# MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2001

*Circle Mitigation Site*
*Circle, Montana*

Prepared for:

**MONTANA DEPARTMENT OF TRANSPORTATION**
2701 PROSPECT AVENUE
Helena, MT 59620-1001

Prepared by:

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Compiled and Edited by:

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

July 2002

Project No: 130091.021

LAND & WATER

# MONTANA DEPARTMENT OF TRANSPORTATION

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# 1.0 INTRODUCTION

This annual report summarizes methods and results from the first year's (2001) monitoring program at the Montana Department of Transportation's (MDT) Circle mitigation site. The Circle wetland, located in Watershed #12 Of the Glendive District, was constructed to mitigate the impacts to 1.7 acres of wetlands associated with MDT improvements of Highway 200. The site is located in McCone County to the immediate northwest of Highway 200 between highway markers 276.2 and 276.5, Section 20, Township 19 North, Range 48 East **(Figure 1)**. Elevations range from approximately 2,426 to 2,433 feet.

This wetland was constructed in 1999 in a former oxbow of the Redwater River **(Figure 2, Appendix A)**. Subsequent to 2001 monitoring activities, MDT provided a sketch of the pre-project wetland limits, which are shown on **Figure 3, Appendix A**. Based on this sketch, approximately 2.98 wetland acres existed at the site prior to mitigation construction. Function and values information of the wetland within the oxbow prior to enhancement was not available.

# 2.0 METHODS

## 2.1 Monitoring Dates and Activities

The Circle wetland was monitored on August 25, 2001. All information contained within the Wetland Mitigation Site Monitoring Form **(Appendix B)** was collected at this time. 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; GPS data points; functional assessment; and, assess maintenance needs of any bird nesting structures and inflow and outflow structures.

## 2.2 Hydrology

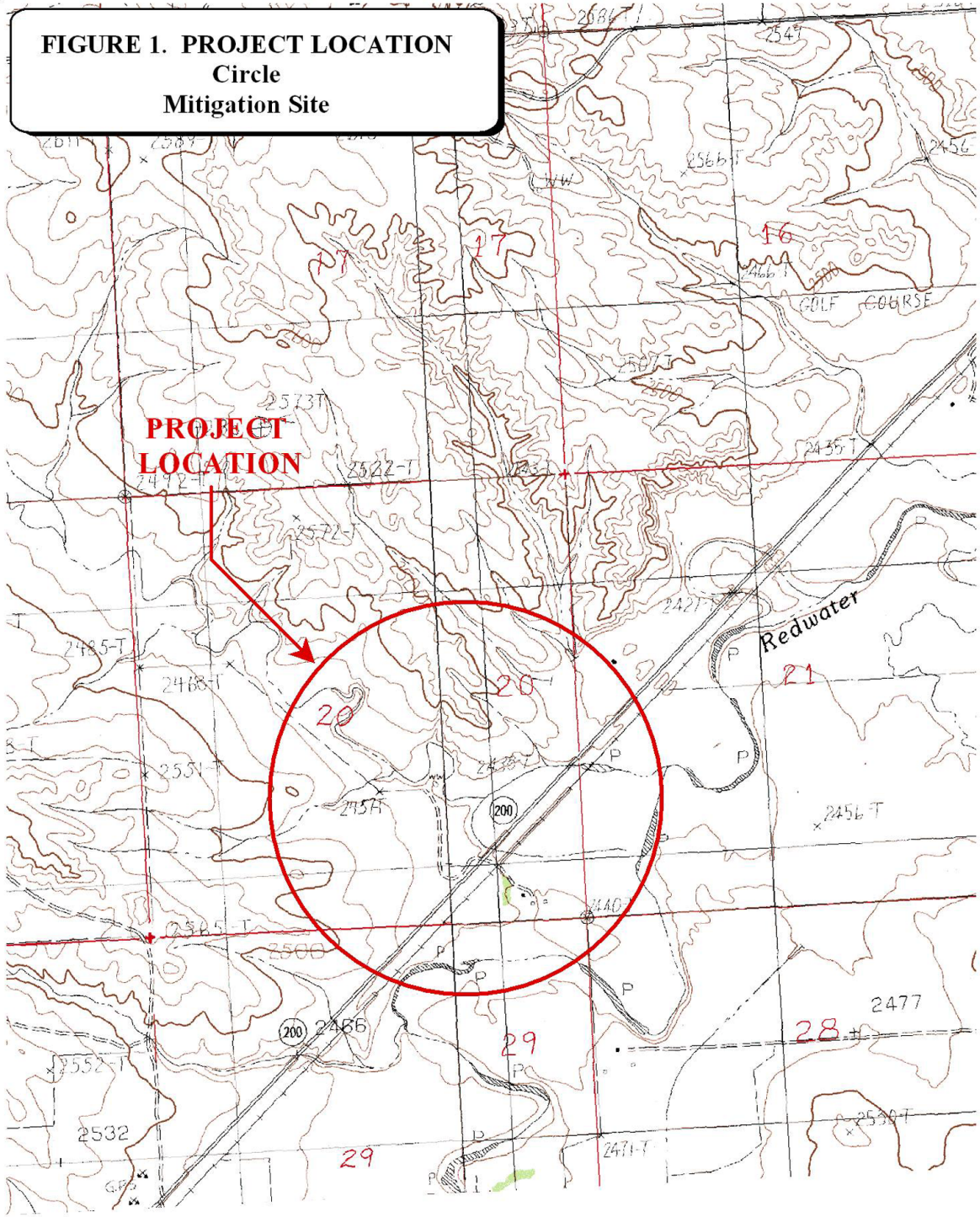
Wetland hydrology indicators were recorded using procedures outlined in the US Army Corps' (COE) 1987 Wetland Delineation Manual. Hydrology data was recorded on the Routine Wetland Delineation Data Form **(Appendix B)** at each wetland determination point.

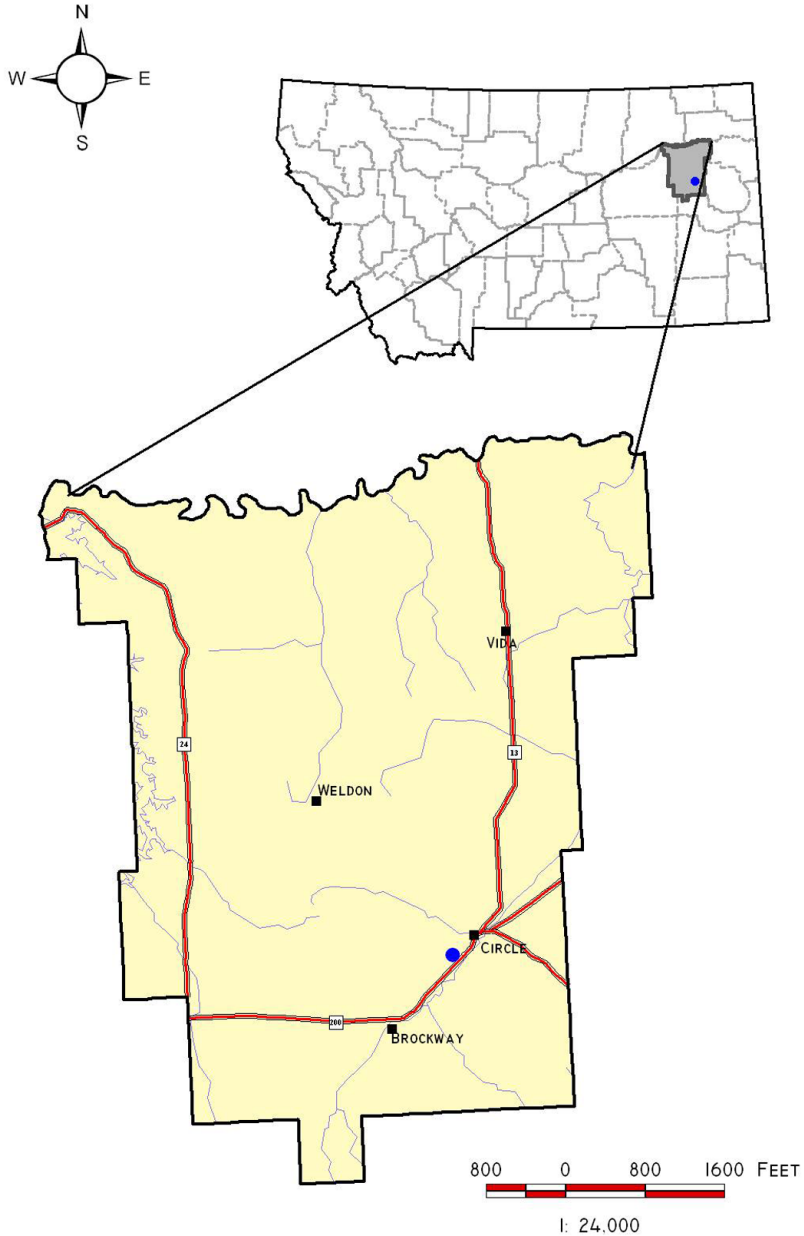
All additional hydrologic data were recorded on the mitigation site monitoring form **(Appendix B)**. The boundary between emergent vegetation and open water was mapped on the aerial photograph **(Figure 3, Appendix A)**. There are no groundwater monitoring wells at the site.

## 2.3 Vegetation

General vegetation types were delineated on an aerial 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. Woody species were not planted at this site.

**FIGURE 1. PROJECT LOCATION**
**Circle**
**Mitigation Site**




PROJECT #: 130091.021
DATE: APRIL 2001
LOCATION:
PROJECT MANAGER: B. DUTTON
DRAWN BY: B. NOECKER

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

One transect was established during the 2001 monitoring event to represent the range of current vegetation conditions. The location of this transect is shown on **Figure 2, Appendix A**. Percent cover for each species was recorded on the vegetation transect form **(Appendix B)**. Transect ends were marked with metal fence posts and their locations recorded with the GPS unit. Photos of the transect were taken from both ends during the site visit. This transect location will be moved during 2002 to better represent and monitor created wetland conditions over time.

### 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)**.

### 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 indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: North Plains Region 4 (Reed 1988). The information was recorded on the COE Routine Wetland Delineation Forms **(Appendix B)**. The wetland/upland and open water boundaries were used to calculate the wetland area.

A 1998 Biological Memorandum and Wetland Finding report (Turnstone Biological 1998) is included in **Appendix C**. This report primarily discusses the proposed wetland impacts associated with road construction rather than the enhancement of the oxbow wetland.

### 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

No macroinvertebrate samples were collected on the site.

## 2.9 Functional Assessment

A functional assessment form was completed in 2001 for the Circle mitigation 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. The remainder of the assessment was completed in the office **(Appendix B)**. A pre-construction functional assessment completed in 1998 is included within the 1998 Biological Memorandum and Wetland Finding report 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 transect. A description and compass direction for each photograph were recorded on the wetland monitoring form.

During the 2001 monitoring season, each photo-point was marked on the ground with a wooden stake and the location recorded with a resource grade GPS **(Appendix E)**. 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, Geoexplorer III hand-held GPS unit. Points collected included: the vegetation transect beginning and ending locations; photograph 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

No bird boxes or inflow structures were located within this site. There was a small containment structure in the lowest elevation of the oxbow that was installed to maintain water in the wetland for longer periods (pers. comm. L. Sickerson, MDT). This structure was less than 0.5 meters in height and overflows were conveyed through a pipe under the roadway and into the Redwater River.

# 3.0 RESULTS

## 3.1 Hydrology

The Circle mitigation site was constructed in 1999 to be a 4.3-acre wetland adjacent to an historic oxbow of the Redwater River. The hydrologic source is primarily groundwater and secondarily, stormwater. A containment area was excavated at the lowest elevation of the oxbow (L. Sickerson, MDT Biologist, pers. comm.) to hold water longer. Excess water simply flows out through a box culvert and into the Redwater River.

On the August 25, 2001 visit approximately 30% of the assessment area was inundated with shallow (0-1 feet), standing water. Drift lines suggest that the water had been higher earlier in the season.

Year 2001 precipitation data were not available for the Circle station; Vida lies approximately 27 miles north of Circle. According to the Western Regional Climate Center, Vida yearly precipitation totals for 2000 (13.72 inches) and 2001 (13.78 inches) were 90 and 91 percent, respectively, of the total annual mean precipitation (15.15 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)**. Three (3) dominant vegetation communities were mapped on the mitigation area map (**Figure 3, Appendix A**). The communities include: Type 1, *Agropyron cristatum*; Type 2, *Juncus balticus;* and Type 3, *Kochia* spp. Dominant species within each community are listed on the monitoring form **(Appendix B)**. The wetland area is primarily comprised of Baltic rush, sedge, and cattail.

**Table 1:** ***2001 Circle Wetland Mitigation Vegetation Species List***

| Scientific Name | Common Name | Indicator Status |
|---|---|---|
| *Agropyron cristatum* | crested wheatgrass | FAC-FACU |
| *Agropyron spp.* | wheatgrass | FAC-FACU |
| *Artemisia tridentate* | big sage | NI |
| *Brassica spp.* | mustard | FACW+ |
| *Bromus japonicus* | Japanese brome | FACU |
| *Carex spp.* | Sedge | FACW-OBL |
| *Elaeagnus angustifolia* | Russian olive | FAC |
| *Grindelia gracilfolia* | gumweed | NI |
| *Hordeum jubatum* | fox-tail barley | FAC+ |
| *Juncus balticus* | Baltic rush | OBL |
| *Kochia spp.* | summer cypress | FAC |
| *Rumex crispus* | curly dock | FACW |
| *Scirpus spp.* | bulrush | OBL |
| *Trifolium spp.* | sweet clover | FAC-FACW |
| *Typha latifolia* | Cattail | OBL |

The vegetation transect results are detailed in the monitoring form **(Appendix B)** and are summarized below.

| | | | | |
|---|---|---|---|---|
| Transect 1 Start | Upland Type 1 (20') | Wetland Type 2 (20') | Total 40' | End Transect 1 |

## 3.3 Soils

The site was mapped as part of the McCone County Soil Survey. The dominant soil on the site is the Havrelon loam (Map Unit 86). This deep, well-drained soil is formed in alluvium on low

terraces and floodplains of the Missouri and Redwater Rivers and their tributaries. Typically, the Havrelon soil has a surface layer of brown loam five (5) inches thick with an underlying layer of very fine sandy loam up to 60 inches deep. Havrelon soils and the inclusions of Trembles, Cherry, and Ridgelaw soils are not listed on the Montana NRCS Hydric Soil list.

Soils were sampled at one upland (SP-1) and one wetland location (SP-2). Soils at SP-1 were a dark, grayish brown (10YR 4/2) loam from 0-5 inches, and dark, grayish brown (10YR4/2) sandy loam from 5-18 inches. Soils at SP-2 were a black (7.5YR 2.5/1) clay loam from 0-18 inches. Mottles were likely masked from the black, clayey soils.

### 3.4 Wetland Delineation

The delineated wetland boundary is depicted on **Figure 3, Appendix A**. According to an MDT sketch, approximately 2.98 wetland acres occurred at the site prior to mitigation construction. During 2001, an additional approximate 4.35 wetland acres, including 0.31 acre of open water habitat, were delineated adjacent to the pre-existing wetlands. The open water averages 1 foot in depth. The COE data forms are included in **Appendix B**.

It should be noted that a combination of error in GPS / aerial photograph rectification, the MDT hand-sketch of pre-existing wetlands, and monitoring area limits has likely skewed the actual "new" wetland acreage calculation in the southwest corner of the site. These factors will be rectified during the 2002 field season, for which MDT has defined revised monitoring area limits. It is estimated that the "new" wetland area may have been overestimated by up to approximately 0.30 acre.

### 3.5 Wildlife

Wildlife species are listed in **Table 2.** Activities and densities associated with these observations area included on the monitoring form in **Appendix B**. Mammal observations were limited to deer tracks. No bird boxes have been installed at this site.

### 3.6 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

### 3.7 Functional Assessment

Completed functional assessment forms are included in **Appendix B** and summarized below in **Table 3**. The wetland is rated as a Category II wetland primarily due to the excellent general wildlife habitat. Sediment removal and stabilization are also rated as high, as well as groundwater discharge and recharge. From the 1998 report, the majority of the wetlands impacted were ranked as "low-quality Class III and IV wetlands" (**Table 1, Appendix C**). 1.2 acres were classified as Category III wetlands and 0.5 acres were classified as Category IV wetlands.

**Table 2.** ***Fish and Wildlife Species Observed at the Circle Mitigation Site***

| |
|---|
| **BIRDS** |
| American coot (*Fulica Americana)*<br>Blue winged teal (*Anas discors)*<br>Cinnamon teal (*Anas cyanoptera*)<br>Common snipe (*Gallinago gallinago)*<br>Killdeer (*Charadrius vociferous)*<br>Mallards (*Anas platyrhynchos)*<br>Spotted sandpiper (*Actitis macularia)*<br>Willets (*Catoptrophorus semipalmatus)* |
| **MAMMALS** |
| White-tailed deer *(Odocoileus virginianus)* |

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

| Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method | 2001 |
|---|---|
| Listed/Proposed T&E Species Habitat | Low (.3) |
| MNHP Species Habitat | Moderate (.6) |
| General Wildlife Habitat | Exceptional (1) |
| General Fish/Aquatic Habitat | NA |
| Flood Attenuation | Moderate (.5) |
| Short and Long Term Surface Water Storage | Moderate (.7) |
| Sediment, Nutrient, Toxicant Removal | High (1) |
| Sediment/Shoreline Stabilization | High (1) |
| Production Export/Food Chain Support | Moderate (.7) |
| Groundwater Discharge/Recharge | High (1) |
| Uniqueness | Moderate (.4) |
| Recreation/Education Potential | Low (.1) |
| Actual Points/ Possible Points | 7.3/12 |
| % of Possible Score Achieved | 66% |
| Overall Category | II |
| Total Acreage of Assessed Wetlands within Monitoring Area | 7.33 ac (2.98 pre-existing) |
| Total Functional Units (acreage x actual points) | 53.73 fu |
| Net Acreage Gain (“new” wetlands) | 4.35 ac |
| Net Functional Unit Gain (new acreage x actual points) | 31.76 fu |

## 3.8 Photographs

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

## 3.9 Maintenance Needs/Recommendations

No maintenance is required at this site.

### 3.10 Current Credit Summary

Wetlands impacted during the Southwest-Brockway East projects totaled 1.7 acres (Harris, 1998); 1.2 acres were classified as Category III wetlands and 0.5 acres were classified as Category IV wetlands. The wetland is now rated as a Category II wetland primarily due to the excellent general wildlife habitat. Sediment removal and stabilization are also rated as high, as well as groundwater discharge and recharge.

The newly-developed wetland acreage at the Circle mitigation site totals 4.35 acres inclusive of 0.313 acres of shallow (<1'), open water. Given the fact that the open water averages <1 foot deep, the entire 4.35 acres should be accepted as wetland credit. There is also a high probability that emergent vegetation will eventually cover the site. As it exists now, the shallow open water is an amenity for resident mammals, shorebirds and waterfowl.

The mitigation ratio for this project currently stands at approximately 2.5 acres of Category II wetland created for every 1 acre of Category III and IV impacted wetlands.

It should be noted that a combination of error in GPS / aerial photograph rectification, the MDT hand-sketch of pre-existing wetlands, and monitoring area limits has likely skewed the actual "new" wetland acreage calculation in the southwest corner of the site. These factors will be rectified during the 2002 field season, for which MDT has defined revised monitoring area limits. It is estimated that the "new" wetland area may have been overestimated by up to approximately 0.30 acre. This will be clarified during the 2002 monitoring year.

## 4.0 REFERENCES

Berglund, J. 1999. *MDT Montana Wetland Assessment Method*. Prepared for Montana Department of Transportation. May 1999.

Harris, R. 1998. *Biological Memorandum and Wetland Finding, MDT's Circle Southwest-Brockway East Projects,* Turnstone Biological.

Reed, P.B. 1988. National list of plant species that occur in wetlands: North Plains (Region 4). Biological Report 88(26.4), May 1988. U.S. Fish and Wildlife Service. Washington, D.C.

Sickerson, L. District 4 Biologist, Montana Department of Transportation. Helena, Montana. March 2002 telephone conversations.

US Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual.* US Army Corps. Washington, DC.

USDA Natural Resource Conservation Service. Soil Survey of McCone County, Montana.

# Appendix A

## FIGURES 2 - 3

*MDT Wetland Mitigation Monitoring*
*Circle Mitigation Site*
*Circle, Montana*

LAND & WATER


PROJECT NAME
MDT Circle Wetland Mitigation
DRAWING TITLE
Monitoring Activity Locations

PROJ NO 130591.02*
FILE NAME TASK2181ASE.dwg
SCALE 1" = 150 ft
LOCATION Circle

DRAWN RA
CHECKED
APPV'D BD
PROJ MGR BD

LAND & WATER CONSULTING, INC.
P.O. BOX 4254
Missoula, MT 59807

SHEET NUMBER
2
REV -
DATE

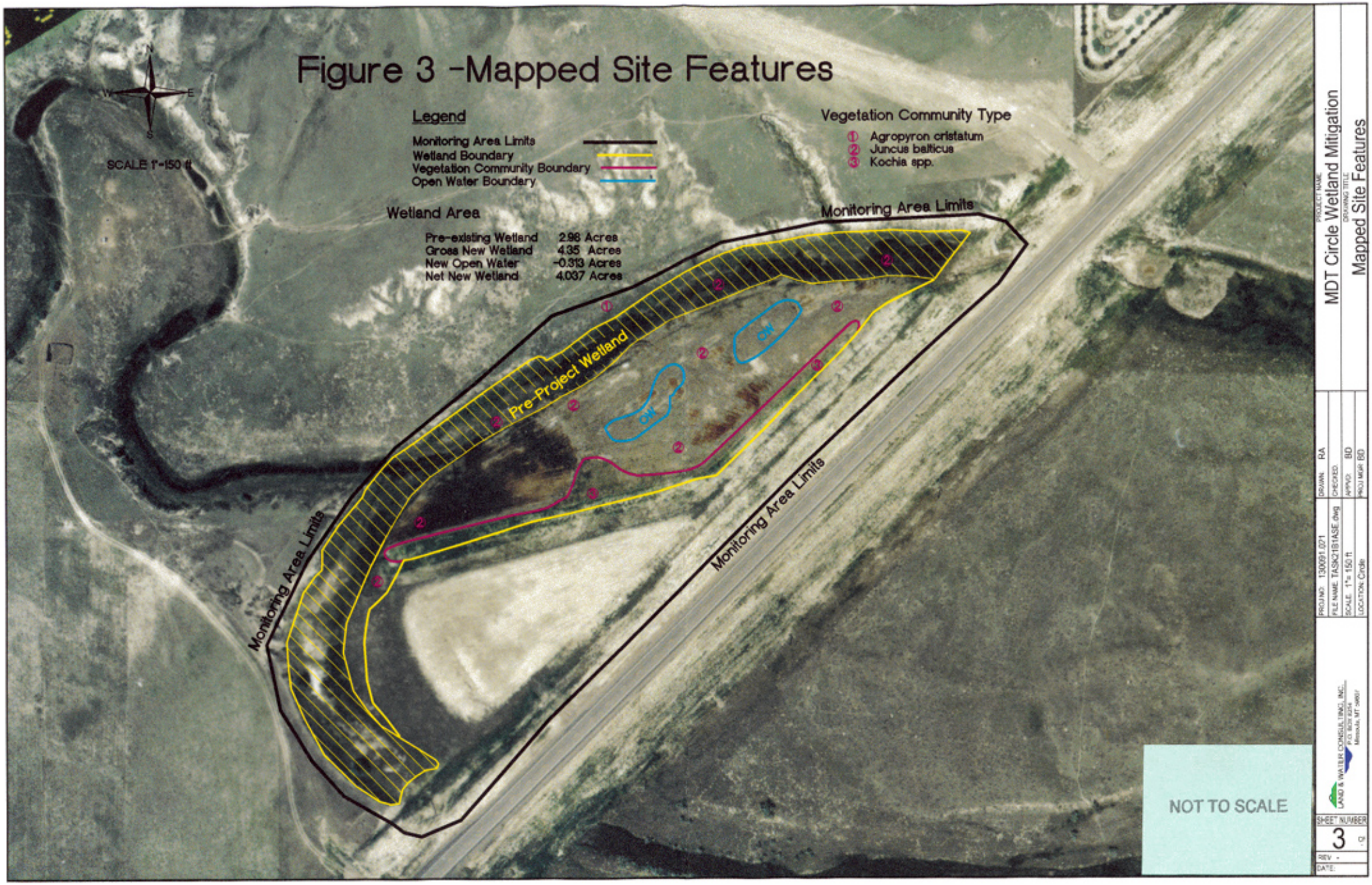


Figure 3 -Mapped Site Features
N
W
E
S
SCALE 1"=150 ft
Legend
Monitoring Area Limits
Wetland Boundary
Vegetation Community Boundary
Open Water Boundary
Vegetation Community Type
1 Agropyron cristatum
2 Juncus balticus
3 Kochia spp.
Wetland Area
Pre-existing Wetland 2.98 Acres
Gross New Wetland 4.35 Acres
New Open Water -0.313 Acres
Net New Wetland 4.037 Acres
Monitoring Area Limits
Pre-Project Wetland
OW
OW
Monitoring Area Limits
Monitoring Area Limits
NOT TO SCALE
PROJECT NAME
MDT Circle Wetland Mitigation
DRAWING TITLE
Mapped Site Features
PROJ NO: 130091.021
FILE NAME: TASK2181ASE.dwg
SCALE: 1"= 150 ft
LOCATION: Circle
DRAWN: RA
CHECKED: BD
APPVD: BD
PROJ MGR: BD
LAND & WATER CONSULTING, INC.
SHEET NUMBER
3
REV -
DATE:

# Appendix B

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## COMPLETED 2001 WETLAND MITIGATION SITE MONITORING FORM
## COMPLETED 2001 BIRD SURVEY FORMS
## COMPLETED 2001 WETLAND DELINEATION FORMS
## COMPLETED 2001 FIELD AND FULL FUNCTIONAL ASSESSMENT FORMS

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***MDT Wetland Mitigation Monitoring***
***Circle Mitigation Site***
***Circle, Montana***

LAND & WATER

# 215-21

LAND & WATER B-1

## DRAFT - MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Circle SW Project Number: 215-21 Assessment Date: 25 Aug 01
Location: Circle, MT MDT District: Five Milepost: 276
Legal description: T___ R___ Section___ Time of Day: 8:00 AM
Weather Conditions: Clear, 65° Person(s) conducting the assessment: LeCain Wetlands West, Inc.
Initial Evaluation Date: 1 1 Visit #: 1 Monitoring Year: 2001
Size of evaluation area: 4.3 acres Land use surrounding wetland: Range land

### HYDROLOGY

**Surface Water**
Inundation: Present √ Absent___ Average depths: 1 ft Range of depths: 0 - 1 ft
Assessment area under inundation: 30 %
Depth at emergent vegetation-open water boundary: 0.5 ft
If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes___ No___
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): _____

**Groundwater**
Monitoring wells: Present_____ Absent √
Record depth of water below ground surface

| Well # | Depth | Well # | Depth | Well # | Depth |
|---|---|---|---|---|---|
| | | | | | |
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**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:** _____

## VEGETATION COMMUNITIES

LAND & WATER B-2

Community No.: 1 Community Title (main species): AGCR

| Dominant Species | % Cover | Dominant Species | % Cover |
|---|---|---|---|
| Agropyron cristatum | 20% | agropyron spp. | 10% |
| G. lindolia gracilifolia | 10% | Bromus japonicus | 10% |
| Sweet Clover | 10% | Rumex crispus | 10% |
| Artemesia tridentata | 20% | | |
| Agropyron spp. | 10% | | |

**COMMENTS/PROBLEMS:**

Community No.: 2 Community Title (main species): JUBA

| Dominant Species | % Cover | Dominant Species | % Cover |
|---|---|---|---|
| Juncus balticus | 70 | | |
| Typha latilifolia | 20 | | |
| Carex spp. | 20 | | |
| Hordeum jubatum | 10 | | |
| Scirpus spp | 10 | | |

**COMMENTS/PROBLEMS:**

Community No.: 3 Community Title (main species): Kochia spp.

| Dominant Species | % Cover | Dominant Species | % Cover |
|---|---|---|---|
| Kochia spp. | 100 | | |
| | | | |
| | | | |
| | | | |
| | | | |

**COMMENTS/PROBLEMS:**

**Additional Activities Checklist:**

✓ Record and map vegetative communities on air photo

# MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Circle Date: 25 Aug 01 Examiner: LeCain, WWC Transect # 1

Approx. transect length: 40 ft Compass Direction from Start (Upland): N

| **Vegetation type 1:** AGCR | |
|---|---|
| Length of transect in this type: 20 | feet |
| Species: | Cover: |
| Agropyron cristatum | 10% |
| Grindelia gracilifolia | 10% |
| Artemesia tridentata | 10% |
| Sweet Clover | 10% |
| Agropyron spp. | 10% |
| Total Vegetative Cover: | 50 |

| **Vegetation type 2:** JUBA | |
|---|---|
| Length of transect in this type: 20 | feet |
| Species: | Cover: |
| Juncus balticus | 80 |
| Typha latifolia | 10 |
| Carex spp. | 10 |
| Total Vegetative Cover: | |

| **Vegetation type 3:** | |
|---|---|
| Length of transect in this type: | feet |
| Species: | Cover: |
| Total Vegetative Cover: | |

| **Vegetation type 4:** | |
|---|---|
| Length of transect in this type: | feet |
| Species: | Cover: |
| Total Vegetative Cover: | |

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form) LAND & WATER B-4

**Cover Estimate**

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

**Indicator Class:**

+ = Obligate
- = Facultative/Wet
0 = Facultative

**Source:**

P = Planted
V = Volunteer

Percent of perimeter 70 % 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 food 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:

Circle 8-25-21

## WETLAND DELINEATION

LAND & WATER B-5

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:** _____

## 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.

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:** _____

Circle 8-25 a

## PLANTED WOODY VEGETATION SURVIVAL

LAND & WATER B-6

| Species | Number Originally Planted | Number Observed | Mortality Causes |
|---|---|---|---|
| NA | | | |
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**COMMENTS/PROBLEMS:**

**COMPREHENSIVE VEGETATION LIST**

LAND & WATER B-7

| Species | Vegetation Community Number(s) | Species | Vegetation Community Number(s) |
|---|---|---|---|
| Agropyron cristatum | 1 | | |
| Grindelia gracilifolia | 1 | | |
| Sweet Clover | 1 | | |
| Artemesia tridentata | 1 | | |
| Agropyron spp. | 1 | | |
| Bromus japonicus | 1 | | |
| Juncus balticus | 2 | | |
| Rumex crispus | 1 | | |
| Brassica spp. | 1 | | |
| Elaeagnus angustifolia | 1 | | |
| Typha latifolia | 2 | | |
| Carex spp. | 2 | | |
| Hordeum jubatum | 2 | | |
| Scirpus spp. | 2 | | |
| Kochia spp. | 3 | | |

**COMMENTS/PROBLEMS:** _____

Circle 8-25-01

## WILDLIFE

LAND & WATER B-8

### BIRDS

| Species | Number Observed | Nesting or Breeding Activity | Likely Breeding Resident | Likely Migrating | Species | Number Observed | Nesting or Breeding Activity | Likely Breeding Resident | Likely Migrating |
|---|---|---|---|---|---|---|---|---|---|
| Mallards | 20 | | ✓ | | | | | | |
| Bl. wing teal | 20 | | ✓ | | | | | | |
| Willets | 30 | | ✓ | | | | | | |
| Killdeer | 10 | | | | | | | | |
| Sp. Sandpiper | 10 | | | | | | | | |
| Am. Coot | 5 | | | | | | | | |
| Common Snipe | 1 | | | | | | | | |
| Cinnamon Teal | 2 | | | | | | | | |

Were man made nesting structures installed? Yes____ No✓Type:_____ How many?_____ Are the nesting structures being utilized? Yes____ No____ Do the nesting structures need repairs? Yes____ No____

### MAMMALS AND HERPTILES

| Species | Number Observed | Indirect indication of use | | | |
|---|---|---|---|---|---|
| | | Tracks | Scat | Burrows | Other |
| Deer | — | ✓ | ✓ | | |

**Additional Activities Checklist:**

_____Macroinvertebrate sampling (if required)

**COMMENTS/PROBLEMS:** _____

## PHOTOGRAPHS

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

| Location | Photo Frame # | Photograph Description | Compass Reading |
|---|---|---|---|
| A | 8 | Wetland view | N |
| B | 7 | Upland use | 320° |
| C | 6 | Wetland Buffer | W |
| D | 5 | Wet land view | W |
| E | 4 | Wetland view | S |
| F | 3 | Wetland view | E |
| G | 9 | transect beginning | |
| H | 10 | transect end | |

**COMMENTS/PROBLEMS:** frames 9 & 10 are of Vegetation transect beginning & end

12a SP-1
11a SP-2

## 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 fore 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:** _____

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

| | |
|---|---|
| Project/Site: Circle<br>Applicant/Owner: MDT<br>Investigator: LeCain, Wetlands West Inc. | Date: 25 Aug 01<br>County: McCone<br>State: MT |
| Do Normal Circumstances exist on the site? (Yes) No<br>Is the site significantly disturbed (Atypical Situation)? Yes (No)<br>Is the area a potential Problem Area? Yes (No)<br>(If needed, explain on reverse.) | Community ID: AGCR<br>Transect ID: VP-1<br>Plot ID: SP-1 |

## VEGETATION

| Dominant Plant Species | Stratum | Indicator | Dominant Plant Species | Stratum | Indicator |
|---|---|---|---|---|---|
| 1. AGCR | H | — | 9. | | |
| 2. GRGR | H | — | 10. | | |
| 3. MEOF | H | FACU | 11. | | |
| 4. ARTR | S | — | 12. | | |
| 5. BRJA | H | FACU | 13. | | |
| 6. RUCR | H | FACW | 14. | | |
| 7. | | | 15. | | |
| 8. | | | 16. | | |

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 20%

Remarks: Upland site surrounding wetland

## HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: NA (in.)

Depth to Free Water in Pit: — (in.)

Depth to Saturated Soil: — (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

## SOILS

Map Unit Name (Series and Phase): 86 Havrelon loam

Drainage Class: well drained

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. |
|---|---|---|---|---|---|
| 0-5 | A | dark grayish brown 10YR 4/2 | — | — | Loam |
| 4-18 | B | 10YR 4/2 | — | — | Sandy loam |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Not a hydric soil

## 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) (Circle)

Remarks:

Approved by HQUSACE 3/92

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

Project/Site: Circle
Applicant/Owner: MDT
Investigator: LeCain, Wetlands West, Inc.

Date: 25 Aug 01
County: McCone
State: MT

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse.)

Community ID: JUBA
Transect ID: W-1
Plot ID: SP-2

## VEGETATION

| Dominant Plant Species | Stratum | Indicator |
|---|---|---|
| 1. JUBA | H | OBL |
| 2. TYLA | H | OBL |
| 3. Carex spp. | H | OBL |
| 4. SCAC | H | OBL |
| 5. | | |
| 6. | | |
| 7. | | |
| 8. | | |
| 9. | | |
| 10. | | |
| 11. | | |
| 12. | | |
| 13. | | |
| 14. | | |
| 15. | | |
| 16. | | |

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

Remarks: Well developed hydrophytic vegetation.

## HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: 12 (in.)
Depth to Free Water in Pit: 6 (in.)
Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
✓ Inundated
✓ Saturated in Upper 12 Inches
___ Water Marks
___ Drift Lines
✓ Sediment Deposits
✓ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 Inches
___ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks: This wetland has an abandance (30%) of open water with well developed vegetation along edges.

## SOILS

Map Unit Name (Series and Phase): 86, Hayrelon loam  Drainage Class: well drained

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. |
|---|---|---|---|---|---|
| 0-18 | A | BIK 7.5YR2.5/1 | Dark red 2.5YR 3/6 | 40% / evident | Clayey loam |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ✓ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Hydric soil with mottles throughout profile

## 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: This is an extensive wetland with well developed hydrophytic vegetation & 30% open water habitat.

Approved by HQUSACE 3/92

# 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 | 10% | (PF) IE SPF SF S TF IF |
| Moss-Lichen | — | PF IE SPF SF S TF IF |
| Scrub-Shrub | — | PF IE SPF SF S TF IF |
| Forested | — | PF IE SPF SF S TF IF |
| Total Estimated % Vegetated | 80% | |

**2. DISTURBANCE** is: High Moderate (Low)

## 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)~~ | ~~Perm / Peren~~ | ~~Seas / Intermit~~ | ~~Temp / Ephem~~ |
| % of waterbody containing cover objects | >25% | (0-25%) | <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 2-10 <2

Estimated % of flooded wetland classified SS, FO or both: ≥75 25-74 <25

Evidence of groundwater discharge or recharge? (Y) N List: wetland is at toe of abank

## 4. VERTEBRATES

Evidence of or potential for T&E or MNHP species use? (For general wildlife use, see separate form.) _____

Fish observations? _____

## 5. OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? (Y) N From: grazing, agriculture

Potential to receive: (low to moderate levels) high levels

Does 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: _____

Does AA offer strong potential for use as recreation / education site? Y (N) Type: _____

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

1. Project Name: Circle Wetland 2. Project #: Site #27 Control #: Task 21

3. Evaluation Date: Mo. 8 Day 25 Yr. 01 4. Evaluator(s): Rhecain Eacin 2/5/02 5. Wetlands/Site #(s)

6. Wetland Location(s): I. Legal: T 19 (N) or S; R 57 E or W; S 20 ; T ___ N or S; R ___ E or W; S ___ ;
II. Approx. Stationing or Mileposts:

III. Watershed: 10060002 GPS Reference No. (If applies):
Other Location Information:

7. a. Evaluating Agency: wetlands unit
b. Purpose of Evaluation:
1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other

8. Wetland size: (total acres) ___ (visually estimated)
5.14 (measured, e.g. by GPS [if applies])

9. Assessment area: (AA, lot., ac., see instructions on determining AA) 5.14 (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 |
|---|---|---|---|---|---|---|
| Riverine | Palustrine | | EM | H, G, C, B | E, I | 90 |
| Riverine | Palustrine | | UB | G | E | 10 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

(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/ 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: Permanently Flooded (H), Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Diked (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:

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, clearing, 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 occupied 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 | moderate disturbance | high disturbance |
| AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration, high road or building density | high disturbance | high disturbance | high disturbance |

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

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

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) | High | 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) | Bald Eagle |
| No usable habitat | D S | |

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) | .8 (M) | .7 (M) | .5 (L) | (.3 (L)) | 0 (L) |

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

**14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program:** (not including species listed in14A above)

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

| | | |
|---|---|---|
| Primary or critical habitat (**list species**) | D S | |
| Secondary habitat (**list species**) | D (S) | N leopard frog, peregrin falcon |
| Incidental habitat (**list species**) | D S | |
| No usable habitat | D S | |

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) | .7 (M) | (.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) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Class cover distribution (all vegetated classes)* | Even | | | | Uneven | | | | Even | | | | Uneven | | | | (Even) | | | |
| *Duration of surface water in ≥ 10% of AA* | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | (P/P) | S/I | T/E | A |
| Low disturbance at AA (see #12i) | E | E | E | H | E | E | H | H | E | H | H | M | E | H | M | M | (E) | H | M | M |
| Moderate disturbance at AA (see #12i) | H | H | H | H | H | H | H | M | H | H | M | M | H | M | M | L | H | M | L | L |
| High disturbance at AA (see #12i) | M | M | M | L | M | M | L | L | M | M | L | L | M | L | L | L | L | L | L | L |

**III. Rating** (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [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) | .7 (M) | .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 ih 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(H) | .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:** Storm H2O runoff

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**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:** from ephemeral/int. drainages

**14H Sediment/Shoreline Stabilization:** (applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 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 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *B* | High | | Moderate | | Low | | High | | Moderate | | Low | | High | | Moderate | | Low | |
| *C* | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| P/P | 1H | .9H | .9H | .8H | .8H | .7M | .9H | .8H | .8H | .7M | .7M | .6M | .7M | .6M | .6M | .4M | .4M | .3L |
| S/I | .9H | .8H | .8H | .7M | .7M | .6M | .8H | .7M | .7M | .6M | .6M | .5M | .6M | .5M | .5M | .3L | .3L | .2L |
| T/E/A | .8H | .7M | .7M | .6M | .6M | .5M | .7M | .6M | .6M | .5M | .5M | .4M | .5M | .4M | .4M | .2L | .2L | .1L |

**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
- X 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**

- X 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) 4.35 |
|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | L | .3 | 1 | |
| B. MT Natural Heritage Program Species Habitat | M | .6 | 1 | |
| C. General Wildlife Habitat | E | 1 | 1 | |
| D. General Fish/Aquatic Habitat | NA | - | - | |
| E. Flood Attenuation | M | .5 | 1 | |
| F. Short and Long Term Surface Water Storage | M | .7 | 1 | |
| G. Sediment/Nutrient/Toxicant Removal | H | 1 | 1 | |
| H. Sediment/Shoreline Stabilization | H | 1 | 1 | |
| I. Production Export/Food Chain Support | M | .7 | 1 | |
| J. Groundwater Discharge/Recharge | H | 1 | 1 | |
| K. Uniqueness | M | .4 | 1 | |
| L. Recreation/Education Potential | L | .1 | 1 | |
| Totals: | | 7.3 | 11 | 31.76 |

7.3/11 x 100 = 66%

**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)

(X) 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
X 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

# Appendix C

## 1998 BIOLOGICAL MEMORANDUM AND WETLAND FINDINGS

***MDT Wetland Mitigation Monitoring***
***Circle Mitigation Site***
***Circle, Montana***

LAND & WATER

# BIOLOGICAL MEMORANDUM AND WETLAND FINDING
# MDT's CIRCLE SOUTHWEST-BROCKWAY EAST PROJECTS

Project #F 57-6(3) 273F
Project #NG 57-6(3) 267F
Control #1303
Control #A303

Prepared for:

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June 1998

## INTRODUCTION

The Montana Department of Transportation is proposing within McCone County to reconstruct an 18.7 kilometer (11.7 mi.) section of Federal Aid Primary (FAP 57) more widely known as Montana Highway 200. The project portion of this important two-lane facility begins immediately west of its junction with FAS 253 near Brockway and extends northeast to the far town limits of Circle. The project would entail a full reconstruction to improve the safety of this presently narrow and shoulderless roadway. In support of this work, a field survey and wetlands delineation was conducted on February 24-25, 1998 to assess the area's wildlife, fisheries, wetlands, and associated biological resources.

Given the infrequency of use by Threatened and Endangered Species and the apparent absence of Sensitive Species of Concern within the immediate project area, there appear to be no significant construction-associated impacts for any biological resources beyond those affecting wetlands. Consequently, this Biological Memorandum with Wetland Finding has been prepared in lieu of a full Resources Report. Reasonable concern does exist however for containment of unavoidable impacts to the 0.68 wetland hectares (1.7 ac.) recently projected by MDT personnel.

### Area/Project Description

First built in 1941 and later improved in 1956, this segment of FAP 57/Hwy 200 is a primary route to and from McCone County. The project portion traverses low bluffs and terraces typical of much of eastern Montana and includes four, small intermittent tributaries of the nearby Redwater River. A major component of these ephemeral creeks are the herbaceous emergent wetlands, nine of which were identified adjacent to the project. Areas beyond the communities of Circle and Brockway are very sparsely populated and largely given to dryland wheat production and cattle grazing.

The proposal calls for full reconstruction to include several horizontal realignments that will ensure future safety as well as continued access during construction. Removal of several old timbered bridges from within the mentioned tributaries and their subsequent replacement with large diameter corrugated pipe would also occur and create several unavoidable wetland impacts discussed within the attached Finding.

The current roadbed width of 7.3 meters (24 ft.) would be increased to 8.5 m. (28 ft.) to provide two, two-foot extensions of paved shoulder which it presently lacks. The subgrade would be built to facilitate a future 11.0 m. (36 ft.) paved top width for any increased demand. Consequently, the purchase of new right-

f· y will also be required as would power utility relocations hroughout the project. New hydraulic structures, resurfacing, igning, and delineation complete the design (Mengel, pers. omm.).

**Threatened and Endangered Species**

**Analysis.** Communications with the U.S. Fish and ildlife Service (USFWS), Montana Natural Heritage Program (MNHP), and Montana Department of Fish, Wildlife, and Parks (MDFWP) biologists indicate that no resident populations of threatened or endangered species are likely to conflict with the proposed action. The USFWS December 1996 list of endangered, threatened, or proposed species considered to possibly occur within McCone County reveals the following:

* peregrine falcon (endangered)
* black-footed ferret (endangered)
* piping plover (threatened)
* least tern (endangered)
* bald eagle (threatened)

Of these, it is only the infrequent, seasonal passage of peregrine falcons and bald eagles within this area that is probable. Neither species has been known to reside in the general vicinity in recent times largely due to the lack of s table habitats. No immediate occurrences, nor their preferred h bitats, are on record for the remaining three species listed for the county.

**Mitigation/Coordination Measures.** In spite of their limited migratory use of the project area, MDT's proposed power utility relocations compel the following measure to ensure the minimization of impacts to peregrine falcons and bald eagles:

* Any overhead electrical powerline relocations shall be raptor-proofed in accordance with Raptor Research Report No. 4 (Olendorff et. al. 1981).

**Determination of Effect.** Based upon this coordination measure and all available information, implementation of the proposed action will have **no effect** upon those species listed for McCone County.

**Additional Biological Resources**

A query of the Montana Rivers Information System (1997) and MDFWP Area Fisheries Biologist, Bill Wiedenheft, reports a diversified presence of rough fish within the upper Redwater River when containing enough water to support them. Many such reaches between rockway and Circle are seasonally dry in average years, while

good water years provide a few persistent pools immediately above Circle that contain fish. Consequently, the area's aquatic species tend to ebb and flow throughout the system depending upon yearly water conditions. For all practical purposes, the project affected tributaries of Cotter, Stoney Butte, and Antelope Creeks are devoid of even these coarse species for the great majority of each year, thus allaying any fisheries concerns.

**Sensitive Species of Concern**

Based on a 5-mile radius search, MNHP does list two S-3 species for areas immediately north and east of Circle. The first is a unique hybrid cross of freshwater fish, the Northern Redbelly X Finescale Dace, which is found in the Redwater River and safely distanced from the project area.

The second listed species is the western hognose snake which inhabited areas just outside of town many years ago; it may still be present as it is a very reclusive species. Although the reptile has never been documented within the immediate project vicinity, suitable habitats do exist. Accordingly, any fostered awareness on the part of the contractor by MDT may save the unnecessary demise of even one individual. Due to its S-3 status, no special provisions are being suggested other than the possible dissemination of an informational packet to the awarded contractor re: status, identification, and preferred habitats.

Construction within the wet interface of area creeks also suggests some practical caution for the presence of more common reptiles and amphibians. Overall, project impacts to local wildlife are anticipated to be the limited loss of several ground nesting/dwelling inhabitants and a short-term displacement for certain bird species and larger mammals during the construction phase. The removal of existing bridges should present little harm to their respective channels as several are already degraded by loafing cattle and litter. Loss of area bridges will have the greatest effect upon the ubiquitous feral pigeons now using most undergirders for nesting platforms.

Substantive construction-associated impacts however will occur within adjacent wetlands when converting from bridges to the mentioned large diameter culverts. As always, protections for water quality as addressed by MDT's best construction practices are an imperative for the health of the area's downstream wetlands.

Table 1- Function/Value Ratings and Estimated Impacts

| Wetland # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Cowardin 1st Classes 2nd | emer | emer | emer | emer | emer | emer | emer | emer | emer |
| T&E Species Habitat | none | none | none | none | none | none | none | none | none |
| MNHP Species Habitat | none | none | none | none | none | none | none | none | none |
| Wildlife Habitat | high | high | high | high | mod | mod | high | mod | low |
| Fish/Aquatic Habitat | low | low | low | mod | low | low | mod | low | none |
| Flood Atten. and Storage | NA | NA | NA | NA | NA | low | low | NA | NA |
| Sed./Nut./Tox Stabilization | mod | mod | mod | mod | high | high | high | mod | low |
| Sed./Shoreln. Stabilization | high | high | high | high | high | mod | high | NA | NA |
| Prod. Export/ Fd. Chn. Sup. | mod | mod | mod | mod | mod | low | mod | low | mod |
| Groundwater Dis/Recharge | NA | NA | unkn | NA | unkn | unkn | unkn | NA | high |
| Uniqueness | low | low | low | low | low | low | low | low | mod |
| Rec./Educ. Potential | low | low | low | low | low | low | low | low | low |
| Dynamic Surf. Water Storage | mod | mod | low | low | low | low | mod | low | NA |
| Actual Points Poss. Points | 3.8 11 | 3.8 11 | 3.6 11 | 4.0 11 | 3.8 11 | 3.1 11 | 4.7 11 | 1.8 9 | 2.6 8 |
| % of Possible Score | 35 | 35 | 33 | 36 | 35 | 28 | 43 | 20 | 33 |
| Overall Category | III | III | III | III | III | IV | III | IV | IV |
| Estimated WL Size (acres) | >5.0 | >5.0 | >5.0 | >5.0 | >5.0 | 0.20 | >5.0 | 0.30 | 0.04 |
| Estimated WL Impact (ac.) | 0.10 | 0.10 | 0.10 | 0.20 | 0.30 | 0.20 | 0.40 | 0.30 | 0.04 |

Total Estimated Wetlands Impacts= 0.68 hec. (1.7 ac.)

## WETLAND PARAMETERS

### Vegetation

Due in part perhaps to the land's arid nature, the wetlands of this project are uncommonly similar in their vegetative composition while also largely lacking a shrubby riparian component. Eight of the nine sites are dominated by a combination of three herbaceous emergents: Olney three-square bulrush; prairie cordgrass; and an unidentified Eleocharis (spikerush) species. Only one site (WL 9) is governed by the larger broad-leaved cattail. Several other hydrophytic species do occur on all sites in represented or trace amounts. These include the mentioned cattail, Baltic rush, saltmarsh and hardstem bulrushes, northern reedgrass, curly dock, and a small, reddish Carex species. Additional hydrophytic plants more detectable during the growing season could also possibly occur.

Such vegetative communities are not necessarily dependent upon the intermittent creeks of the project but can occur anywhere a depression may interact with the reportedly high water table or a brief surficial flow. Accordingly, several depressions of non-functional river oxbow along the highway's edge exhibit the same dominant wetland species, if not in like abundance.

Four well defined ephemeral creeks- Cotter, Stoney Butte, Antelope and one unnamed, occur within the project at mileposts 267.0, 270.3, 273.2, and 275.8, respectively; a fifth **non-wetland** drainage occurs near MP 271.7. Because the area's creeks are not reported to flood vigorously, it is probable that their highly saline conditions may also inhibit the broader establishment of the hardier obligate bulrushes found as bank fringes on several sites (Ref appended WL photos). The wetland cover component regardless of species composition, and excepting Site 9, is less than one meter in height.

Differing from all other areas, Site 9 is a narrow strip of cattail-dominant wetland that has established between Hwy 200 and the adjacent north bankslope. Reportedly dependent upon spring-fed bank seepage, the site also contains Olney bulrush, prairie cordgrass, and the Eleocharis species mentioned earlier.

### Hydrology

Once more excusing Site 9, all project wetlands depend greatly on the hydrology of their associated creeks and the water tables which they influence. NRCS personnel generally report the infrequent, passive flooding of most area creeks, a condition borne

out by the mosaic of wetland plants found intermingling with open water areas. Creek hydrology is also augmented by a mean annual precipitation of 25-35 cm. (10-14 in.), some of which reaches the wetland sites as highway/storm water run-off. Of interest regarding these arid-bound wetland areas, are water tables reported to be at or within 0.6 m. (2 ft.) of the ground surface for many months of each year (McCone Co. Soil Survey).

**Soils**

Excerpts from McCone County's Soil Survey list but one major soil map unit that is locally and nationally recognized as a hydric soil. This is the Typic Fluvaquent of 0 to 2 percent slope, and is considered to occur beneath the wetlands of Cotter, Stoney Butte, and Antelope Creeks (Sites 1-4). The soil is reported to be an erratically stratified sandy loam to silty clay, deep and poorly drained.

Remaining sites have developed over time upon soils that the NRCS generally regards as non-hydric. These sites, having been inundated and/or saturated frequently enough in their small depressions to induce a variety of obligate wetland plants, have likely developed occlusions of hydric soils left unconfirmed by February's field work.

## FUNCTIONS and VALUES

An assessment of functions and values utilizing MDT's Wetland Field Evaluation Forms indicates a succession of low-quality Class III and IV wetlands throughout the project. The better Class III sites (1-5, 7) are uniformly tied to the more active drainages supporting the sizable, linear wetlands of herbaceous emergents. Conversely, Class IV sites (6, 8-9) are rated such because of their small size and encroached condition (see Table 1 and appended mapping).

Specific function and value ratings for all sites are generally in the low to moderate range. Of twelve possible categories, the only high ratings appear within Sediment/Shoreline Stabilization, Sediment/Nutrient/Toxicant Removal, and General Wildlife Habitat-virtually confined again to Class III wetlands. It should be noted that these mentioned functions/values are completely dependent upon the expansive emergent communities of bulrushes, spikerushes, sedges, and grasses. Such floodplain cover accounts for most wetland acres within the project vicinity and a great many more within the overall pattern of area drainages.

Unavoidable construction-related impacts will occur to these nine sites either because of the proposed alignment shifts or the redevelopment of new creek crossings. Of MDT's projected 0.68 hectare (1.7 ac.) wetland loss, 0.48 hec. (1.2 ac.) is expected to occur within Class III sites, the remaining 0.20 hectares (0.5 ac.) within Class IV sites. Confinement of disturbance to the presently proposed construction limits and standard protections for water quality are strongly encouraged to preserve the project's downstream wetlands.

Earlier last year, biologist Larry Sickerson identified a potential wetland mitigation site immediately northwest of Highway 200 between mileposts 276.2 and 276.5. Once an active oxbow of the Redwater River, the site may prove to be a useful gravel source in addition to suitable mitigation for this project. MDT is currently investigating materials suitability and landowner cooperation.

## MITIGATION

A potential wetlands mitigation site is located to the west of the roadway between stations 509+00 and 522+00. This mitigation site will yield 1.3 hectares (3.37 acres) of wetlands.

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## REFERENCED SPECIES

| COMMON NAME | GENUS and SPECIES |
|---|---|
| **Fauna** | |
| Bald eagle | Haliaeetus leucocephalus |
| Black-footed ferret | Mustela nigripes |
| Least tern | Sterna antillarum |
| Peregrine falcon | Falco peregrinus |
| Piping Plover | Charadrius melodus |
| Western hognose snake | Heterodon nasicus |
| N. redbelly x. Finescale dace | Phoxinus eos x. Ph. neogaeus |
| **Flora** | |
| Baltic rush | Juncus balticus |
| Broad-leaved cattail | Typha latifolia |
| Common cocklebur | Xanthium strumarium |
| Crested wheatgrass | Agropyron cristatum |
| Curly dock | Rumex crispus |
| Curly-cup gumweed | Grindelia squarrosa |
| Foxtail barley | Hordeum jubatum |
| Great plains yucca | Yucca glauca |
| Hardstem bulrush | Scirpus acutus |
| Kochia spp. | Kochia spp. |
| Mustards | Brassica spp. |
| Northern reedgrass | Calamagrostis inexpansa |
| Olney Three-square bulrush | Scirpus americanus |
| Pale purple coneflower | Echinacea pallida |
| Prairie cordgrass | Spartina pectinata |
| Russian olive | Eleagnus angustifolia |
| Saltmarsh bulrush | Scirpus maritimus |
| Sedge spp. | Carex spp. |
| Silver sagebrush | Artemesia cana |
| Smooth brome | Bromus inermis |
| Spikerushes | Eleocharis spp. |
| Spiny sowthistle | Sonchus asper |
| Western snowberry | Symphoricarpos occidentalis |
| Yellow sweetclover | Melilotus officinalis |

# Appendix D

## BIRD SURVEY PROTOCOL
## GPS PROTOCOL

***MDT Wetland Mitigation Monitoring***
***Circle Mitigation Site***
***Circle, Montana***

LAND & WATER

# 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.

# 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***
***Circle Mitigation Site***
***Circle, Montana***

LAND & WATER

Photo point A, view North

Photo point F, view East

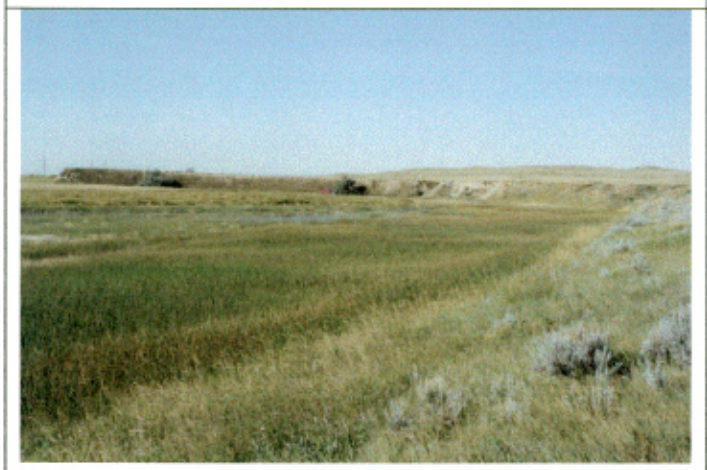

Photo point E, view South

Photo D, view West

Photo point B, upland use

Photo point C, wetland buffer view West

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| Photo point G, begin veg transect | Photo point H, end transect |
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