES ☒ NO ☐

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

One wood duck was installed back in tree. One is hanging over open water (one wood duck box).


Were man-made structures build or installed to impound water or control water flow into or out of the wetland?

YES ☒ NO ☐

If yes, are the structures working properly and in good working order? YES ☒ NO ☐

If no, describe the problems below.

COMMENTS/PROBLEMS: Recording vegetation communities on small aerial photos is difficult.

 DNA

COMMENTS/PROBLEMS:

BIRD SURVEY - FIELD DATA SHEET

SITE:

Stillwater

Page 1 of 1

Page 1 of 1
Date: 25 April 2001

Survey Time: 6:30-9:00

[illegible][illegible][illegible]

Behavior: BP - one of a breeding pair; BD-breeding display; F - foraging; FO - flyover; L - loafing; N - nesting

Habitat: AB - aquatic Bed; FO - forested; MA - marsh; OW - open water; SS - scrub-shrub; UP - upland buffer;

WM - wet meadow

PHOTOGRAPHS

LAND & WATER B-7

Using a camera with a 50 mm lenses and color film take photographs of the following permanent reference points listed in the checklist below. Record the direction of the photograph using a compass. (The first time at each site establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3' above ground, survey the location with a resource grade GPS and mark the location on the air photo.)

Checklist:

- ☒ One photo for each of the 4 cardinal directions surrounding wetland
- ☒ At least one photo showing upland use surrounding wetland – if more than one upland use exists, take additional photos
- ☒ At least one photo showing buffer surrounding wetland
- ☒ One photo from each end of vegetation transect showing transect

(B made changes)

Location	Photo Frame #	Photograph Description	Compass Reading
A	9	Looking N over wetland, Impound #1	NE
B	10	Looking E over wetland, Impound #1	E
C	11	Looking N over side channel off Impound #1	N
D	12	Looking N over Impound #2	NE
E	13	Looking E over Impound #2	ESE
F	14	Looking S over impound #2	S
G	15	End vegetation transect #2 Looking →	340° N
H	16	End vegetation transect #2 Looking →	160° S

COMMENTS/PROBLEMS:

I	17	Looking W over Impound #2	W
J	18	Upland use. Looking →	E S
K	19	Wetland Buffer Looking →	220° S
L	20	Vegetation transect impound #1	130° E
M	21	Vegetation transect impound #2	310° W

GPS SURVEYING

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

Checklist:

- ☒ Jurisdictional wetland boundary
- ☒ 4-6 landmarks recognizable on the air photo
- ☒ Start and end points of vegetation transect(s)
- ☒ Photo reference points
- ☒ Groundwater monitoring well locations

COMMENTS/PROBLEMS:

soil tax



DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

215-32

Project/Site: <u>Still water</u>	Date: <u>8/6/2001</u>
Applicant/Owner: <u>MDT</u>	County: <u>Still water</u>
Investigator: <u>Bacina/Wetlands unit</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <u>Yes</u> <u>No</u>	Community ID: <u>1 (Com type)</u>
Is the site significantly disturbed (Atypical Situation)? <u>Yes</u> <u>No</u>	Transect ID: _____
Is the area a potential Problem Area? <u>Yes</u> <u>No</u>	Plot ID: <u>SP-1</u>
(If needed, explain on reverse.) <u>MDT mit. site</u>	<u>(WL)</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Agrostis alba</u>	<u>H</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>C. utric. or Nebraska</u>	<u>H</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Glyceria spp.</u>	<u>H</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Juncus spp</u>	<u>H</u>	<u>FACW-OBL</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: dominant hydrophytic veg

HYDROLOGY

<p><input type="checkbox"/> Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input checked="" type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>0</u> (in.)</p> <p>Depth to Free Water in Pit: <u>5"</u> (in.)</p> <p>Depth to Saturated Soil: <u>at surface</u> (in.)</p>	<p>Remarks: <u>water from overflow of ponds and also running in a v. sm. amt from ponded area in higher elevated location</u></p>

SOILS

Map Unit Name
(Series and Phase):

Lolo series (#37)

Drainage Class:

deep well-drained

Field Observations

Confirm Mapped Type? Yes ☒ No

Taxonomy (Subgroup):

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	A	gray 2.5/		—	clay loam
6+		rocks - impenetrable	—	—	Gravel

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

gley = hydric soil

WETLAND DETERMINATION

Hydrophytic Vegetation Present?

Yes ☒ No (Circle)

Wetland Hydrology Present?

Yes ☒ No

Hydric Soils Present?

Yes ☒ No

(Circle)

Is this Sampling Point Within a Wetland?

Yes ☒ No

Remarks:

wetland area w/ obvious hydrophytic veg. hydric soil and source of hydrology. Constructed depressed wetland.

Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

215-32

Project/Site: <u>Still water</u>	Date: <u>8/6/01</u>
Applicant/Owner: <u>MDT</u>	County: <u>Still H2O</u>
Investigator: <u>Baca / Wetlands West</u>	State: <u>MT</u>
Do Normal Circumstances exist on the site? <u>Yes</u> <u>No</u>	Community ID: <u>3</u> (comm: type)
Is the site significantly disturbed (Atypical Situation)? <u>Yes</u> <u>No</u>	Transect ID: <u> </u>
Is the area a potential Problem Area? <u>Yes</u> <u>No</u>	Plot ID: <u>(sc) - 2</u>
(If needed, explain on reverse.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Dactylis glomerata</u>	<u>H</u>	<u>FACU</u>	9. <u> </u>	<u> </u>	<u> </u>
2. <u>Bromus inermis</u>	<u>II</u>	<u>NI</u>	10. <u> </u>	<u> </u>	<u> </u>
3. <u>Populus deltoides</u>	<u>T</u>	<u>FAC</u>	11. <u> </u>	<u> </u>	<u> </u>
4. <u>Salix sp</u>	<u>S</u>	<u>FACW-OB</u>	12. <u> </u>	<u> </u>	<u> </u>
5. <u> </u>	<u> </u>	<u> </u>	13. <u> </u>	<u> </u>	<u> </u>
6. <u> </u>	<u> </u>	<u> </u>	14. <u> </u>	<u> </u>	<u> </u>
7. <u> </u>	<u> </u>	<u> </u>	15. <u> </u>	<u> </u>	<u> </u>
8. <u> </u>	<u> </u>	<u> </u>	16. <u> </u>	<u> </u>	<u> </u>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): < 50%

Remarks: hydrophytic

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u> </u> Inundated <u> </u> Saturated in Upper 12 Inches <u> </u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u> </u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u> </u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u> </u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> </u> (in.) Depth to Free Water in Pit: <u> </u> (in.) Depth to Saturated Soil: <u> </u> (in.)	
Remarks: <u>Hydro. indicators</u>	

Draft Field Data Collection Sheet for MDT Montana Wetland Assessment Form

1. CLASSIFICATION

Vegetated Cowardin Class	Estimated % of AA	Predominant Water Regime (CIRCLE)
Emergent	70%	PF IE SPF SF S TF IF
Aquatic Bed	? seen @ edges - if in middle	PF IE SPF SF S TF IF
Moss-Lichen		PF IE SPF SF S TF IF
Scrub-Shrub	(= many)	PF IE SPF SF S TF IF
Forested	45%	PF IE SPF SF S TF IF
Total Estimated % Vegetated		

2. DISTURBANCE is: High Moderate Low Constructed Wetland

3. HYDROLOGY

Do wetlands on site pond or flood? Y N (if no, skip to groundwater discharge/recharge portion of this section)Does AA contain surface or subsurface outlet? Y N If outlet present, is it restricted (subsurface will always be "yes")? Y N

Longest duration of surface water:		Surface Water Duration and other attributes (circle)		
at any wetlands within AA		Perm / Peren	Seas / Intermit	Temp / Ephem
in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...])		Perm / Peren	Seas / Intermit	Temp / Ephem
where fish are or historically were present (cross out if not applicable) <u>likely</u>		Perm / Peren	Seas / Intermit	Temp / Ephem
% of waterbody containing cover objects	>25%	10-25%	<10%	
% bank or shore with riparian or wetland shrub or forested communities	>75%	50-74%	<50%	
adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave action (cross out if not applicable)		Perm / Peren	Seas / Intermit	Temp / Ephem
% cover of wetland bank or shore by sp. with binding rootmasses	>65%	35-64%	<35%	

Do any wetlands on site flood as a result of in-channel or overbank flow? Y N (if no, go to groundwater section below)Estimated wetland area subject to periodic flooding (acres): ≥ 10

Estimated % of flooded wetland classified SS, FO or both:

2-10

 ≥ 75

<2

25-74

<25

Evidence of groundwater discharge or recharge? Y N List: _____

4. VERTEBRATES

Evidence of or potential for T&E or MNHP species use? (For general wildlife use, see separate form.) bald eagleFish observations? (likely - 1 rise in N. pond)

5. OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Y N From: irr. ditch
Potential to receive: low to moderate levels high levelsDoes site contain bog, fen, warm springs, >80 year-old forested wetland, or MNHP "S1" or "S2" plant association? Y N
List: _____Is AA a known recreation / education site? Y N Type: (boat in N. pond), locals report swimming there
Does AA offer strong potential for use as recreation / education site? Y N Type: recreation

Draft Field Data Collection Sheet for MDT Montana Wetland Assessment Form

1. CLASSIFICATION

Vegetated Cowardin Class	Estimated % of AA	Predominant Water Regime (CIRCLE)
Emergent	70%	PF IE <u>SPF</u> SF S TF IF
Aquatic Bed	(?) seen at edges but may be in middle	<u>PF</u> IE SPF SF S TF IF
Moss-Lichen		PF IE SPF SF S TF IF
Scrub-Shrub	(so many)	PF IE SPF SF S TF IF
Forested	45-70	PF IE SPF SF <u>S</u> <u>TF</u> IF
Total Estimated % Vegetated		

2. DISTURBANCE is: High Moderate Low constructed WL

3. HYDROLOGY

Do wetlands on site pond or flood? Y N (if no, skip to groundwater discharge/recharge portion of this section)Does AA contain surface or subsurface outlet? Y N If outlet present, is it restricted (subsurface will always be "yes")? Y N

Longest duration of surface water:		Surface Water Duration and other attributes (circle)		
at any wetlands within AA		<u>Perm / Peren</u>	<u>Seas / Intermit</u>	Temp / Ephem
in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...])		<u>Perm / Peren</u>	Seas / Intermit	Temp / Ephem
where fish are or historically were present (cross out if not applicable) <u>(fish are)</u>		<u>Perm / Peren</u>	Seas / Intermit	Temp / Ephem
% of waterbody containing cover objects	>25%	10-25%	<u><10%</u>	
% bank or shore with riparian or wetland shrub or forested communities	>75%	<u>50-74%</u>	<50%	
adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave action (cross out if not applicable)	<u>Perm / Peren</u>	Seas / Intermit	Temp / Ephem	
% cover of wetland bank or shore by sp. with binding rootmasses	<u>>65%</u>	35-64%	<35%	

Do any wetlands on site flood as a result of in-channel or overbank flow? Y N (if no, go to groundwater section below)Estimated wetland area subject to periodic flooding (acres): ≥10 2-10 <2Estimated % of flooded wetland classified SS, FO or both: ≥75 25-74 <25Evidence of groundwater discharge or recharge? Y N List: _____

4. VERTEBRATES

Evidence of or potential for T&E or MNHP species use? (For general wildlife use, see separate form.) bird eagleFish observations? yes - 1 cr. is

5. OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Y N From: from ir. ditch
Potential to receive: low to moderate levels high levelsDoes site contain bog, fen, warm springs, >80 year-old forested wetland, or MNHP "S1" or "S2" plant association? Y N
List: _____Is AA a known recreation / education site? Y N Type: swimming (passerby told us)
Does AA offer strong potential for use as recreation / education site? Y N Type: boat not tied down first by about

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project Name: Stillwater River Wetland 2. Project #: 215-32 Control #: Task 32 Site 233. Evaluation Date: Mo. Aug Day 6 Yr. 01 4. Evaluator(s): Lelain & Peron 5. Wetlands/Site #(s): _____6. Wetland Location(s): I. Legal: T 2 N or S; R 19 E or W; S 22 ; T _____ N or S; R _____ E or W; S _____ ;

II. Approx. Stationing or Mileposts: _____

III. Watershed: 10070005 GPS Reference No. (if applies): _____

Other Location Information: _____

7. a. Evaluating Agency: Wetlands 8. Wetland size: (total acres) _____ (visually estimated) 9.806 (measured, e.g. by GPS (if applies))
- b. Purpose of Evaluation:
1. _____ Wetlands potentially affected by MDT project
 2. _____ Mitigation wetlands; pre-construction
 3. ☒ Mitigation wetlands; post-construction
 4. _____ Other
9. Assessment area: (AA, td., ac., see instructions on determining AA) 9.806 (visually estimated) (measured, e.g. by GPS (if applies))

10. Classification of Wetland and Aquatic Habitats in AA (HGM according to Brinson, first col.; USFWS according to Cowardin [1979], remaining cols.)

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
(R) Riverine	Riverine	Lower Perennial	AB	Perm ^(H) Flood	E/I	30%
(P) Palustrine	Palustrine	NA	EM	Perm ^(H) Flood	E/I	70%

(Abbreviations: System: Palustrine (P) Subsystem: none/ 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) System: Lacustrine (L), Subsystem: Littoral (4) Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Flooded (I), Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Ciled (D), Partly Drained (PD), Farmed (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

(Circle one) Unknown Rare Common Abundant

Comments: Former River Channel

12. General condition of AA:

I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

Conditions within AA	Predominant conditions adjacent to (within 500 feet of) AA		
	Land managed in predominantly natural state, is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings	Land not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, cleaning, or hydrological alteration; high road or building density
AA occurs and is managed in predominantly natural state, is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but 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	moderate disturbance	<u>moderate disturbance</u>	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, cleaning, or hydrological alteration; high road or building density	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc.): Good, grazingII. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) weedy spurge

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

Diked river channel of Stillwater R. Some sheep had broken through fence to graze. No cattle noted.

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

# of "Cowardin" vegetated classes present in AA (see #10)	≥ 3 vegetated classes (or ≥ 2 if one is forested)	2 vegetated classes (or 1 if forested)	≤ 1 vegetated class
Rating (circle)	<u>High</u>	Moderate	Low

Comments: _____

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):

Primary or critical habitat (list species)

D S

Secondary habitat (list species)

D S

Incidental habitat (list species)

D S

No usable habitat

D S

Bald eagle - down stream 1/4 mi - a nest
single prob. uses area as roost

MDT / FWP
Notes

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.9 (H)	<u>.8 (M)</u>	.7 (M)	.5 (L)	.3 (L)	0 (L)

Sources for documented use (e.g. observations, records, etc.):

See 1998 MDT - Per Pre-con. FA this was lowered to keep it out of Cat I Status

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

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

Primary or critical habitat (list species)

D S

Secondary habitat (list species)

D S

Incidental habitat (list species)

D S

No usable habitat

D S

great blue heron
by low stream

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.8 (H)	<u>.7 (M)</u>	.6 (M)	.2 (L)	.1 (L)	0 (L)

Sources for documented use (e.g. observations, records, etc.):

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

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

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

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

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

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

Structural diversity (see #13)	High								Moderate								Low			
	Even				Uneven				Even				Uneven				Even			
	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
Class cover distribution (all vegetated classes)																				
Duration of surface water in ≥ 10% of AA																				
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	<u>H</u>	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 [E = exceptional, H = high, M = moderate, or L = low] for this function)

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

Comments:

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading - 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support? Y N Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Types of fish known or suspected within AA	Modified Habitat Quality (ii)			
	Exceptional	High	Moderate	Low
Native game fish	1 (E)	.9 (H)	.7 (M)	.5 (M)
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

Comments:

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, circle NA here and proceed to next function.)

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] for this function)

Estimated wetland area in AA subject to periodic flooding	> 10 acres			< 10 - 2 acres			< 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1 (H)	.9 (H)	.6 (M)	.8 (H)	.7 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)	.8 (H)	.5 (M)	.7 (H)	.6 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle)? Y N
Comments:

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, circle NA here and proceed with the evaluation.)

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] for this function. 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			< 5, > 1 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	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
Wetlands in AA flood or pond < 5 out of 10 years	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess 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, circle NA here and proceed with the evaluation.)

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] for this function.)

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments:

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

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses	Duration of surface water adjacent to rooted vegetation		
	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
> 65%	1 (H)	.9 (H)	.7 (M)
35-64%	.7 (M)	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

Comments:

14I. Production Export/Food Chain Support:

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] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; 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 = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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

Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

I. Discharge Indicators

- ☐ Springs are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☒ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☐ Other

II. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Other

III. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments:

14K. Uniqueness:

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] for this function.

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

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. site: (circle) Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

iii. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N

(If yes, go to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iv. Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	Disturbance at AA (#12i)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage) 8.49
A. Listed/Proposed T&E Species Habitat	H	.8	1	6.79
B. MT Natural Heritage Program Species Habitat	L	.7	1	5.94
C. General Wildlife Habitat	M	.7	1	5.94
D. General Fish/Aquatic Habitat	M	.6	1	5.09
E. Flood Attenuation	M	.6	1	5.09
F. Short and Long Term Surface Water Storage	H	1	1	8.49
G. Sediment/Nutrient/Toxicant Removal	M	.6	1	5.09
H. Sediment/Shoreline Stabilization	H	1	1	8.49
I. Production Export/Food Chain Support	H	.9	1	7.64
J. Groundwater Discharge/Recharge	H	1	1	8.49
K. Uniqueness	M	.5	1	4.23
L. Recreation/Education Potential	L	.3	1	2.54
Totals:		8.7	12	73.22

7370

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II III IV

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, 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
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)

- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; or
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic 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
- ☒ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)

- ☐ "Low" rating for Uniqueness; and
- ☐ "Low" rating for Production Export/Food Chain Support; and
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

Note: 3.77 ac. of WL affected by mit. per mdt

Macro-invertebrate Sampling Results for Stillwater River

Montana Department of Transportation	Project Name	Stillwater River
Wetland Mitigation Monitoring Project	Project/task number	215-32
for	Date	8/6/2001
Land and Water Consulting	Field Personnel	Wetlands West
	Note	South Pond (Impoundment #1)
2001	Rhithron Sample Identification	1
Coelenterata	<i>Hydra</i>	
Oligochaeta	Enchytraeic Enchytraeidae	
	Naididae <i>Chaetogaster</i>	
	<i>Nais elinguis</i>	
	<i>Nais variabilis</i>	162
	<i>Ophidonais serpentina</i>	1
	Tubificidae Tubificidae - immature	
	<i>Limnodrilus hoffmeisteri</i>	
Hirudinea	Erpobdellid <i>Mooreobdella microstoma</i>	
	<i>Nepheleopsis</i>	
	Glossiphoniidae <i>Helobdella stagnalis</i>	
	<i>Helobdella</i>	
	<i>Glossiphonia</i>	
Bivalvia	Sphaeriid <i>Sphaerium</i>	
Gastropoda	Lymnaeid <i>Fossaria</i>	
	Physidae <i>Physa</i>	1
	Planorbidae <i>Gyraulus</i>	
	<i>Helisoma</i>	
Crustacea	Cladocer Cladocera	2
	Copepoda Calanoida	1
	Cyclopoida	
	Ostracoda Ostracoda	5
	Amphipoda <i>Gammarus</i>	
	<i>Hyaella azteca</i>	11
	Decapoda <i>Orconectes</i>	
Acarina	Acari	1
Odonata	Aeshnids <i>Anax</i>	
	Libellulidae Libellulidae-early instar	
	<i>Sympetrum</i>	
	Coenagrionidae Coenagrionidae-early instar	3
	<i>Enallagma</i>	1
	Lestidae <i>Lestes</i>	
Ephemeroptera	Baetidae <i>Callibaetis</i>	3
	Caenidae <i>Caenis</i>	
Hemiptera	Corixidae Corixidae - immature	
	<i>Hesperocorixa</i>	
	<i>Sigara</i>	
	<i>Trichocorixa</i>	
	Nepidae <i>Ranatra</i>	
	Notonectidae <i>Notonecta</i>	
Trichoptera	Hydroptilid Hydroptilidae - pupa	
	Leptoceridae Leptoceridae - early instar	
	<i>Mystacides</i>	
	<i>Ylodes</i>	
Coleoptera	Chrysomelid Chrysomelidae	
	Curculionidae <i>Bagous</i>	
	Dytiscidae <i>Acilius</i>	
	Hydroporinae - early instar larvae	
	<i>Hygrotus</i>	
	<i>Liodessus</i>	
	<i>Laccophilus</i>	
	<i>Neoporus</i>	
	Elmidae <i>Heterolimnius</i>	
	Haliplidae <i>Haliplus</i>	1
	<i>Peltodytes</i>	
	Hydrophilidae <i>Berosus</i>	
	<i>Helophorus</i>	
	<i>Hydrobius</i>	
	<i>Hydrochara</i>	
	<i>Laccobius</i>	
	<i>Tropisternus</i>	

Macro-invertebrate Sampling Results for Stillwater River

Diptera

Ceratopogonin	<i>Bezzia/Palpomyia</i>	5	
	<i>Dasyhelea</i>	1	
Chaoboridae	<i>Chaoborus</i>		
Culicidae	<i>Anopheles</i>		
	<i>Culex</i>		
Ephydriidae	<i>Ephydriidae</i>		
Simuliidae	<i>Simulium</i>		
Sciomyzidae	<i>Sciomyzidae</i>		
Stratiomyidae	<i>Odontomyia</i>		
Chironomidae	<i>Acricotopus</i>	5	
	<i>Chironomus</i>		
	<i>Cladotanytarsus</i>		
	<i>Corynoneura</i>		
	<i>Cryptotendipes</i>		
	<i>Dicrotendipes</i>		
	<i>Einfeldia</i>		
	<i>Endochironomus</i>	2	
	<i>Labrundinia</i>		
	<i>Microtendipes</i>		
	<i>Orthocladius annectens</i>	2	
	<i>Parachironomus</i>		
	<i>Paramerina</i>		
	<i>Paratanytarsus</i>	32	
	<i>Phaenopsectra</i>		
	<i>Polypedilum</i>		
	<i>Procladius</i>		
	<i>Psectrocladius</i>		
	<i>Psectrotanytus</i>		
	<i>Pseudochironomus</i>		
	<i>Tanytus</i>		
	<i>Tanytarsus</i>	3	
	TOTAL	242	
grids			1
Total taxa			19
POET			1
Chironomidae taxa			5
Crustacea taxa + Mollusca taxa			2
% Chironomidae		18.181818	
Orthoclaadiinae/Chironomidae		15.90909091	
%Amphipoda		4.545454545	
%Crustacea + %Mollusca		4.958677686	
HBI		7.599173554	
%Dominant taxon		66.94214876	
%Collector-Gatherers		93.80165289	
%Filterers		0.826446281	
Total taxa			3
POET			1
Chironomidae taxa			3
Crustacea taxa + Mollusca taxa			3
% Chironomidae			1
Orthoclaadiinae/Chironomidae			3
%Amphipoda			3
%Crustacea + %Mollusca			3
HBI			1
%Dominant taxon			1
%Collector-Gatherers			5
%Filterers			3
site score			30

Appendix C

MDT PRE-CONSTRUCTION WETLAND DELINEATION REPORT PRE-CONSTRUCTION FUNCTIONAL ASSESSMENT STILLWATER RIVER WETLAND MITIGATION PLAN WETLAND MITIGATION SITE MAP

*MDT Wetland Mitigation Monitoring
Stillwater River
Absarokee, Montana*

**MONTANA DEPARTMENT OF TRANSPORTATION
STILLWATER WETLAND MITIGATION SITE
WETLAND REPORT**

**Conducted by
Lawrence J. Urban
Wetland Mitigation Specialist**

Introduction:

The Montana Department of Transportation in cooperation with the County of Stillwater is proposing to purchase constructed wetland credits at a wetland mitigation site within the confines of a former channel of the Stillwater River, approximately 2 miles southwest of the town of Columbus and 3 miles north of the town of Absarokee, Stillwater County, Montana. Wetland credits developed at this site are proposed to mitigate wetland impacts associated with a Federal Aviation Administration (FAA) project to expand the runways at the Columbus airport, and MDT's proposed Columbus to Absarokee roadway improvement project. It is anticipated that the proposed project will create approximately 10.69 acres of wetlands within a 15 to 20 acre conservation easement on property owned by Virginia K. Thompson.

The site is currently utilized as a fall/winter and spring pasture for livestock (cows & sheep). The bottom of the former channel of the Stillwater River consists of emergent herbaceous vegetative species, with a scattering of tree saplings and shrubs. Due to the heavy grazing pressure exerted on this area, the shrubs and trees appear to be stunted by livestock browsing. The area located to the east and south of the proposed mitigation site are pastures utilized for both hay production and livestock grazing. To the west of the site are forested and scrub/shrub riparian vegetative communities that are between the proposed mitigation site and the Stillwater River. Situated within these riparian areas are gravel bars and piles that are covered with nonnative herbaceous weed species such as bearded knapweed and Russian Thistle.

Natural flood flows are no longer entering the old channel as a dike and a hardened riverbank were constructed across the former channel to prevent flooding of residences downstream of the site. These structures were constructed at some point in the last 30 years to divert the river to the west away from this channel. The Whitebird irrigation ditch diversion point is situated approximately 1/8 of a mile upstream of the dike and hardened bank. Overflow from the Whitebird ditch is diverted into the former river channel, via a control structure to provide hydrology to a 1/4 acre man-made pond and water for livestock utilizing the area as a pasture. The proposed project will have no effect on any of the Whitebird ditch structures, nor the dike and hardened streambank along the Stillwater River.

Project Description:

The proposed project consists of the construction and placement of two (2) dikes across the former river channel to impound wastewater flows from the nearby Whitebird irrigation ditch, and groundwater flows from the nearby Stillwater River. By constructing the two dikes, two impoundments of standing water will be created, ranging in size from **3.79 acres** behind **Dike # 1**, and **6.9 acres** behind **Dike # 2**. Based upon the existing elevations of the former river channel, **Dike # 1** will have the following breakdown of vegetative zone development; **1.53 acres** of saturated emergent vegetation, **1.83 acres** of rooted emergent vegetation 0 to 3 feet below the surface water elevation, and **0.43 acres** of open water with water levels between 3 and 6 feet in depth. **Dike # 2** is anticipated to have similar vegetative zones, but somewhat larger in size; **2.65 acres** of saturated emergent vegetation up to 2 feet above the surface water level, **2.09 acres** of rooted emergent vegetation 0 to 3 feet below the surface water elevation, and **2.16 acres** of open water with water levels between 3 and 6 feet in depth.

An onsite field survey of the property indicates that approximately 3.77 acres of existing wetlands within the former river channel will be impacted by the proposed mitigation project. A majority of these wetlands will occur in water depths greater than 3 feet in depth, but the remainder will occur in water depths less than 3 feet. It is anticipated that those emergent vegetative species such as *Scirpus acutus*, *Juncus* spp., *Eleocharis* spp., *Carex* spp. and *Typha latifolia* occurring in these shallow water areas will survive and help to colonize those newly saturated zones around the perimeter of the lower impoundment.

It is anticipated with construction of the proposed dikes that there will be some loss of trees along the western edge of the two impoundments. However, these will be minor in nature, as the remaining trees will be unaffected by construction activities. Saturation of these forested areas and removal of the grazing pressures associated with livestock should improve conditions to create a greater diversity of woody shrub and tree species within these areas.

Wetland Findings:

On July 24, 1998, a field investigation was conducted to determine the extent of existing wetlands within the former channel of the Stillwater River. Two distinct wetland boundary lines were identified along the eastern and western banks of the former river channel. A total of ten (10) soil borings were taken along these boundary lines as the vegetative communities and hydrologic conditions changed. This data is reflected in the U.S. Army Corps of Engineers 1987 Routine Wetland Determination Data Forms attached to this report.

Vegetation above the riverbanks was distinctly upland in nature as characterized by pink clover, timothy, orchard grass, alfalfa, roses and other species of vegetation commonly found in pastures. Woody vegetation consisted primarily of Russian olive, snowberry, prairie rose and cottonwood trees.

The wetland found within the river channel was an emergent vegetative community that varied in community composition and density dependent upon water elevations and soil composition. The interior of the wetland centered around a flowing stream of water, within a 5 to 10-foot wide channel, moving at approximately 5 to 8 cubic feet per second at a depth of between 1.5 to 2 feet. Moving toward the east and/or west banks of the former river channel, the majority of the wetland community was in standing water between 0 and 18 inches in depth. The zone of saturation within this former river channel extended between 5 and 10 feet beyond the end of the standing water within this complex. The extent of the saturation zone was dependent upon the gradual or steep rise of the topography into the upland /riparian communities.

Between boring locations # 1 & # 2 (See attached Data Form), the vegetative community within the emergent marsh was primarily reed canary grass (*Phalaris arundinacea*) and Nebraska sedge (*Carex nebrascensis*) with a mixture of three-square bulrush (*Scirpus pungens*), common large monkey flower (*Mimulus guttatus*) and Eleocharis species. The interior of this wetland community had water levels between 16 to 20 inches in depth, while the wetland edges had saturated soils at 6 inches and groundwater at a depth of 8 inches. The soils were largely mineral in nature with an organic layer of deposition 0 to 3 inches thick. Soils were only evident to a depth of ten inches, where a gravel lens and groundwater were quite apparent. Secondary characteristics of sulfidic odor, iron concretions and oxidized rhizospheres identified it as a hydric soil.

The vegetative community situated between Boring # 2 and # 3 was primarily a saturated zone that exhibited signs of heavy overgrazing, based upon the height of the vegetative species observed. The dominant vegetation in these areas was primarily least spikerush (*Eleocharis acicularis*) and Nebraska sedge, with a scattering of reed canary grass, Baltic rush (*Juncus balticus*), buttercup (*Ranunculus* spp.), common large monkey flower, and mustard species (*Brassica* spp.). The area was primarily saturated soils with some open water present within the interior. Soils again were hydric in nature, although more gravel was present and it was closer to the surface (10 inches deep).

Heavy grazing was quite evident between Boring locations #3 and # 4, as the vegetation was virtually grazed down to ground level. The dominant vegetation within this saturated area was Nebraska sedge, Baltic rush, least spikerush, common large monkey flower, buttercup and field horsetail (*Equisetum arvense*). The soils within this area were very shallow in nature due to the extent of gravel found in the soil borings, and a gravel layer which precluded further sampling beyond ten inches. The low chroma colors were apparent in the first ten inches where 7.5YR 2.5/1 and 10YR 3/2 colors were identified within the soil profile. Sulfidic odors, iron concretions and oxidized rhizospheres were also noticeable during the soil profile characterizations. The soils within this area were saturated to the surface, and groundwater was evident at one inch in depth below the surface.

At boring location # 5, the vegetative community was quite different as more surface water was present across the area near the property boundary fence. At this location, the vegetation was dominated by common cattail (*Typha latifolia*), bulrushes (*Scirpus* spp.), Nebraska sedge, Baltic rush, least spikerush and a variety of miscellaneous herbaceous herbs and forbs. The surface water levels varied between

10 to 12 inches in depth, with the soil primarily a clay loam (7.5YR2.5/1) to a sandy clay loam (10YR3/2-4/2). The soils exhibited a number of hydric soil characteristics, including sulfidic odor, iron concretions and oxidized rhizospheres.

Along the western wetland boundary adjacent to the forested / scrub-shrub riparian area, the wetland had a different vegetative community structure. Between soil borings # 6 & # 7, the dominant plants observed were reed canary grass, foxtail barley (*Hordeum jubatum*), Nebraska sedge, buttercup, common large monkey flower, true forget-me-not (*Myosotis scorpioides*), and a scattering of riverbank willow saplings (*Salix exigua*). The majority of the wetland area had a saturated substrate in this section near the northern property boundary. The width of the wetland varied between 10 to 25 feet dependent upon the location of the channel containing the water flow through the site. Soils in this area were mostly sandy clay with an abundant amount of gravels as the depth of the hole increased.

Boring # 8 was located within an old floodplain channel from the Stillwater River. It was quite apparent that the area was still receiving groundwater flows from the river through the gravel seams in the channel, even though the channel had been cutoff from the river with the installation of rip-rap along the riverbank. The channel had pockets of standing water, as well as saturated soils throughout. Mature riverbank willow and cottonwood trees lined the embankment of this channel. Many riverbank willow saplings were growing within the channel, as were obligate and facultative wetland plant species like common cattail, Nebraska sedge, three-square bulrush, Baltic rush, and true forget-me-not. Soils were in the 7.5YR 2.5/1 to 4/2 chroma color range, with a consistency of sandy and gravelly clays. Soil borings could not extend beyond 8 inches in depth due to the density of gravel and cobbles apparent in the soil below that depth.

Between boring locations # 9 & # 10, the wetland extended right up to the former river channel bank. Water depths in this area varied from 10 to 16 inches or greater. The steep bank limited the amount of vegetative growth, as did the lack of topsoil within the forested riparian area in the upland terrace above the wetland. Trees along this bank were primarily riverbank willow and eastern cottonwood. Vegetation in the wetland portion of the channel, was dominated by common cattail, reed canary grass, soft stem bulrush (*Scirpus validus*), Nebraska sedge, *Juncus* spp. and a variety of flowering herbs. Soils within the wetland were organic on the surface (10YR4/4), but became quite sandy and gravelly clays as you descended in the soil profile.

The upland area to the west of the wetland was dominated by a number of weed species, including; whitetop, bearded knapweed (*Centaria* sp.), common mullein, and Russian thistle. Tree and shrub species within this area were primarily cottonwoods, willows, buffaloberry, and Russian olive. The area appeared to be covered with remnants of old gravel piles that were probably the remains of excavation for the pond at the southern end of the former river channel or from old gold mining dredge operations. Very little topsoil was present, if any over the entire area.

Wetland Findings:

Based upon observations, the entire wetland area rated out as a Class I wetland based upon the sighting of a bald eagle and the documented nesting success of a pair of eagles less than 3/4's of a mile from the proposed wetland mitigation project. However, due to the evidence of overgrazing by livestock within the wetland, and the lack or low rating of some important wetland functions, the rating needs to be changed to reflect its current condition as a Class III wetland (see attached MDT form).

Wildlife:

As the study was conducted during the daylight hours, and livestock were present within the area, little or no wildlife species were observed, with the exception of bird species. Various tracks and scat piles were observed within the study area that indicate species like white-tailed deer, red fox, raccoon, mink, muskrat utilize the site. In addition to the tracks and scat piles, remnant signs of beaver activity were evident as cut willows and cottonwood stumps were prevalent in the riparian zone between the former channel and the existing channel of the Stillwater River. The age of these cuttings indicates that beavers have not utilized the site for several years.

Standing water is present in the former river channel, and a number of waterfowl were observed during our field study utilizing these open water pockets for feeding and roosting. Species observed, included: mallards, green-winged & cinnamon teal, wood ducks and American coots. Several shorebirds were also observed, primarily spotted sandpiper and killdeer. Other birds observed utilizing the sites were; American Robin, red-winged blackbirds, Brewer's blackbird, Eastern kingbird, cedar waxwings, Great Blue heron, mourning doves, yellow warblers, vesper sparrows, bank swallows, and a mature Bald Eagle.

A mature Bald Eagle (*Haliaeetus leucocephalus*), was observed roosting in a tree at the southern end of the site near the pond and dike along the Stillwater River. Personal communication with *Dennis Flath of the Montana Department of Fish, Wildlife and Parks*, indicates that an active Bald Eagle nest is located approximately 3/4 mile south of the proposed wetland mitigation project. The pair of eagles utilizing this nest successfully fledged two young eagle in 1998. Mr. Flath indicated that special provisions should be placed within the project plans and specifications to prevent disturbance of the nesting pair if construction takes place in the spring of 1999. He requested that no heavy equipment be operated within 3/4 of mile from the nest during the incubation period, and a 1/2 mile of the nest once the eagles have hatched. These provisions would need to be in place prior to March 1st and can be removed after July 15th, or once the young eagles have fledged out of the nest. These provisions are different from the normal specials for Bald eagle nests as he considers the area to be very open and the chances of disturbance to the nesting pair much higher than in other areas of the state.

No herpetiles and/or amphibians were observed during our field investigation of the site. However, it is possible that amphibian species like the spotted and Northern leopard frogs, western toad, and tiger salamanders could be present or utilize the site for a part of their life cycle. Although no other herpetile species were observed within the project area, the following species might be present, include:

racers, gopher snakes, common & western garter snakes, and the western rattlesnake.

A database search conducted by the Montana Natural Heritage Program (See attached MNHP response 7/28/98) indicated that no records of species of special concern were found within the project area. This database search did not even identify the active bald eagle nest reported by Dennis Flath of Montana Fish, Wildlife & Parks, which is situated approximately 3/4's of a mile south of the proposed project site.

MONTANA NATURAL HERITAGE PROGRAM

1515 East Sixth Avenue
Helena, Montana 59620
(406) 444-3009

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JUL 29 1998

ENVIRONMENTAL



July 28, 1998

Lawrence J. Urban
Env. Services Unit, Resources and Permitting Section
Montana Department of Transportation
2701 Prospect Avenue
Helena, MT 59620-1001

Dear Mr. Urban,

I am writing in response to your recent request regarding species of concern in the vicinity of the Stillwater Wetland Mitigation Site, T03S R19E, Stillwater County.

In checking our database for this area, I found no records of species of special concern.

Please remember that results of a data search by the Montana Natural Heritage Program are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys which may be required for environmental assessments.

Should you have any questions or require additional information, please feel free to contact me at (406) 444-3267 or via my e-mail address, below.

Sincerely,

A handwritten signature in cursive script that reads "Anne Dalton". The signature is fluid and elegant, with the first and last names clearly distinguishable.

Anne Dalton, Research Assistant
Montana Natural Heritage Program
(email: adalton@nris.state.mt.us)

Montana Wetland Field Evaluation Form (revised 9/23/1997, DRAFT)

1. Project Name: Absarokee - Columbus 2. Project #: STPP 75-2(5)37 & Control #: 0920
Stillwater Mitigation Site
3. Evaluation Date: Mo. 6 Day 20 Yr. 98 4. Evaluator(s): L. URBAN 5. Wetlands/Site #(s): Stillwater #2

Wetland Location(s): i. Legal: Twnshp. 3 N or S Range 19E or W; Section 22; $\frac{1}{4}$ S.W.; $\frac{1}{4}$ S.; $\frac{1}{4}$ S.W.
 ii. Geographic: Latitude: Degrees 45; Min. 30; Sec. _____; Longitude: Degrees 109 Min. 20; Sec. _____
 iii. UTM: _____ iv. Watershed: _____ GPS Reference No.: _____

Access Description: Access to the site is through private property owned by Ms. Virginia Hamilton of Columbus. It is situated directly adjacent to the Whitebird irrigation diversion on the Stillwater River.

7. a. Evaluating Agency: MDT; 8. Wetland size: (total acres) 3.0 (visually estimated)
 b. Purpose of Evaluation: _____ (measured, e.g. by GPS)
 1. _____ Wetlands potentially affected by MDT project
 2. X Mitigation wetlands; pre-construction
 3. _____ Mitigation wetlands; post-construction
 4. _____ Other
9. Assessment area: (AA, tot., ac.) 15.0 (visually estimated)
 see instructions on determining AA) _____ (measured, e.g. by GPS)

10. Classification of AA (HGM according to Brinson, first column; USFWS according to Cowardin[1979], remaining columns)

HGM Class	System	Subsyst	Class	Water Regime	Modifier	Dominance Type	% of AA
Riverine	Palustrine	Upper Perennial	UB	Permanently Flooded		<i>Typha latifolia</i> , <i>Phalaris arundinacea</i> , <i>Vallisneria spiralis</i>	15
Riverine	Palustrine	Upper Perennial	EM	Permanently Flooded	Persistent	<i>Phalaris arundinacea</i> , <i>Scirpus sp.</i> , <i>Juncus sp.</i> , <i>Carex sp.</i>	40
Riverine	Palustrine	Upper Perennial	EM	Saturated	Non Persistent	<i>Carex nebrascensis</i> , <i>Eleocharis palustris</i> , <i>Phalaris arundinacea</i> , <i>Juncus sp.</i>	42%
Riverine	Palustrine	Upper Perennial	SS	Saturated		<i>Salix exigua</i> , <i>Populus deltoides</i> , <i>Carex sp.</i> , <i>Juncus sp.</i>	37%

(Abbreviations: System: Palustrine (P) Subsyst.: none/ 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) System: Lacustrine (L), Subsyst.: Limnetic (2) Classes: RB, UB, AB, US, EM/ Subsystem: Littoral (4) Classes: RB, UB, AB, US, EM/ System: Riverine (R) Subsyst.: Lower Perennial (2) Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3) Classes: RB, UB, AB, US/ Water Regimes: Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Temporarily Flooded (A), Intermittently Flooded (J)

11. Estimate relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

(Circle one) Unknown Rare Common Abundant

Comments: As this area is a former channel of the Stillwater River aerial photos of the region indicate that wetland systems of this type are common.

12. General condition of AA:

i. Regarding disturbance: (circle one, see definitions) Undisturbed Encroached Upon Directly Disturbed

Comments: (types of disturbance, intensity, season, etc.): Intensive livestock grazing throughout area.

ii. Weedy, alien, & introduced species (including those not domesticated, feral): (list) Knapweed is quite prevalent in gravel bars and spoil piles along the forested riparian zone located to the west of the site. Reed canary grass dominates the wetland area.

13. Habitat Diversity: (count only the number of different "Cowardin" types occurring at level of water regime [equal NWI classes, #10 above])

i. Number of NWI classes w/ persistent vegetation: (circle points) ≥ 3 classes = 5 pts. 2 classes = 3 pts. ≤ 1 class = 1 pt.

ii. Open water in the AA: (circle one) present = 2 pts. absent = 1 pt.

Score is: (i 3) x (ii 2) = 6

Score	10	<u>5-6</u>	2-3	1
Rating	Exceptional	High	Moderate	Low
Functional Points	NA	NA	NA	NA

Comments: Area could potentially have a greater diversity except that livestock grazing is limiting that diversity.

14. Provide brief descriptive summary of AA & surrounding land use and habitat: Area is a remnant river channel of the Stillwater River that has been diked from receiving flood/river flows. Hydrology is provided by overflow from the nearby Whitebird ditch. Area outside the channel is utilized as pasture ground for livestock to the east, as is the scrub/shrub forested riparian corridor to the west.

15A. Habitat for Federally Listed, Proposed, or Candidate Threatened or Endangered Plants or Animals:

AA is Documented (D) or Suspected (S) to receive (circle one):

Regular use or is designated critical habitat (list species) D S

Occasional (infrequent, sporadic) use (list species) D S

Incidental (chance, inconsequential) use (list species) D S

No use D S

Bald eagle (active nest)

Highest Level Use:	<u>doc./reg.</u>	doc./occ.	sus./reg.	sus./occ.	doc./incid.	sus./incid.	None
Rating	<u>High</u>	High	Moderate	Moderate	Low	Low	None
Functional Points	<u>1.0</u>	0.8	0.7	0.6	0.2	0.1	0.0

Sources for documented use (e.g. observations, records, etc.) Although MNHP did not identify a bald eagle nest in the area, Dennis Flath of MFWP indicates an active eagle nest is located within a 1/4 mile of the proposed wetland. It is anticipated that the proposed project will have no effect.

15B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in 15A above)

AA is Documented (D) or Suspected (S) to receive (circle one):

Regular use (list species) D S

Occasional (infrequent, sporadic) use (list species) D S

Incidental (chance, inconsequential) use (list species) D S

No use D S

Yellowstone Cutthroat Trout

Highest Level Use:	doc./reg.	doc./occ.	sus./reg.	sus./occ.	doc./incid.	<u>sus./incid.</u>	None
Rating	High	High	Moderate	Moderate	Low	<u>Low</u>	None
Functional Points	1.0	0.8	0.7	0.6	0.2	<u>0.1</u>	0.0

Sources for documented use (e.g. observations, records, etc.) Although MNHP did not identify any species of special concern in their database files, there is the suspected chance that Yellowstone cutthroat trout and other fish may be situated within the existing wetland system.

15C. General Wildlife Habitat Rating: (Circle appropriate response; AA is verified [V] or suspected [S] to receive substantial [S] moderate [M], or negligible to no use [N]; [see definitions for these terms] by the listed wildlife groups (see definitions for aquatic/semi-aquatic & non-aquatic wildlife))Aquatic/semi-aquatic birds (list examples) V or S S, M or NNon-aquatic birds (list examples) V or S S, M or NAquatic/semi-aquatic mammals (list ex.) V or S S, M or NNon-aquatic mammals (list ex.) V or S S, M or NAquatic/semi-aquatic reptiles (list ex.) V or S S, M or NNon-aquatic reptiles (list ex.) V or S S, M or NAmphibians (list examples) V or S S, M or NInvertebrates (list examples) V or S S, M or Nwaterfowl, shorebirdsAmerican Robin, Cedar Waxwings, Kingbirdsmuskrat, beaver, raccoonswhite-tailed deerNone identified for area (trunks)Northern Leopard frog.- Dragonfly, mayfly, caddis, mosquito, etc.**i. Assessed Wildlife Use (circle points):**≥ 3 s's or ≥ 5 m's + s's = 7 pts.

1-2 s's or 2-4 m's = 3 pts.

No s's and < 2 m's = 1 pt.

Score is: (i 7) x (ii 3) = 21**ii. Habitat Diversity from # 13 (circle points)**High to exceptional rating = 3 pts.

Moderate rating = 2 pts.

Low rating = 1 pt.

Score	<u>21</u>	14	9	7	<u>6</u>	3	2	1
Rating	<u>High</u>	High	High	High	<u>Mod.</u>	Mod.	Low	Low
Functional Points	<u>1.0</u>	0.9	0.8	0.7	<u>0.5</u>	0.4	0.3	0.1

Comments: Although the area rates high for wildlife diversity, it should be rated moderate due to livestock grazing within the wetland. - Rate area as moderate.

15D. General Fish Habitat Rating: (If AA does not contain, or is not connected to, a fish-bearing stream or standing water body [e.g. pond or lake], circle NA here and proceed to the next function)

i. AA is verified (V) or suspected (S) to support listed groups for portions of their life cycle (circle points)

Native fish V or S = 5 pts.

Introduced game fish V or S = 3 pts.

Introduced non-game fish V or S = 2 pts.

No fish V or S = 1 pt.

Score is: (i 3) x (ii 3) = 9Permanent/perennial = 3 pts.

Seasonal/intermittent = 2 pts.

Temporary/ephemeral = 1 pt.

Score	15	10	<u>9</u>	6	5	3,4	2	1
Rating	High	High	<u>High</u>	Mod.	Mod.	Mod.	Low	Low
Functional Points	1.0	0.9	<u>0.8</u>	0.7	0.6	0.5	0.2	0.1

Comments: Although the area is not directly linked to the Stillwater river, there is standing water and a small stream running through the site. This is due to over flow from the Whitebird Ditch. There is a chance of fish entering the site by being trapped in the Whitebird Ditch and then entering the wetland via overflow points.

- 15E. Flood Attenuation and Storage:** (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, circle NA here and proceed to next function. (see 15L for Dynamic Surface Water Storage)
- i. Estimated acreage of jurisdictional wetland in the AA that is subject to periodic flooding (circle points)
 Flooded wetlands ≥ 10 acres = 7 pts.
 Flooded wetland < 10 ac., > 2 ac. = 5 pts.
 Flooded wetlands ≤ 2 ac. = 1 pt.
- ii. Estimated % of flooded wetland classified as forested (fo), scrub-shrub (ss) or both
 $> 75\%$ fo/ss = 3 pts.
 $25-75\%$ fo/ss = 2 pts.
 $< 25\%$ fo/ss = 1 pt.
- iii. AA contains no outlet or restricted outlet = 1 pt.
 AA contains unrestricted outlet = 0 pts.
- Score is: $[(i \ 5) \times (ii \ 1)] + (iii \ 1) = 6$

Score	22	16-21	14-15	11	8-10	6-7	5-4	3	2	1
Rating	High	High	High	High	Mod.	Mod.	Mod.	Low	Low	Low
Functional Points	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1

Comments: *Although not directly linked to the river, the area may receive overbank flooding of the Stillwater River and via flows from the Whitebird Ditch.*

- 15F. Sediment/Nutrient/Toxicant Retention and Removal:** (Circle true [T] or false [F] for each of the following statements)
- i. T ☒ F AA receives direct discharge of managed water (municipal or road stormwater, agricultural drainage, industrial/municipal wastewater) or accumulation of sediment/excess nutrients evident (deposits on vegetation, algal mats or other signs of eutrophication present) or immediate upstream land use potential to deliver significant sediment/nutrient loads to AA.
- ii. ☒ F Evidence of flooding or ponding occurs in AA
- iii. ☒ F AA contains restricted outlet or no outlet such that flow is slowed or retarded.
- iv. ☒ F Percent cover of emergent and/or dense woody vegetation in the AA exceeds 50%
- Rating of Category: (i) is true and at least two of (ii), (iii), or (iv) are true = High Rating
 Rating is neither High nor Low = Moderate Rating
 (i) is false and at least two of (ii), (iii), or (iv) are false = Low Rating

Score	NA	NA	NA
Rating	High	Mod.	Low
Functional Points	1.0	0.5	0.1

Comments: *As the area does not receive managed water from either sewage or roadway runoff, but does have a restricted outlet and vegetation coverage exceeding 50%, it rates a moderate value.*

- 15G Sediment/Shoreline Stabilization:** (applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which has a maximum depth exceeding 6.6 ft. at low water (e.g. subject to wave action). If does not apply, circle NA here and proceed to next function; in items i-iv below, circle choice)

- i. Estimated % cover of rooted vegetated component in AA
 $> 30\%$ rooted vegetation = 3 points
 $10-30\%$ rooted vegetation = 2 points
 $< 10\%$ rooted vegetation = 1 point
- ii. Water body adjacent to rooted vegetation is
 Permanent/Perennial = 5 points
 Seasonal/Intermittent = 3 points
 Temporary/Ephemeral = 2 points
- Score is: $(i \ 2) \times (ii \ 3) = 6$

Score	15	10	9	6	4	5	3	2
Rating	High	High	High	Mod.	Mod.	Mod.	Low	Low
Functional Points	1.0	0.9	0.8	0.7	0.5	0.4	0.2	0.1

Comments: *Not applicable*

- 15H. Production Export/Food Chain Support:** (Circle appropriate choice in i-iv below)
- i. Acreage of vegetated component in AA:
 > 5 acres = 10 points
 $1-5$ acres = 5 points
 < 1 acre = 1 point
- ii. Habitat Diversity Rating: (from #13)
 High-Exceptional = 3 points
 Moderate = 2 points
 Low = 1 point
- iii. Outlet presence:
 AA contains an outlet = 3 points
 AA contains no outlet = 1 point
- iv. Surface water in AA is:
 Permanently/Perennial = 3 points
 Seasonal/Intermittent = 2 points
 Temporary/Ephemeral = 1 point
- Score is: $[(i \ 10) \times (ii \ 3)] + [(iii \ 3) \times (iv \ 3)] = 39$

Score	39	21-36	16-19	10-14	8-9	7	5-6	4	3	2
Rating	High	High	High	Mod.	Mod.	Mod.	Low	Low	Low	Low
Functional Points	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1

Comments: *an area of high production for the wetland*

15I. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

- i. ☐ Springs are known or observed
☐ Vegetation growing during dormant season/drought
☐ Wetland occurs at the toe of a natural slope
☐ Seeps are present at the wetland edge
☐ AA permanently flooded during drought periods
☐ Wetland contains an outlet, but no inlet
☐ Other
- ii. ☐ Permeable substrate present without underlying impeding layer
☐ Wetland contains inlet but no outlet
☐ Other

Rating for Discharge(D)/Recharge(R) Properties:

AA is known D/R area or one or more indicators of D/R present = High
 No D/R indicators present = Low
 Available D/R information inadequate to rate AA D/R potential = Unkn

Score	NA	NA	NA
Rating	High	Low	Unknown
Functional Points	1.0	0.1	NA

Comments: AA evidence of Discharge/recharge occurring in the assessment area. However, due to the rock/sand strata underlying the site it may be possible that groundwater contributes to the system.

15J. Uniqueness:

i. Estimated relative abundance of similarly classified sites within the Major Watershed Basin (#11, circle)

Rare = 3 points
 Common = 2 points
 Abundant = 1 point

ii. Replacement potential/habitat diversity (#12, circle points)

AA is/contains fen, bog, warm springs or mature (>80 yr) forested wetland = 10 points
 AA does not contain above cited types but diversity is high-exceptional = 3 points
 AA does not contain above types and habitat diversity is low-moderate = 1 point

iii. Condition of AA: (from #12, circle) Undisturbed = 3 pts. Encroached = 2 pts. Directly Disturbed = 1 pt.

Score is $((i \ 2) \times (ii \ 3)) + (iii) = 7$

Score	33	31-32	22-23	12-21	10-11	8-9	5,6,7	4	2-3	1
Rating	High	High	High	High	Mod.	Mod.	Mod.	Low	Low	Low
Functional Points	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1

Comments: Due to the fact that these types of wetlands are quite common within the area and is disturbed by livestock it rates a moderate for uniqueness.

15K. Recreation/Education Potential: i. Is the AA a known rec./ed. site: (circle) Y (N) (If yes, rate as High and go to ii; if no go to iii)

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

iii. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y (N) (If yes, go to ii, then proceed to iv; if no, then rate as Low [0.1])

iv. Condition of AA: (from #12, circle points) Undisturbed = 3 pts; Encroached upon = 2 pts.; Directly Disturbed = 1 pt.

v. Ownership of AA: (circle points) Public = 2 points; Private = 1 point

Score is: $(iv \ 1) \times (v \ 1) = 1$

Score	6	4	3	2	1
Rating	High	Mod.	Mod.	Low	Low
Functional Points	1.0	0.7	0.5	0.3	0.1

Comments: Due to the private ownership of the area, the recreational/education potential for the site is very low to poor.

15L. Dynamic Surface Water Storage: (Applies to wetlands that do not flood from overbank or in-channel flow, but flood via precipitation, upland surface flow, or groundwater flow. If no jurisdictional wetlands in the AA are subject to flooding, circle NA here and proceed with the evaluation.)

i. Estimated acreage of jurisdictional wetland in the AA subject to periodic flooding (circle points)

Flooded wetlands \geq 5 acres = 3 points
 5 acres > flooded wetland > 1 acre = 2 points
 Flooded wetlands < 1 acre = 1 point

Score is $(i \ 1) \times (ii \ 1) = 1$

ii. Estimated flood frequency (circle points)

Wetland floods \geq 5/10 years = 2 points
 Wetland floods < 5/10 years = 1 point

Score	6	4	2,3	1	0.5
Rating	High	High	Mod.	Low	Low
Functional Points	1.0	0.8	0.5	0.3	0.1

Comments: Not Applicable

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed/Candidate T&E Species Habitat	HIGH	1.0	1	15
B. MT Natural Heritage Program Species Habitat	LOW	0.1	1	1.5
C. General Wildlife Habitat	MODERATE	0.5	1	7.5
D. General Fish/Aquatic Habitat	HIGH	0.8	1	12.0
E. Flood Attenuation and Storage	MODERATE	0.5	1	7.5
F. Sediment/Nutrient/Toxicant Removal	MODERATE	0.5	1	7.5
G. Sediment/Shoreline Stabilization	NON	Applicable		
H. Production Export/Food Chain Support	HIGH	1.0	1	15.0
I. Groundwater Discharge/Recharge	LOW	0.1	1	1.5
J. Uniqueness	MODERATE	0.4	1	6.0
K. Recreation/Education Potential	LOW	0.1	1	1.5
L. Dynamic Surface Water Storage	N/A	N/A	N/A	
Totals:		5.0	10	75

50%

* See below

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II III IVCategory I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II)

- ☒ Score of 0.9 or 1 functional point for Listed/Proposed/Candidate Threatened or Endangered Species; or
☐ Score of 0.9 or 1 functional point for Uniqueness or "High" rating for Uniqueness and Condition (#12) is "Undisturbed"; or
☐ Score of 1 functional point for Flood Attenuation and Storage and answer to Question 14.E.3 is "yes"; or
☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied but meets any one of the following criteria; if not satisfied, go to Cat. IV)

- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
☐ Score of 1 functional point for General Wildlife Habitat; or
☐ "High" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or
☐ "High" rating for Uniqueness or
☐ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

Category III Wetland: (Criteria for Categories I, II or IV not satisfied; if does not meet criteria go to Category IV) 50%

Category IV Wetland: (Criteria for Categories I or II are not satisfied and any one of the following criteria; if does not satisfy, criteria go to Category III)

- ☐ "Low" rating for Uniqueness; and (should this be or-?)
☐ "Low" rating for Production Export/Food Chain Support; and
☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

Although a bald eagle nest has been identified within the vicinity of the proposed project, it is anticipated that the project will have no effect on the nest + adult birds. Overall, the wetland is degraded by heavy livestock grazing which is inhibiting the development of natural scrub/shrub and woody vegetational communities. Because our evaluation of the site and assessment of the area indicates that the total % of actual functional points is around 50%, we must rate the area as a Class III wetland, even with a bald eagle nest situated nearby.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater City Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence Urban</u>	State: <u>MT</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No*	Transect ID: <u>East Line</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="radio"/> Yes <input checked="" type="radio"/> No	Plot ID: <u>Boxwg #1</u>

* Area is heavily grazed by livestock (sheep + cows) that are inhibiting the establishment of native woody vegetation

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Phalaris amydriacea</u>	<u>Grass</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Carex nebrascensis</u>	<u>Grass</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Scirpus validus</u>	<u>Grass</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Mimulus guttatus</u>	<u>Herb</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Eleocharis acicularis</u>	<u>Rush</u>	<u>OBL</u>	13. _____	_____	_____
6. <u>Eleocharis aciculata</u>	<u>Rush</u>	<u>OBL</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

6 of 6 species = 100%

Remarks: As the majority of wetland vegetation within the assessment area were hydrophytic in nature, the wetland vegetation criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input checked="" type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input checked="" type="checkbox"/> Other (Explain in Remarks) - <u>iron pitting + concretions</u></p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>intermittent-18-20</u> (in.)</p> <p>Depth to Free Water in Pit: <u>8"</u> (in.)</p> <p>Depth to Saturated Soil: <u>6"</u> (in.)</p>	
<p>Remarks: <u>As saturated soils, groundwater and surface water was evident in the area of sampling, the hydrologic criterion is met.</u></p>	



SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3"	O	7.5YR ^{2.5} / ₁			organic humus
3"-10"	A	10YR ³ / ₂	10YR ⁶ / ₂ ⁵ / ₂	Abundant	clay loam - with concretions
10"+>	C	10YR ³ / ₂	10YR ⁴ / ₃ ⁵ / ₂	Abundant/Distinct	gravelly with cobbles

Hydric Soil Indicators	
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chrome Colors	<input checked="" type="checkbox"/> Concretions - iron <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)

Remarks: As a number of characteristics indicative of a hydric soil were apparent within the sampling area, the hydric soil criterion is met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Remarks: As the area exhibited all three parameters required for a jurisdictional determination, the area is a wetland.	

Approved by H05ACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater City Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence J. Debow</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <u>Yes</u> <u>No</u>	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <u>Yes</u> <u>No</u> *	Transect ID: <u>East Line</u>
Is the area a potential Problem Area? <u>Yes</u> <u>No</u>	Plot ID: <u>Barney #2</u>
(If needed, explain on reverse.)	

* Area is heavily grazed by livestock (sheep/cows) that are inhibiting the establishment of native woody vegetation.

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Eleocharis acicularis</u>	<u>Rush</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Carex nebrascensis</u>	<u>Sedge</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Juncus balticus</u>	<u>Rush</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Phalaris arundinacea</u>	<u>Grass</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Ranunculus pennsylvanicus</u>	<u>Herb</u>	<u>FACW</u>	13. _____	_____	_____
6. <u>Mimulus guttatus</u>	<u>Herb</u>	<u>OBL</u>	14. _____	_____	_____
7. <u>Brassica sp.</u>	<u>Herb</u>	<u>N/L</u>	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

6 of 7 dominant species = 86%

Remarks: As the majority of vegetation was hydrophytic in nature, the wetland vegetation criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p>Stream, Lake, or Tide Gauge _____</p> <p>Aerial Photographs _____</p> <p>Other _____</p> <p>No Recorded Data Available _____</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p>Inundated _____</p> <p><u>X</u> Saturated in Upper 12 Inches</p> <p><u>X</u> Water Marks</p> <p><u>X</u> Drift Lines</p> <p>Sediment Deposits _____</p> <p>Drainage Patterns in Wetlands _____</p> <p>Secondary Indicators (2 or more required):</p> <p><u>X</u> Oxidized Root Channels in Upper 12 Inches</p> <p>Water-Stained Leaves _____</p> <p>Local Soil Survey Data _____</p> <p>FAC-Neutral Test _____</p> <p><u>X</u> Other (Explain in Remarks) <u>mottling</u></p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>interior - 12" - 14"</u> (in.)</p> <p>Depth to Free Water in Pit: <u>8"</u> (in.)</p> <p>Depth to Saturated Soil: <u>6"</u> (in.)</p>	

Remarks: As saturated soils, groundwater and surface water was evident in the area of sampling, the hydrologic criterion is met.



SOILS

Map Unit Name (Series and Phase): _____			Drainage Class: _____		
Taxonomy (Subgroup): _____			Field Observations Confirm Mapped Type? Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-0"	O	10YR 4/3	NONE	NONE	Organic Layer
0-3"	A	7.5YR 2.5/1	—	—	—
3"-10"	C	10YR 3/2	10YR 6/6, 7/2	Abundant	- Gravel/cobbles > 10"

Hydric Soil Indicators:	
<input type="checkbox"/> Mottled <input type="checkbox"/> Mottle Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input checked="" type="checkbox"/> Other (Explain in Remarks) — oxidized rhizospheres

Remarks: Due to the nature of the area soils did not extend below 10 to 12 inches as streambed gravels were very apparent. Hydric soil characteristics were very apparent in 1st 12 inches.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle) Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Remarks: As the assessment area met all three parameters required of a jurisdictional determination, it must be considered a wetland.	

Approved by HQUSACE J/SZ

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater City Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence J. Weber</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input checked="" type="radio"/> Yes <input type="radio"/> No	Transect ID: <u>East Line</u>
Is the area a potential Problem Area? <input checked="" type="radio"/> Yes <input type="radio"/> No	Plot ID: <u>Bering #3+4</u>
(If needed, explain on reverse.)	

* Area is heavily grazed by livestock (sheep & cows) that are inhibiting the establishment of native woody vegetation.

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex nebrascensis</u>	<u>Sedge</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Juncus balticus</u>	<u>Rush</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Eleocharis acicularis</u>	<u>Rush</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Munus guttatus</u>	<u>Herb</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Equisetum arvense</u>	<u>Herb</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

5 of 5 species = 100%

Remarks: As the majority of dominant vegetative species were hydrophytic in nature, the wetland vegetational criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input checked="" type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input checked="" type="checkbox"/> Other (Explain in Remarks) <u>oxidized rhizospheres</u></p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>1"-5"</u> (in.)</p> <p>Depth to Free Water in Pit: <u>1"</u> (in.)</p> <p>Depth to Saturated Soil: <u>0-1</u> (in.)</p>	
<p>Remarks: <u>As the area exhibited a number of hydrologic characteristics and had standing water, it met the hydrologic criterion for a wetland.</u></p>	



SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
1-0	O	10YR 4/4	—	—	organic material
0-3"	A	7.5YR 2.5/1	—	—	—
3-10"	C	10YR 3/2	10YR 6/8, 7/1	Abundant	- gravelly - sandy - clay

Hydric Soil Indicators:	
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chrome Colors	<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input checked="" type="checkbox"/> Other (Explain in Remarks) <i>oxidized rhizospheres</i>

Remarks: *As a number of hydric soil characteristics were apparent in this sampling area, the hydric soil criterion is met.*

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	(Circle)
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No

Remarks: *As The assessment sampling area met all three parameters required for a jurisdictional determination, it must be considered a wetland.*

Approved by HCU3ACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater City Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence J. Dabow</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No	Transect ID: <u>East Line</u>
Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No	Plot ID: <u>Boring #5</u>
(If needed, explain on reverse.)	<u>Property Fence line</u>

* The area is heavily grazed by livestock (sheep/cows) that are inhibiting the establishment of native woody vegetation.

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha latifolia</u>	<u>Grass</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Carex nebrascensis</u>	<u>Sedge</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Juncus balticus</u>	<u>rush</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Eleocharis acicularis</u>	<u>rush</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Scirpus sp.</u>	<u>rush</u>	<u>OBL</u>	13. _____	_____	_____
6. <u>Phalaris arundinacea</u>	<u>grass</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Mimulus guttatus</u>	<u>Herb</u>	<u>OBL</u>	15. _____	_____	_____
8. <u>Myosotis scorpioides</u>	<u>Herb</u>	<u>FACW</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

8 of 8 dominant species = 100%

Remarks: As the majority of vegetation is hydrophytic in nature, the wetland vegetation criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input checked="" type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input checked="" type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input checked="" type="checkbox"/> Other (Explain in Remarks) <u>organic muck</u></p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>10"-12"</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0</u> (in.)</p> <p>Depth to Saturated Soil: <u>0</u> (in.)</p>	
<p>Remarks: <u>As the area exhibited a number of hydrologic characteristics and evidence of standing water, it met the hydrologic criterion for a wetland.</u></p>	



SOILS

Map Unit Name (Series and Phase): _____			Drainage Class: _____		
Taxonomy (Subgroup): _____			Field Observations Confirm Mapped Type? Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
2"-0"	O	10YR 4/2	—	—	—
0-6"	A	7.5YR 2.5/1	10YR 5/8	Indistinct	Clay loam
6"-13"	C	10YR 3.5/4.2	10YR 7.2/6.5	Distinct	Sandy clay

Hydric Soil Indicators:	
<input type="checkbox"/> Histosol <input type="checkbox"/> Hist. Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chrome Colors	<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input checked="" type="checkbox"/> Other (Explain in Remarks) <i>oxidized Rhizospheres</i>

Remarks: *As a number of hydric soil characteristics were apparent in this sampling area, the hydric soil criterion is met*

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: <i>As the area sampled met all three parameters required for a jurisdictional determination, it must be considered a wetland.</i>	

Approved by HCUACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater City Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence J. Urban</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input checked="" type="radio"/> Yes <input type="radio"/> No	Transect ID: <u>West Line</u>
Is the area a potential Problem Area? <input checked="" type="radio"/> Yes <input type="radio"/> No	Plot ID: <u>Boring #6-7</u>
(If needed, explain on reverse.) *	<u>Property boundary fence line</u>

* Area is heavily grazed by livestock (sheep/cows) that are inhibiting the establishment of native woody vegetation.

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Phalaris arundinacea</u>	<u>Grass</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Hordeum jubatum</u>	<u>Grass</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Carex nebrascensis</u>	<u>Sedge</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Juncus spp</u>	<u>Rush</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Salix exigua</u>	<u>Shrub</u>	<u>FACW</u>	13. _____	_____	_____
6. <u>Ranunculus pennsylvanicus</u>	<u>Herb</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Mimulus guttatus</u>	<u>Herb</u>	<u>OBL</u>	15. _____	_____	_____
8. <u>Myosotis scorpioides</u>	<u>Herb</u>	<u>FACW</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-1).

8 of 8 dominant species = 100%

Remarks: As the majority of vegetation within the assessment area were hydrophytic in nature, the wetland vegetation criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input checked="" type="checkbox"/> Drift Lines</p> <p><input checked="" type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input checked="" type="checkbox"/> Other (Explain in Remarks) <u>iron concretions</u></p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>10ft from hole</u> <u>10-12"</u> (in.)</p> <p>Depth to Free Water in Pit: <u>0-3"</u> (in.)</p> <p>Depth to Saturated Soil: <u>0-2"</u> (in.)</p>	
<p>Remarks: <u>As saturated soils and surface water were evident in the area of sampling, the hydrologic criterion for a wetland is met.</u></p>	



SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
2"-0"	O	10YR 4/4			
0-8"	A	7.5YR 2.5/1	10YR 4/6	Distinct	
8"-15"	C	10YR 4/2	10YR 4/4	Abundant	Sandy clay/gravel/s

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histie Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chrome Colors	<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
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Remarks: As a number of hydric soil characteristics were apparent in this sampling area, the hydric soil criterion is met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Remarks: As the area sampled met all three parameters required for a jurisdictional determination, it must be considered a wetland	

Approved by M&SACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater Cty. Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence J. Urban</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No	Transect ID: <u>West Line</u>
Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No	Plot ID: <u>Basin #8</u>
(If needed, explain on reverse.) *	- old floodplain channel

* Area is heavily grazed by livestock (sheep/cows) that are inhibiting the establishment of native woody vegetation.

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha latifolia</u>	<u>Grass</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Carex nebrascensis</u>	<u>Sedge</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Juncus balticus</u>	<u>rush</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Scirpus</u>	<u>rush</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Ranunculus sp</u>	<u>Herb</u>	<u>FACW</u>	13. _____	_____	_____
6. <u>Myosotis scorpioides</u>	<u>Herb</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Salix exigua</u>	<u>Seedlings</u>	<u>OBL</u>	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

7 of 7 dominant species = 100%

Remarks: As a majority of the dominant vegetation was hydrophytic in nature, the wetland vegetation criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input checked="" type="checkbox"/> Drift Lines</p> <p><input checked="" type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input checked="" type="checkbox"/> Other (Explain in Remarks) <u>nothing in soils</u></p>
<p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>8-10"</u> (in.)</p> <p>Depth to Saturated Soil: <u>0-4"</u> (in.)</p>	
<p>Remarks: <u>As the area had saturated soils and standing water, it meets hydrologic criterion for a wetland.</u></p>	



SOILS

Map Unit Name (Series and Phase): _____			Drainage Class: _____		
Taxonomy (Subgroup): _____			Field Observations Confirm Mapped Type? Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
1-0	ⓐ	10YR 4/2			
0-8"	A	7.5YR 2.5/1	7.5YR 3/3	Indistinct	sandy clay
8"	7.5YR 4/2	10YR 6/6 3/6			
8"+	7.5YR 4/2	7.5YR 4/2	10YR 6/6 3/6	Distinct abundant	sandy/gravel clay

Hydric Soil Indicators:	
<input type="checkbox"/> Mistic soil <input type="checkbox"/> Mistic Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input checked="" type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)

Remarks: As several hydric soil characteristics were apparent in the soil sample, it meets hydric soil parameters for a wetland.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Remarks: As the area met all three parameters required for a jurisdictional determination, it must be considered a wetland.	

Approved by HQUSACE J192

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Stillwater City Wetland Mitigation Site</u>	Date: <u>6/20/98</u>
Applicant/Owner: <u>Montana Department of Transportation</u>	County: <u>Stillwater</u>
Investigator: <u>Lawrence J. Debow</u>	State: <u>Montana</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No	Transect ID: <u>West Line</u>
Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No	Plot ID: <u>Benches 9#10</u>
(If needed, explain on reverse.)	- channel edge

* Area is heavily grazed by livestock (sheep/cows) that are inhabiting. The establishment of woody vegetation within the wetland.

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Typha latifolia</u>	<u>Grass</u>	<u>OBL</u>	9. <u>Salix exigua</u>	<u>Seedlings</u>	<u>OBL</u>
2. <u>Phalaris arundinacea</u>	<u>Grass</u>	<u>FACW</u>	10. <u>Populus deltoides</u>	<u>seedlings</u>	<u>FACW</u>
3. <u>Scirpus validus</u>	<u>rush</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Carex nebrascensis</u>	<u>sedge</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Eleocharis acicularis</u>	<u>rush</u>	<u>OBL</u>	13. _____	_____	_____
6. <u>Juncus balticus</u>	<u>rush</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Mimulus guttatus</u>	<u>Herb</u>	<u>OBL</u>	15. _____	_____	_____
8. <u>Myosotis scorpioides</u>	<u>Herb</u>	<u>FACW</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-1).

10 of 10 species = 100%

Remarks: As a majority of the dominant vegetative species were hydrophytic in nature, the wetland vegetation criterion is met.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input checked="" type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input checked="" type="checkbox"/> Drift Lines</p> <p><input checked="" type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>10"-16"</u> (in.)</p> <p>Depth to Free Water in Pit: <u>—</u> (in.)</p> <p>Depth to Saturated Soil: <u>—</u> (in.)</p>	
<p>Remarks: <u>As the area was inundated with standing water, it meets the hydrologic criterion for a wetland.</u></p>	



SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____	
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No	

Profile Description:		Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Depth (Inches)	Horizon				
0-0	O	10YR 4/4	—	—	organic
0-6"	A	10YR 2/1	10YR 4/8	Indistinct	Sandy clay
6"-10"	C	10YR 2/2	10YR 4/8 1/2	Distinct	Sandy/gravelly clay cobbles at 10"

Hydric Soil Indicators:	
<input type="checkbox"/> Histosol <input type="checkbox"/> Hist. Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chrome Colors	<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input checked="" type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)

Remarks: As the soil samples exhibited a number of characteristics indicative of a hydric soil, the wetland soil criterion is met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
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Remarks: As the area exhibited all three parameters required for a jurisdictional wetland determination, it must be considered a wetland.

Approved by RCUSACE J/S2

STILLWATER WETLAND MITIGATION SITE STILLWATER COUNTY

I. Monitoring Plan for the Wetland Community:

A. Vegetational community:

- 1) Establish Transects across the site to monitor vegetative development and community diversity.
- 2) Develop plant species lists for each annual monitoring report.
- 3) Plot vegetative communities on as-built plans of the site, and determine areal coverage of vegetative community development through color aerial photographs each year.
- 4) Monitor and develop measures/controls to eradicate invasive weed species on the site.
- 5) Set up locations to photograph vegetative community development from the same spot each year for the duration of the monitoring requirements.

B. Soils:

- 1) Establish monitoring points for hydric soil development.
- 2) Determine groundwater depths within the saturated soil zones.
- 3) Monitor characteristic development of the oxidation/reduction potential.
- 4) Determination if anaerobic conditions are occurring within soil boring locations.
- 5) Monitor the deposition of sediment by measuring buildup with staff gauge at key locations within the site.

C. Hydrology:

- 1) Delineate area of surface inundation during the growing season via aerial photography in July, and staff gage pool elevation measurements at field visits.
- 2) Monitor the depth within the depressional open water areas around the site (borrow area).
- 3) Determine the extent of soil saturation around the margins of the impoundment through core sampling.

I. Monitoring Plan for the Wetland Community:

D. Water Quality:

- 1) Monitor water temperatures at various locations within the site and from the discharge point.
- 2) Monitoring of Dissolved oxygen, pH, salinity, turbidity & conductivity during monitoring visits.

E. Wildlife Community:

1. Macro invertebrate Community:

- a) Sampling of the macro-invertebrate community with dip nets and visual observations. Sampling with dip nets will require three(3) ten foot long sweeps through emergent and submergent aquatic vegetation at locations to be identified within the area of surface water inundation.
- b) Identification of invertebrates collected to the Order, Family and species level of classification utilizing the most current identification keys.

2. Birds:

- a) Conduct pair counts, brood surveys and fall/spring staging counts during migration of waterfowl and shorebird species.
- b) Maintain a bird list of species observed during migration and field visits to the site.
- c) Monitor to determine if there is any breeding success occurring during the breeding season (broods, nests, etc.) via field observations on field visits.

3. Mammals:

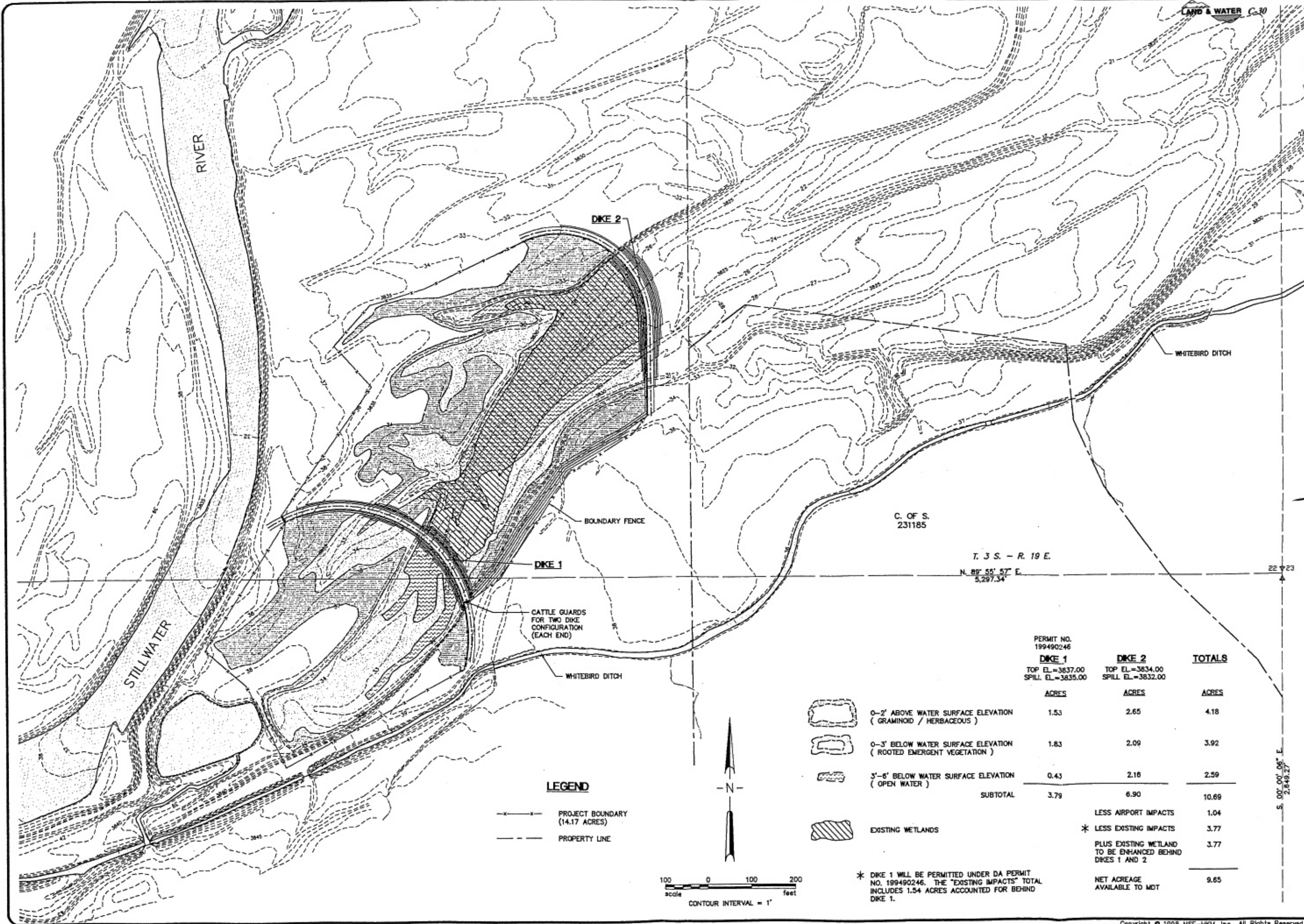
- a) Mammalian species utilizing the site will be identified through visual observation, analysis of tracks and scat, location of dens and burrows, etc.

4. Herpetiles:

- a) Herpetile species will be identified through visual observation and collection of amphibians during aquatic invertebrate surveys.

II. Monitoring Reports:

- A) Yearly written reports will be prepared in accordance with the permit conditions and contain information collected from the site over the course of the monitoring year. This report will include data collected from on-site visits by MDT staff biologists, interagency personnel and the property owner. Scientific data collected from the annual monitoring event will be placed into tabular form to track progress of the site from year to year. Discussions on the functions and values being replicated and their development will be included as a separate section of the report. The report will include aerial photos and as-built site plans identifying the locations of monitoring transects, soil borings, staff gages, temperature sampling sites and any areas of concern identified (such as animal burrows, dike failures, erosion, etc.).
- B) One field trip per year will be scheduled to accommodate members of the Army Corps of Engineers as a field inspection to verify the development of the site.
- C) A presentation will be made to the MDT Interagency Wetland Group including, interim information and a slide presentation as to the development of the site for each year of the monitoring period.



Appendix D

BIRD SURVEY PROTOCOL MACROINVERTEBRATE SAMPLING PROTOCOL GPS PROTOCOL

*MDT Wetland Mitigation Monitoring
Stillwater River
Absarokee, Montana*

BIRD SURVEY PROTOCOL

The following is an outline of the MDT Wetland Mitigation Site Monitoring Bird Survey Protocol. Though each site is vastly different, the bird survey data collection methods must be standardized to a certain degree to increase repeatability. An Area Search within a restricted time frame will be used to collect the following data: a bird species list, density, behavior, and habitat-type use. There will be some decisions that team members must make to fit the protocol to their particular site. Each of the following sections and the desired result describes the protocol established to reflect bird species use over time.

Species Use within the Mitigation Wetland: Survey Method

Result: To conduct a bird survey of the wetland mitigation site within a restricted period of time and the budget allotment.

Sites that can be circumambulated or walked throughout.

These types of sites will include ponds, enhanced historic river channels, wet meadows, and any area that can be surveyed from the entirety of its perimeter or walked throughout. If the wetland is not uncomfortably inundated, conduct several “meandering” transects through the site in an orderly fashion (record the number and approximate location/direction of the transects in the field notebook; they do not have to be formalized or staked). If a very small portion of the site cannot be crossed due to inundation, this method will also apply. Though the sizes of the site vary, each site will require surveying to the fullest extent possible within a set time limit. The optimum times to conduct the survey are in the morning hours. Conduct the survey from sunrise to no later than 11:00 AM. (Note: some sites may have to be surveyed in the late afternoon or evening due to time constraints or weather; if this is the case, record the time of day and include this information in your report discussion.) If the survey is completed before 11:00 AM and no additions are being made to the list, then the task is complete. The overall limiting factor regarding the number of hours that are spent conducting this survey is the number of budgeted hours; this determination must be made by site by each individual.

In many cases, binoculars will be the only instrument that is needed to identify and count the birds using the wetland. If the wetland includes deep water habitat that can not be assessed with binoculars, then a scope and tripod are necessary. If this is the case, establish as many lookout posts as necessary from key vantage points to collect the data. Depending on the size of the open water, more time may be spent viewing the mitigation area from these vantage points than is spent walking the peripheries of more shallow-water wetlands.

Sites that cannot be circumambulated.

These types of sites will include large-bodied waters, such as reservoirs, particularly those with deep water habitat (>6 ft) close to the shore and no wetland development in that area of the shoreline. If one area of the reservoir was graded in such a way to create or enhance the development of a wetland, then that will be the area in which the ambulatory bird survey is conducted. The team member must then determine the length of the shoreline that will be surveyed during each visit.

As stated above in the ambulatory site section, these large sites most likely will have to be surveyed from established vantage points.

Species Use within the Mitigation Wetland: Data Recording

Result: A complete list of bird species using the site, an estimate of bird densities and associated behaviors, and identification of habitat use.

1. Bird Species List

Record the bird species on the Bird Survey - Field Data Sheet using the appropriate 4-letter code of the common name. The coding uses the first two letters of the first two words of the birds' common name or if one name, the first four (4) letters. For example, mourning dove is coded MODO and mallard is MALL. If an unknown individual is observed, use the following protocol and define your abbreviation at the bottom of the field data sheet: unknown shorebird: UNSB; unknown brown bird (UNBR); unknown warbler (UNWA); unknown waterfowl (UNWF). For a flyover of a flock of unknown species, use a term that describes the birds' general characteristics and include the approximate flock size in parentheses; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded: UNBB / FO (25). You may also note on the data sheet if that particular individual is using a constructed nest box.

2. Bird Density

In the office, sum the Bird Survey – Field Data Sheet data by species and by behavior. Record this data in the Bird Summary Table.

3. Bird Behavior

Bird behavior must be identified by what is known. When a species is simply observed, the behavior that it is immediately exhibiting is what is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair individual (BP); foraging (F); flyover (FO); loafing (L; e.g. sleeping, roosting, floating with head tucked under wing are loafing behaviors); and, nesting (N). If more behaviors are observed that do have a specific descriptive word, use them and we will add it to the protocol; descriptive words or phrases such as “migrating” or “living on site” are unknown behaviors.

4. Bird Species Habitat Use

We are interested in what bird species are using which particular habitat within the mitigation wetlands. This data is easily collected by simply recording what habitat the species was initially observed. Use the following broad category habitat classifications: aquatic bed (AB - rooted floating, floating-leaved, or submergent vegetation); forested (FO); marsh (MA – cattail, bulrush, emergent vegetation, etc. with surface water); open water (OW – primarily unvegetated); scrub-shrub (SS); and upland buffer (UP); wet meadow (WM – sedges, rushes, grasses with little to no surface water). If other categories are observed onsite that are not suggested here, we will make a new category next year.

AQUATIC INVERTEBRATE SAMPLING PROTOCOL

Equipment List

- D-frame sampling net with 1 mm mesh. Wildco is a good source of these.
- Spare net.
- 1-liter plastic sample jars, wide-mouth. VWR has these: catalog #36319-707.
- 95% ethanol: Northwest Scientific in Billings carries this.

All these other things are generally available at hardware or sporting goods stores. Make the labels on an ink jet printer preferably.

- hip waders.
- pre-printed sample labels (printed on Rite-in-the-Rain or other coated paper, two labels per sample).
- pencil.
- plastic pail (3 or 5 gallon).
- large tea strainer or framed screen.
- towel.
- tape for affixing label to jar.
- cooler with ice for sample storage.

Site Selection

Select the sampling site with these considerations in mind:

- Select a site accessible with hip waders. If substrates are too soft, lay a wide board down to walk on.
- Determine a location that is representative of the overall condition of the wetland.

Sampling

Wetland invertebrates inhabit the substrate, the water column, the stems and leaves of aquatic vegetation, and the water surface. Your goal is to sweep the collecting net through each of these habitat types, and then to combine the resulting samples into the 1-liter sample jar.

Dip out about a gallon of water into the pail. Pour about a cup of ethanol into the sample jar. Fill out the top half of the sample labels, using pencil, since ink will dissolve in the ethanol.

Ideally, you can sample a swath of water column from near-shore outward to a depth of approximately 3 feet with a long sweep of the net, keeping the net at about half the depth of the water throughout the sweep. Sweep the water surface as well. Pull the net through a vegetated area, beneath the water surface, for at least a meter of distance.

Sample the substrate by pulling the net along the bottom, bumping it against the substrate several times as you pull.

This step is optional, but it gives you a chance to see that you've collected some invertebrates. Rinse the net out into the bucket, and look for insects, crustaceans, etc. If necessary, repeat the sampling process in a nearby location, and add the net contents to the bucket. Remember to sample all four environments.

Sieve the contents of the bucket through the straining device and pour or carefully scrape the contents of the strainer into the sample jar.

If you skip the bucket-and-sieve steps, simply lift handfuls of material out of the sampling net into the jars. In either case, please include some muck or mud and some vegetation in the jar. Often, you will have collected a large amount of vegetable material. If this is the case, lift out handfuls of material from the sieve into the jar, until the jar is about half full. Please limit material you include in the sample, so that there is only a single jar for each sample.

Top off the sample jar with enough ethanol to cover all the material in the jar. Leave as little headroom as possible.

It is not necessary to sample habitats in any specified order. Keep in mind that disturbing the habitats prior to sampling will chase off the animals you are trying to capture.

Complete the sample labels. Place one label inside the sample jar and tape the other label securely to the outside of the jar. Dry the jar before attaching the outer label if necessary. In some situations, it may be necessary to collect more than one sample at a site. If you take multiple samples from the same site, clearly indicate this by using individual sample numbers, along with the total number of samples collected at the site (e.g. Sample #3 of 5 total samples).

Photograph the sampled site.

Sample Handling/Shipping

- In the field, keep collected samples cool by storing them in a cooler. Only a small amount of ice is necessary.
- Inventory all samples, preparing a list of all sites and enumerating all samples, before shipping or delivering to the laboratory.
- Deliver samples to Rhithron.

GPS Mapping and Aerial Photo Referencing Procedure

The wetland boundaries, photograph location points and sampling locations were field located with mapping grade Trimble Geo III GPS units. The data was collected with a minimum of three positions per feature using Course/Acquisition code. The collected data was then transferred to a PC and differentially corrected to the nearest operating Community Base Station. The corrected data was then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

The GPS positions collected and processed had a 68% accuracy of 7 feet except in isolated areas of Tasks .008 and .011, where it went to 12 feet. This is within the 1 to 5 meter range listed as the expected accuracy of the mapping grade Trimble GPS.

Aerial reference points were used to position the aerial photographs. This positioning did not remove the distortion inherent in all photos; this imagery is to be used as a visual aide only. The located wetland boundaries were given a final review by the wetland biologist and adjustments were made if necessary.

Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.

Appendix E

REPRESENTATIVE PHOTOGRAPHS

*MDT Wetland Mitigation Monitoring
Stillwater River
Absarokee, Montana*



Photo point B, West Impoundment (#1); view East.



Photo point A, West Impoundment (#1); view NE.



Photo point D, East Impoundment (#2); view NE.



Photo point E, East Impoundment; view SE.



Photo point F, outflow of East Impoundment; view SW



Photo point I, East Impoundment (#2); view is West.



Photo point L, beginning transect 1; view SE.



Photo point M, looking at beginning transect 1; view NW.



Photo point H, end of transect close to water.



Photo point K, wetland buffer; view SW.



Photo point J, upland, SE side of impoundments.