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# **MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2002**

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*Circle Mitigation Site  
Circle, Montana*



Prepared for:

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

February 2003

Project No: 130091.021

Prepared by:

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



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## TABLE OF CONTENTS

<b>1.0 INTRODUCTION.....</b>	<b>1</b>
<b>2.0 METHODS.....</b>	<b>1</b>
2.1 Monitoring Dates and Activities .....	1
2.2 Hydrology .....	1
2.3 Vegetation.....	1
2.4 Soils.....	3
2.5 Wetland Delineation .....	3
2.6 Mammals, Reptiles and Amphibians .....	3
2.7 Birds.....	3
2.8 Macroinvertebrates.....	3
2.9 Functional Assessment .....	3
2.10 Photographs .....	4
2.11 GPS Data.....	4
2.12 Maintenance Needs .....	4
<b>3.0 RESULTS .....</b>	<b>4</b>
3.1 Hydrology .....	4
3.2 Vegetation.....	5
3.3 Soils.....	5
3.4 Wetland Delineation .....	6
3.5 Wildlife .....	6
3.6 Macroinvertebrates.....	7
3.7 Functional Assessment .....	7
3.8 Photographs .....	7
3.9 Maintenance Needs/Recommendations .....	7
3.10 Current Credit Summary.....	8
<b>4.0 REFERENCES.....</b>	<b>9</b>

## **TABLES**

Table 1	<i>2001 and 2002 Circle Wetland Mitigation Vegetation Species List</i>
Table 2	<i>Wildlife Species Observed on the Circle Mitigation Site</i>
Table 3	<i>Summary of 2001 and 2002 Wetlands Function/Value Ratings and Functional Points at the Circle Mitigation Project.</i>

## **FIGURES**

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

Appendix A:	<i>Figures 2 - 3</i>
Appendix B:	<i>Completed 2002 Wetland Mitigation Site Monitoring Form</i> <i>Completed 2002 Bird Survey Forms</i> <i>Completed 2002 Wetland Delineation Forms</i> <i>Completed 2002 Field and Full Functional Assessment Forms</i>
Appendix C:	<i>Representative Photographs</i> <i>2002 Aerial Photograph</i>
Appendix D:	<i>Bird Survey Protocol</i> <i>GPS Protocol</i>



## 1.0 INTRODUCTION

This annual report summarizes methods and results from the second year (2002) of monitoring for 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 for 1.7 acres of wetlands associated with MDT improvements to Highway 200. The site is located in McCone County along the northwest side of Highway 200 between highway markers 276.2 and 276.5, Section 20, Township 19 North, Range 48 East (**Figure 1**). Elevations are approximately 2,430 feet above sea level.

The Circle wetland was constructed in 1999 in a former oxbow of the Redwater River (**Figure 2, Appendix A**). The pre-project wetland limits are shown on **Figure 3, Appendix A** and total approximately 2.98 acres.

## 2.0 METHODS

### 2.1 Monitoring Dates and Activities

The Circle wetland was monitored on July 17, 2002. 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; functional assessment; and, maintenance assessment of any inflow/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 were recorded on the Routine Wetland Delineation Data Form (**Appendix B**) at each wetland determination point. Precipitation data for the year 2002 were compared to the 1963-2001 average (WRCC 2002).

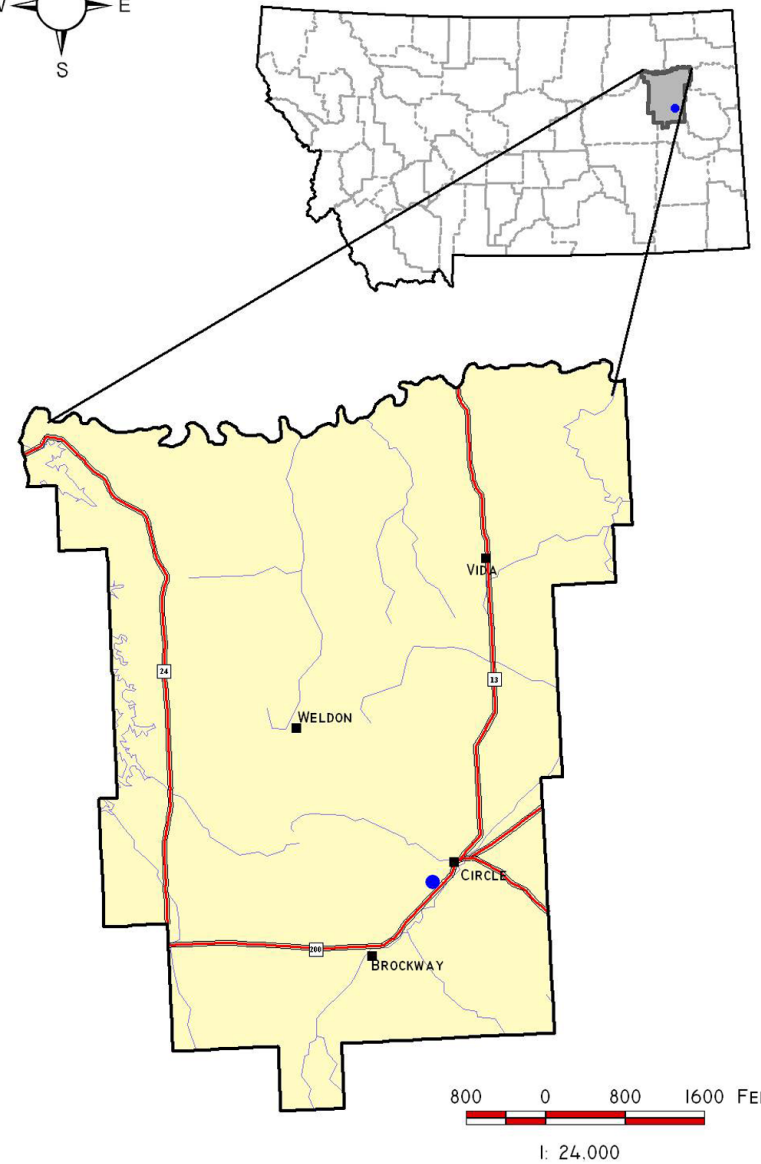
All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). The boundary between emergent vegetation and open water was mapped on the aerial photograph (**Figure 3, Appendix A**). There are no groundwater monitoring wells at the site.

### 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

A topographic map of a region with contour lines and elevation markers. A red circle highlights a specific area, and a red arrow points to it from the text 'PROJECT LOCATION'. The map includes labels for 'Redwater' and 'GOLF COURSE'. Various elevation points are marked, such as 2532, 2537, 2547, 2566, 2572, 2573, 2582, 2585, 2592, 2597, 2607, 2617, 2627, 2637, 2647, 2657, 2667, 2677, 2687, 2697, 2707, 2717, 2727, 2737, 2747, 2757, 2767, 2777, 2787, 2797, 2807, 2817, 2827, 2837, 2847, 2857, 2867, 2877, 2887, 2897, 2907, 2917, 2927, 2937, 2947, 2957, 2967, 2977, 2987, 2997, 3007, 3017, 3027, 3037, 3047, 3057, 3067, 3077, 3087, 3097, 3107, 3117, 3127, 3137, 3147, 3157, 3167, 3177, 3187, 3197, 3207, 3217, 3227, 3237, 3247, 3257, 3267, 3277, 3287, 3297, 3307, 3317, 3327, 3337, 3347, 3357, 3367, 3377, 3387, 3397, 3407, 3417, 3427, 3437, 3447, 3457, 3467, 3477, 3487, 3497, 3507, 3517, 3527, 3537, 3547, 3557, 3567, 3577, 3587, 3597, 3607, 3617, 3627, 3637, 3647, 3657, 3667, 3677, 3687, 3697, 3707, 3717, 3727, 3737, 3747, 3757, 3767, 3777, 3787, 3797, 3807, 3817, 3827, 3837, 3847, 3857, 3867, 3877, 3887, 3897, 3907, 3917, 3927, 3937, 3947, 3957, 3967, 3977, 3987, 3997, 4007, 4017, 4027, 4037, 4047, 4057, 4067, 4077, 4087, 4097, 4107, 4117, 4127, 4137, 4147, 4157, 4167, 4177, 4187, 4197, 4207, 4217, 4227, 4237, 4247, 4257, 4267, 4277, 4287, 4297, 4307, 4317, 4327, 4337, 4347, 4357, 4367, 4377, 4387, 4397, 4407, 4417, 4427, 4437, 4447, 4457, 4467, 4477, 4487, 4497, 4507, 4517, 4527, 4537, 4547, 4557, 4567, 4577, 4587, 4597, 4607, 4617, 4627, 4637, 4647, 4657, 4667, 4677, 4687, 4697, 4707, 4717, 4727, 4737, 4747, 4757, 4767, 4777, 4787, 4797, 4807, 4817, 4827, 4837, 4847, 4857, 4867, 4877, 4887, 4897, 4907, 4917, 4927, 4937, 4947, 4957, 4967, 4977, 4987, 4997, 5007, 5017, 5027, 5037, 5047, 5057, 5067, 5077, 5087, 5097, 5107, 5117, 5127, 5137, 5147, 5157, 5167, 5177, 5187, 5197, 5207, 5217, 5227, 5237, 5247, 5257, 5267, 5277, 5287, 5297, 5307, 5317, 5327, 5337, 5347, 5357, 5367, 5377, 5387, 5397, 5407, 5417, 5427, 5437, 5447, 5457, 5467, 5477, 5487, 5497, 5507, 5517, 5527, 5537, 5547, 5557, 5567, 5577, 5587, 5597, 5607, 5617, 5627, 5637, 5647, 5657, 5667, 5677, 5687, 5697, 5707, 5717, 5727, 5737, 5747, 5757, 5767, 5777, 5787, 5797, 5807, 5817, 5827, 5837, 5847, 5857, 5867, 5877, 5887, 5897, 5907, 5917, 5927, 5937, 5947, 5957, 5967, 5977, 5987, 5997, 6007, 6017, 6027, 6037, 6047, 6057, 6067, 6077, 6087, 6097, 6107, 6117, 6127, 6137, 6147, 6157, 6167, 6177, 6187, 6197, 6207, 6217, 6227, 6237, 6247, 6257, 6267, 6277, 6287, 6297, 6307, 6317, 6327, 6337, 6347, 6357, 6367, 6377, 6387, 6397, 6407, 6417, 6427, 6437, 6447, 6457, 6467, 6477, 6487, 6497, 6507, 6517, 6527, 6537, 6547, 6557, 6567, 6577, 6587, 6597, 6607, 6617, 6627, 6637, 6647, 6657, 6667, 6677, 6687, 6697, 6707, 6717, 6727, 6737, 6747, 6757, 6767, 6777, 6787, 6797, 6807, 6817, 6827, 6837, 6847, 6857, 6867, 6877, 6887, 6897, 6907, 6917, 6927, 6937, 6947, 6957, 6967, 6977, 6987, 6997, 7007, 7017, 7027, 7037, 7047, 7057, 7067, 7077, 7087, 7097, 7107, 7117, 7127, 7137, 7147, 7157, 7167, 7177, 7187, 7197, 7207, 7217, 7227, 7237, 7247, 7257, 7267, 7277, 7287, 7297, 7307, 7317, 7327, 7337, 7347, 7357, 7367, 7377, 7387, 7397, 7407, 7417, 7427, 7437, 7447, 7457, 7467, 7477, 7487, 7497, 7507, 7517, 7527, 7537, 7547, 7557, 7567, 7577, 7587, 7597, 7607, 7617, 7627, 7637, 7647, 7657, 7667, 7677, 7687, 7697, 7707, 7717, 7727, 7737, 7747, 7757, 7767, 7777, 7787, 7797, 7807, 7817, 7827, 7837, 7847, 7857, 7867, 7877, 7887, 7897, 7907, 7917, 7927, 7937, 7947, 7957, 7967, 7977, 7987, 7997, 8007, 8017, 8027, 8037, 8047, 8057, 8067, 8077, 8087, 8097, 8107, 8117, 8127, 8137, 8147, 8157, 8167, 8177, 8187, 8197, 8207, 8217, 8227, 8237, 8247, 8257, 8267, 8277, 8287, 8297, 8307, 8317, 8327, 8337, 8347, 8357, 8367, 8377, 8387, 8397, 8407, 8417, 8427, 8437, 8447, 8457, 8467, 8477, 8487, 8497, 8507, 8517, 8527, 8537, 8547, 8557, 8567, 8577, 8587, 8597, 8607, 8617, 8627, 8637, 8647, 8657, 8667, 8677, 8687, 8697, 8707, 8717, 8727, 8737, 8747, 8757, 8767, 8777, 8787, 8797, 8807, 8817, 8827, 8837, 8847, 8857, 8867, 8877, 8887, 8897, 8907, 8917, 8927, 8937, 8947, 8957, 8967, 8977, 8987, 8997, 9007, 9017, 9027, 9037, 9047, 9057, 9067, 9077, 9087, 9097, 9107, 9117, 9127, 9137, 9147, 91



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The vegetation transect was moved to a new location for the 2002 investigation because the 2001 transect was not located in an enhanced wetland area. 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 on the vegetation map. Photos of the transect were taken from both ends 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**).

## 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.

## 2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations were recorded on the wetland monitoring form during the site 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

Per MDT instructions, no macroinvertebrate samples were collected on the site.

## 2.9 Functional Assessment

A functional assessment form was completed in 2002 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**).

## **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 C**). The approximate locations are shown on **Figure 2, Appendix A**. Photographs were taken from the same locations during the 2002 site visit. All photographs were taken using a 50 mm lens. A 2002 aerial photo is included in **Appendix C**.

## **2.11 GPS Data**

During the 2001 monitoring season, survey points were collected using a resource grade Trimble, Geoexplorer III hand-held GPS unit (**Appendix D**). 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. No new GPS data were collected during the 2002 field season; changes in the wetland boundary, vegetation communities, location of the vegetation transect, and the sample point locations were drawn on an aerial photograph.

## **2.12 Maintenance Needs**

No bird boxes or inflow structures were located within this site. There is 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 is less than 0.5 meters in height and overflows are conveyed through a box culvert 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 to retain water for longer periods. Excess water simply flows out through a box culvert under the highway and into the Redwater River.

During the July 17, 2002 visit approximately 37% of the assessment area was inundated with shallow (0-2 feet), standing water.

Precipitation data for the Circle station indicate that the yearly average (1963-2001) is 13.44 inches (WRCC, 2002); through the month of July precipitation average is 9.06 inches. During 2002, precipitation through the month of July was 7.02 inches or 77% of the average. The night before the 2002 site visit a rain storm had occurred and saturation or inundation was evident throughout most of the site.

### 3.2 Vegetation

Vegetation species identified on the site are presented in **Table 1** and in the monitoring form (**Appendix B**). Five (5) dominant vegetation communities are mapped on the mitigation area map (**Figure 3, Appendix A**). The communities include: Type 1, *Agropyron smithii*; Type 2, *Scirpus spp.*; Type 3, *Scirpus spp./Distichlis stricta*; Type 4, *Juncus effuses*; and Type 5, *Distichlis stricta/Hordeum jubatum*. Dominant species within each community are listed on the monitoring form (**Appendix B**).

The 2002 vegetation transect results are detailed in the monitoring form (**Appendix B**) and are summarized below. The 2001 transect data is included for comparison, although the transect was moved to a new location in 2002.

#### 2001 Transect Data

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

#### 2002 Transect Data

Transect 1 Start	Upland Type 1 (9')	Wetland Type 3 (6')	Wetland Type 2 (15')	Open Water (39')	Wetland Type 2 (45')	Wetland Type 1 (18')	Total 132'	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. 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 wetland location (SP-1) and one upland (SP-2). Soils at SP-1 were an olive brown (2.5Y 4/3) organic streaked sandy clay loam from 0-16 inches. From 2-7 inches the soil was an olive brown sand, and from 7-16 inches olive brown sand with yellowish red mottles (5YR 4/3). Below 16 inches the soil was a gray (Gley 1 5N) clay gravel. The soil was saturated to the surface and water was filling the pit at a depth of 5 inches. Soils at SP-2 were an olive brown sandy loam from 0-18 inches; no saturation or hydric indicators were notes.

**Table 1: 2001 and 2002 Circle Wetland Mitigation Vegetation Species List**

Scientific Name	Common Name	Indicator Status
<i>Agropyron cristatum</i> *	crested wheatgrass	-
<i>Agropyron smithii</i> **	western wheatgrass	FACU
<i>Artemisia tridentate</i> *	big sage	-
<i>Brassica spp.</i>	mustard	FACW+
<i>Bromus japonicus</i> *	Japanese brome	FACU
<i>Carex praegracilis</i> **	clustered field sedge	FACW
<i>Chenopodium spp.</i> *	pigweed	unk.
<i>Cirsium arvense</i> **	Canada (creeping) thistle	FACU
<i>Distichlis stricta</i> **	inland saltgrass	-
<i>Elaeagnus angustifolia</i>	Russian olive	FAC
<i>Eleocharis palustris</i> **	creeping spikerush	OBL
<i>Glyceria spp.</i> **	reed meadowgrass	OBL
<i>Grindelia spp.</i>	gumweed	(Unknown -likely FACU)
<i>Hordeum jubatum</i> *	fox-tail barley	FACW
<i>Juncus balticus</i>	Baltic rush	OBL
<i>Juncus effuses</i> **	soft rush	OBL
<i>Kochia spp.</i> *	Kochia	FAC
<i>Poa fendleriana</i> **	mutton bluegrass	FACU
<i>Rumex crispus</i>	curly dock	FACW
<i>Scirpus pungens</i> **	three-square bulrush	OBL
<i>Scirpus spp.</i> **	bulrush species	(likely OBL)
<i>Stipa spp.</i> **	needle grass	(Unknown -likely NI)
<i>Trifolium spp.</i>	sweet clover	FAC-FACW
<i>Typha latifolia</i>	broad-leaf cattail	OBL

- : Not included in the Wetland Indicator manual or No Indicator listed.

\*denotes observed in 2002 in addition to previous years

\*\*denotes observed in 2002 for the first time

No star indicates a species was observed in 2001, but not in 2002

### 3.4 Wetland Delineation

The delineated wetland boundary is depicted on **Figure 3, Appendix A**. According to the MDT, approximately 2.98 wetland acres occurred at the site prior to mitigation construction. During 2002, an additional 4.62 wetland acres, including 1.7 acres of open water habitat, were delineated adjacent to the pre-existing wetlands. Since 2001 the acreage of new wetland increased 0.27 acres. The open water averages 1 foot in depth. The COE data forms are included in **Appendix B**.

### 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 coyote tracks. No bird boxes have been installed at this site.

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

<b>BIRDS</b>	
American coot ( <i>Fulica Americana</i> )	Killdeer ( <i>Charadrius vociferous</i> ) *
Black Tern ( <i>Chlidonias niger</i> )**	Mallard ( <i>Anas platyrhynchos</i> ) *
Eastern Kingbird ( <i>Tyrannus tyrannus</i> ) **	Red-winged Black bird ( <i>Agelaius phoeniceus</i> ) **
Greater Yellow Legs ( <i>Tringa melanoleuca</i> )**	Spotted sandpiper ( <i>Actitis macularia</i> )
Blue winged teal ( <i>Anas discors</i> )	Tree Swallow ( <i>Tachycineta bicolor</i> )**
Cinnamon teal ( <i>Anas cyanoptera</i> )	Unident. ducks
Common Nighthawk ( <i>Chordeiles minor</i> ) **	Unident. shorebirds
Common snipe ( <i>Gallinago gallinago</i> )	Willet ( <i>Catoptrophorus semipalmatus</i> )
<b>MAMMALS</b>	
Coyote tracks ( <i>Canis latrans</i> ) **	
White-tailed deer ( <i>Odocoileus virginianus</i> )	

\*denotes observed in 2002 in addition to previous years

\*\*denotes observed in 2002 for the first time

No star indicates a species was observed in 2001, but not in 2002

### 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 1998 functional assessment resulted in a Class III (43%) rating, 2001 was rated as a Class II (66%), and the 2002 assessment indicates that the wetland has improved within the Class II rating (77%). The entire wetland has increased 10.9 functional units since 2001. The mitigation site has been rated as a Category II wetland primarily as a result of the excellent general wildlife habitat, water storage, sediment removal, and potential for educational use.

### 3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix C**. The 2002 aerial photograph is also included in **Appendix C**.

### 3.9 Maintenance Needs/Recommendations

No maintenance is required at this site.

**Table 3: Summary of 2001 and 2002 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	2002
Listed/Proposed T&E Species Habitat	Low (.3)	Low (.3)
MNHP Species Habitat	Moderate (.6)	High (.8)
General Wildlife Habitat	Exceptional (1)	Exceptional (1)
General Fish/Aquatic Habitat	NA	NA
Flood Attenuation	Moderate (.5)	Moderate (.5)
Short and Long Term Surface Water Storage	Moderate (.7)	High (.8)
Sediment, Nutrient, Toxicant Removal	High (1)	High (1)
Sediment/Shoreline Stabilization	High (1)	High (1)
Production Export/Food Chain Support	Moderate (.7)	Moderate (.7)
Groundwater Discharge/Recharge	High (1)	High (1)
Uniqueness	Moderate (.4)	Moderate (.4)
Recreation/Education Potential	Low (.1)	High (1)
Actual Points/ Possible Points	7.3/11	8.5/11
% of Possible Score Achieved	66%	77%
Overall Category	II	II
Total Acreage of Assessed Wetlands within Monitoring Area	7.33 ac (2.98 pre-existing)	7.6 ac (2.98 pre-existing)
Total Functional Units (acreage x actual points)	53.73 fu	64.6 fu
Net Acreage Gain ("new" wetlands)	4.35 ac	4.62 ac
Net Functional Unit Gain (new acreage x actual points)	31.76 fu	39.27 fu

### 3.10 Current Credit Summary

The new wetland acreage at the Circle mitigation site totals 4.62 acres inclusive of 1.7 acres of shallow (<1'), open water (a storm had passed through the day before). Given the fact that the open water averages <1 foot deep, the entire 4.62 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. Wetlands impacted during the Southwest-Brockway East projects totaled 1.7 acres (Harris, 1998). Consequently, approximately 2.92 acres of "credit" may remain at this site for application to other projects as of 2002.

The Circle mitigation wetland is rated as a Category II wetland primarily as a result of the excellent general wildlife habitat, water storage, sediment removal, and potential for educational use. The wetland is well developed with a high diversity of wetland species and a presumed sanctuary for migrating waterfowl and shorebirds.

Grazing continues within the southwest end of the project. Long-term fencing is recommended around the entire Circle wetland to protect the sensitive wetland environment. Several watering access points for livestock could be incorporated, which would limit vegetation trampling to a small number of areas.



#### 4.0 REFERENCES

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- 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.
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- Western Regional Climate Center, 2002. Circle, MT Station: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?mtcirc>

## Appendix A

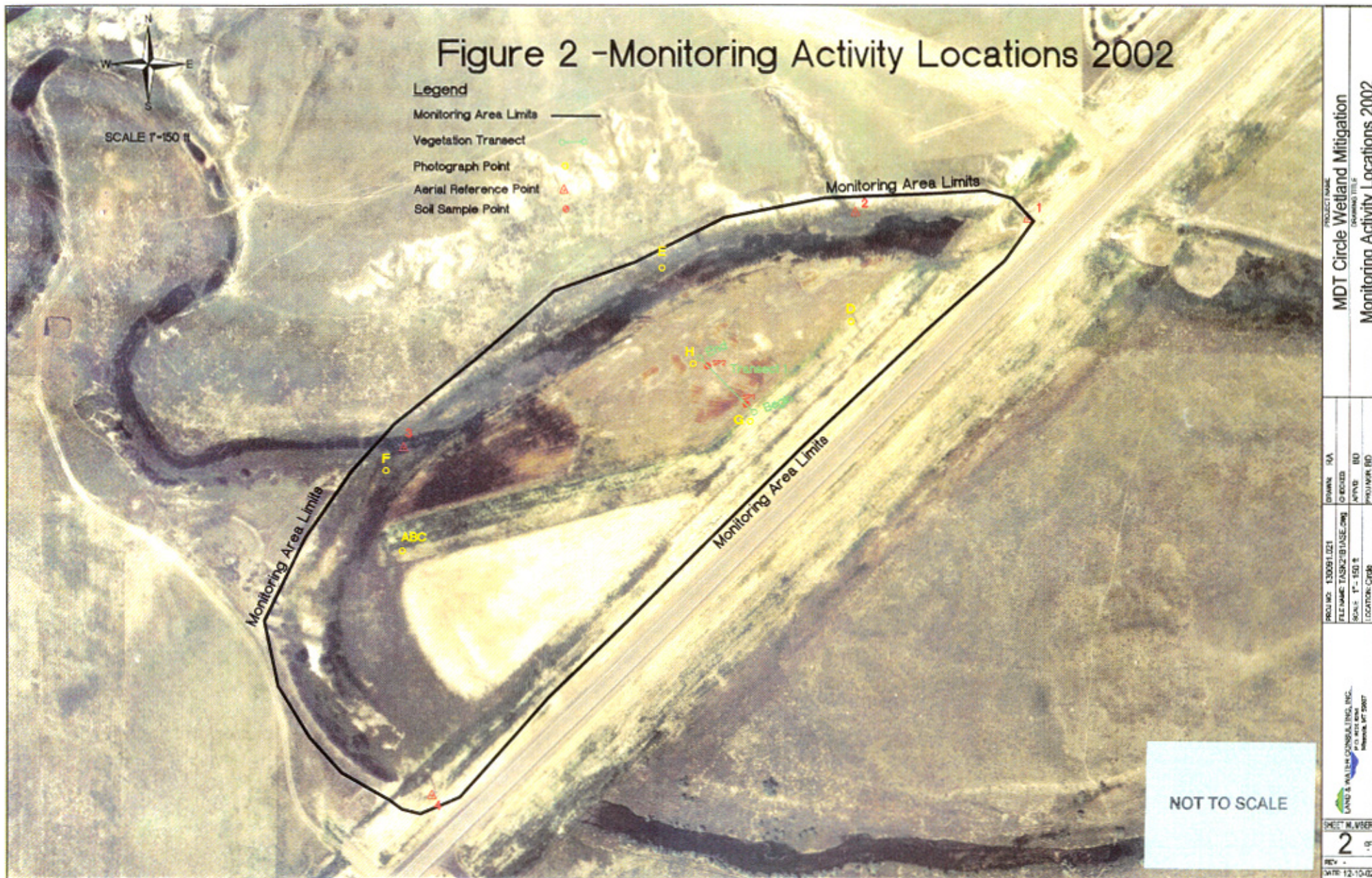
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### FIGURES 2 - 3

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





PROJECT NAME	MDT Circle Wetland Mitigation
DRAWING TITLE	Monitoring Activity Locations 2002
PROJECT NO.	130091.021
FILE NAME	TASK2\BASE.dwg
SCALE	1" = 150'
LOCATION	Circle
DRAWN	HA
CHECKED	
APPROVED	BU
PROJECT MANAGER	
DATE	12-10-02
SHEET NO.	2
REV	



# Figure 3 -Mapped Site Features 2002



SCALE 1"=150 ft

## Legend

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

## Vegetation Community Type

- 1 Agropyron smithii
- 2 Scirpus spp.
- 3 Scirpus spp./Distichlis stricta
- 4 Juncus effusus
- 5 Distichlis stricta/ Hordeum jubatum

## Wetland Area 2002

Estimated Historic Wetland	2.98 Acres
Gross Wetland 2002 (Outside of Est. Historic Wetland)	4.62 Acres
Open Water 2002 (Outside of Est. Historic Wetland)	1.70 Acres
Net Wetland 2002	2.92 Acres



NOT TO SCALE

PROJECT NAME  
MDT Circle Wetland Mitigation

DRAWING TITLE  
Mapped Site Features 2002

PROJECT NO.  
130081.021

FILE NAME  
TASK01B1ASE.dwg

SCALE  
1"= 150 ft

DATE  
12/13/02

SHEET NUMBER  
3

REV  
DATE

DATE  
12/13/02

DATE  
12/13/02



## **Appendix B**

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**COMPLETED 2002 WETLAND MITIGATION SITE MONITORING  
FORM**

**COMPLETED 2002 BIRD SURVEY FORMS**

**COMPLETED 2002 WETLAND DELINEATION FORMS**

**COMPLETED 2002 FIELD AND FULL FUNCTIONAL  
ASSESSMENT FORMS**

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

# LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Circle Project Number: 130091-021 Assessment Date: 7 / 17 /02  
 Location: Circle, MT MDT District: 5 Milepost: 276  
 Legal description: T 19N R 48E Section 20 Time of Day: 6-8 PM  
 Weather Conditions: clear (clouds of mosquitos!) Person(s) conducting the assessment: LBacon  
 Initial Evaluation Date: 8 / 25 / 58 Visit #: 2 Monitoring Year: 2002  
 Size of evaluation area: 4-5 acres Land use surrounding wetland: range

## HYDROLOGY

**Surface Water** Source: Redwater River  
Inundation: Present X Absent      Average depths: 1 ft Range of depths: 0 - 2 ft  
Assessment area under inundation: 37%  
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 X No       
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.):       
     stained ground, drift lines

## Groundwater

Monitoring wells: Present \_\_\_\_\_ Absent ☒ X

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

[illegible]

## VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): Agropyron smithii

Dominant Species	% Cover	Dominant Species	% Cover
<i>Agropyron smithii</i>	50		
<i>Cirsium arvense</i>	<10		
<i>Stipa spp.</i>	<10		
<i>Kochia spp.</i>	30		

**COMMENTS/PROBLEMS:** \_\_\_\_\_

Community No.: 2 Community Title (main species): Scirpus pungens/Scirpus spp.

Dominant Species	% Cover	Dominant Species	% Cover
<i>Scirpus pungens/Scirpus spp.</i>	90		
<i>Glyceria spp.</i>	10		
<i>Hordeum jubatum</i>	<5		
<i>Distichlis stricta</i>	<5		

**COMMENTS/PROBLEMS:** \_\_\_\_\_ recollect succulent in 2003 \_\_\_\_\_  
Remains unclear what the *Scirpus spp.* is; will recollect 2003. \_\_\_\_\_

Community No.: 3 Community Title (main species): Scirpus pungens/Scirpus spp./ Distichlis stricta

Dominant Species	% Cover	Dominant Species	% Cover
<i>Scirpus pungens/Scirpus spp.</i>	40	<i>Glyceria grandis (maxima)</i>	10
<i>Distichlis stricta</i>	30	<i>Eleocharis palustris</i>	10
<i>Poa fendlerana</i>	<5		
<i>Chenopodium spp.</i>	10		
<i>Hordeum jubatum</i>	<5		

**COMMENTS/PROBLEMS:** \_\_\_\_\_

### Additional Activities Checklist:

☒ Record and map vegetative communities on air photo

## VEGETATION COMMUNITIES (continued)

Community No.: 4 Community Title (main species): Juncus effuses

Dominant Species	% Cover	Dominant Species	% Cover
<i>Juncus effuses</i>	85		
<i>Carex praegracilis</i>	<5		
<i>Chenopodium spp.</i>	<5		
<i>Hordeum jubatum</i>	<10		

**COMMENTS/PROBLEMS:** recollect succulent in 2003

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Community No.: 5 Community Title (main species): Disticlis stricta/Hordeum jubatum

Dominant Species	% Cover	Dominant Species	% Cover
<i>Disticlis stricta</i>	50		
<i>Hordeum jubatum</i>	40		
<i>Scirpus pungens/Scirpus spp.</i>	<5		
<i>Juncus effuses</i>	<5		
<i>Glyceria grandis (maxima)</i>	<5		

**COMMENTS/PROBLEMS:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Community No.: \_\_\_\_\_ Community Title (main species): \_\_\_\_\_

Dominant Species	% Cover	Dominant Species	% Cover

**COMMENTS/PROBLEMS:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Agropyron cristatum*</i>	1		
<i>Agropyron smithii**</i>	1		
<i>Artemisia tridentate*</i>	1		
<i>Brassica spp.</i>	1		
<i>Bromus japonicus*</i>	1		
<i>Carex praegracilis**</i>	4		
<i>Chenopodium spp.*</i>	3		
<i>Cirsium arvense**</i>	1		
<i>Distichlis stricta**</i>	1, 2, 3		
<i>Elaeagnus angustifolia</i>	1		
<i>Eleocharis palustris**</i>	3		
<i>Glyceria spp.**</i>	2, 3		
<i>Grindelia spp.</i>	1		
<i>Hordeum jubatum*</i>	1, 2, 3		
<i>Juncus balticus</i>	(unknown)		
<i>Juncus effuses**</i>	2		
<i>Kochia spp.*</i>	1		
<i>Poa fendlerana**</i>	3		
<i>Rumex crispus</i>	1		
<i>Scirpus pungens**</i>	2, 3		
<i>Scirpus spp.**</i>	2		
<i>Stipa spp.**</i>	1		
<i>Trifolium spp.</i>	1		
<i>Typha latifolia</i>	2		
*denotes observed in 2002 in addition to previous years			
**denotes observed in 2002 for the first time			
No star indicates a species was observed in 2001, but not in 2002			

**COMMENTS/PROBLEMS:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## PLANTED WOODY VEGETATION SURVIVAL

[illegible]

**COMMENTS/PROBLEMS:** \_\_\_\_\_

[illegible]

## BIRDS

Were man made nesting structures installed? Yes\_\_\_\_ No\_X\_\_Type:\_\_\_\_ How many?\_\_\_\_ Are the nesting structures being utilized? Yes\_\_\_\_ No\_\_\_\_ Do the nesting structures need repairs? Yes\_\_\_\_ No\_\_\_\_

[illegible]

\_\_none\_\_ Macroinvertebrate sampling (if required)

[illegible]

## 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	(2001) Compass Readings
A	10	wetland view	N
B	11	upland use (across WL)	320
C	12	WL buffer (across WL)	W
D	3	wetland view	W
E	8	wetland view	S
F	9	wetland view	E
G	4	Beginning transect (new 2002)	NW
H	5	End transect (new 2002)	SE
cover	7	WL overview	SW

**COMMENTS/PROBLEMS:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## \*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
- ☐ no 4-6 landmarks recognizable on the air photo
- ☒ Start and end points of vegetation transect(s)
- ☒ Photo reference points
- ☐ none Groundwater monitoring well locations

**COMMENTS/PROBLEMS:**     **\*Data in checklist was hand-drawn for the 2002 investigation.**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

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:** ☐ \*boundary hand-drawn 2002\_\_\_\_\_

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## FUNCTIONAL ASSESSMENT

(Complete and attach full MDT Montana Wetland Assessment Method field forms; also attach abbreviated field forms, if used)

**COMMENTS/PROBLEMS:** \_\_\_\_\_

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## MAINTENANCE

Were man-made nesting structures installed at this site? YES\_\_\_ NO\_\_X\_\_

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\_\_X\_\_ NO\_\_\_

If yes, are the structures working properly and in good working order? YES\_\_X\_\_ NO\_\_\_

If no, describe the problems below.

**COMMENTS/PROBLEMS:** Outflow area constructed to slow passage of water out of the wetland and to allow ponding; outlet stream not impeded and culvert clear.

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# MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Circle Date: 7/17/02 Examiner: LB Transect # 1

Approx. transect length: 132' Compass Direction from Start (Upland): 315 deg.

Vegetation type A: CT 1		
Length of transect in this type:	9'	feet
Species:	Cover:	
GLYCERIA SPP.	5%	
HORJUB	3%	
KOCHIA spp.	70%	
AGRSMI	<25%	
Total Vegetative Cover:	100%	

Vegetation type B: CT 3		
Length of transect in this type:	6'	feet
Species:	Cover:	
HORJUB	<1%	
GLYGRA	5%	
DISSPI	85%	
CHENOPODIUM SPP.	5%	
SCIPUN/SCIspp.	5%	
Total Vegetative Cover:	100%	

Vegetation type C: CT 2		
Length of transect in this type:	15'	feet
Species:	Cover:	
SCIPUN/SCIspp	94%	
ELEPAL	3	
DISSPI	3	
Total Vegetative Cover:	100%	

Vegetation type D: open water		
Length of transect in this type:	39'	feet
Species:	Cover:	
(open water)	(100%)	
Total Vegetative Cover:	0%	

**MDT WETLAND MONITORING – VEGETATION TRANSECT (continued)**

Site: Circle- page 2                  Date:                  Examiner:                  Transect # (1)

Approx. transect length: \_\_\_\_\_ Compass Direction from Start (Upland): \_\_\_\_\_

<b>Vegetation type E:</b>	<b>CT 2</b>	
Length of transect in this type:	45'	feet
Species:	Cover:	
(mud)	(85%)	
(open water-<2" deep)	(5%)	
SCIPUN/SCI spp	10%	
GLYGRA	<1%	
DISSPI	5%	
	<10%	

SCIRPUS spp.

<b>Vegetation type F:</b>	<b>CT 1</b>	
Length of transect in this type:	18'	feet
Species:		Cover:
SCIPUN/SCIRPUS spp		100%
.		
Total Vegetative Cover:		100%

<b>Vegetation type G:</b>		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

<b>Vegetation type H:</b>		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		



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:






## BIRD SURVEY – FIELD DATA SHEET

Page\_\_1\_of\_\_1\_

Date: 7/17/02

**SITE:** Circle, MT

Survey Time: 6-8 PM

[illegible]

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**Notes:**

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

**Habitat:** AB – aquatic bed; FO – forested; I – island; MA – marsh; MF – mud flat; OW – open water; SS – scrub/shrub; UP – upland buffer; WM – wet meadow, US – unconsolidated shoreline

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

Project/Site: <u>Circle Wetland</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting</u>	Date: <u>7-17-02</u> County: <u>McCone</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>  x  </u> Yes <u>      </u> No Is the site significantly disturbed (Atypical Situation)? <u>      </u> Yes <u>  x  </u> No Is the area a potential Problem Area?: <u>      </u> Yes <u>  x  </u> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: <u>                    </u> Plot ID: <u>SP-1</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1 <i>Scirpus pungens</i>	H	OBL		9		
2 <i>Scirpus spp.</i>	H	OBL		10		
3				11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-).   2/2 = 100%  

Remarks: SP on the wetland end of the transect.

**HYDROLOGY**

<u>  x  </u> Recorded Data (Describe in Remarks): <u>          </u> Stream, Lake, or Tide Gauge <u>  x  </u> Aerial Photographs <u>          </u> Other <u>      </u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u>  x  </u> Inundated <u>  x  </u> Saturated in Upper 12 Inches <u>  x  </u> Water Marks <u>      </u> Drift Lines <u>  x  </u> Sediment Deposits <u>  x  </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>      6      </u> (in.)  Depth to Saturated Soil: <u>  surface  </u> (in.)	
Remarks:  Transect crosses several open water areas (likely <1' deep and perhaps only a few inches deep). This SP is on a slightly higher area and thus was not inundated.	

## SOILS

Map Unit Name (Series and Phase):		86 Havrelon loam		Drainage Class: <u>well</u>	
Taxonomy (Subgroup):		<u>NA</u>		Field Observations Confirm Mapped Type? <u>-</u> Yes <u>-</u> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 2	A	2Y 4/3			organic streaked, sandy clay loam
2 - 7	A	2Y 4/3			sand
7-16	A	2Y 4/3	5YR 4/6	40%, large	sand (organic streak at 10")
16+	B	Gley 1 5/N	10YR 7/8	5%	clay gravels
<b>Hydric Soil Indicators:</b>					
<u>      </u> Histosol		<u>      </u> Concretions			
<u>      </u> Histic Epipedon		<u>  x  </u> High Organic Content in surface Layer in Sandy Soils			
<u>      </u> Sulfidic Odor		<u>      </u> Organic Streaking in Sandy Soils			
<u>  x  </u> Aquic Moisture Regime		<u>      </u> Listed on Local Hydric Soils List			
<u>  x  </u> Reducing Conditions		<u>      </u> Listed on National Hydric Soils List			
<u>  x  </u> Gleyed or Low-Chroma Colors		<u>      </u> Other (Explain in Remarks)			
qualifies for hydric soil					

## WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>  X  </u> Yes <u>      </u> No Wetland Hydrology Present? <u>  X  </u> Yes <u>      </u> No Hydric Soils Present? <u>  X  </u> Yes <u>      </u> No	Is this Sampling Point Within a Wetland? <u>  x  </u> Yes <u>      </u> No
Remarks:  Well developed wetland, currently fenced from cattle which is likely contributing to the high diversity and proliferation of wetland vegetation.	

Approved by HQUSACE 2/92

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

Project/Site: <u>Circle Wetland</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting</u>	Date: <u>7-17-02</u> County: <u>McCone</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>  x  </u> Yes <u>      </u> No Is the site significantly disturbed (Atypical Situation)? <u>      </u> Yes <u>  x  </u> No Is the area a potential Problem Area?: <u>      </u> Yes <u>  x  </u> No (If needed, explain on reverse.)	Community ID: <u>UPL</u> Transect ID: <u>          </u> Plot ID: <u>SP-2</u>

**VEGETATION**

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Poa fendlerana</i>	H	FACU-	9			
2	<i>Kochia spp.</i>	H	unk.	10			
3	<i>Agoipyron smithii</i>	H	FACU	11			
4	<i>Hordeum jubatum</i>	H	FACW	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-).   1/4 = 25%  

SP not within the wetland boundary.

**HYDROLOGY**

<u>  x  </u> Recorded Data (Describe in Remarks): <u>          </u> Stream, Lake, or Tide Gauge <u>  x  </u> Aerial Photographs <u>          </u> Other <u>      </u> 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>  NA  </u> (in.)  Depth to Free Water in Pit: <u>  NA  </u> (in.)  Depth to Saturated Soil: <u>  NA  </u> (in.)	
Remarks:  No hydrology indicators evident.	

## SOILS

Map Unit Name (Series and Phase):		86 Havrelon loam		Drainage Class: well	
Taxonomy (Subgroup): NA				Field Observations Confirm Mapped Type? Yes X No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 18	A	2Y 4/3			sandy loam
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 type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain in Remarks)		
No hydric indicators.					

## WETLAND DETERMINATION

Hydrophytic Vegetation Present?	_____	Yes	X	No	Is this Sampling Point Within a Wetland?	_____	Yes	x	No
Wetland Hydrology Present?	_____	Yes	X	No					
Hydric Soils Present?	_____	Yes	X	No					
Remarks:									
SP on the edge of the wetland, no wetland indicators occur in this location.									

Approved by HQUSACE 2/92



## Field Data Sheet for 1999 MDT Wetland Assessment Form

Site: CircleDate: 7/1/02 By: LBEstimated AA Size (Circle Ac.): <1 1-5 >5Brief Description: on stream enhanced wet area

HGM Class (CIRCLE)	Cowardin Class	Est. % of AA	Predominant Water Regime (CIRCLE)						
Mineral Soil Flats	<u>Emergent</u>	<u>85</u>	Perm Flood	<u>Int Exp</u>	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Organic Soil Flats	<u>Aquatic Bed</u>		<u>Perm Flood</u>	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Riverine (nonperennial)			<u>Perm Flood</u>	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Riverine (upper perennial)	<u>Moss-Lichen</u>	<u>5</u>	<u>Perm Flood</u>	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Riverine (lower perennial)									
Lacustrine Fringe	<u>Scrub-Shrub</u>		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Depression (closed)	<u>Forested</u>		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Depression (open, groundwater)	<u>Unconsolidated Bottom</u>	<u>5</u>	<u>Perm Flood</u>	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Depression (open, surface water)									
Slope	<u>Other:</u>		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Organic Soil Flats									
Total Estimated % Vegetated		<u>90%</u>							

RELATIVE ABUNDANCE: rare com. abun.

DISTURBANCE is:

High Moderate

LowHYDROLOGY: Max. acre-ft surf. water at wetlands in AA subject to inundation: <1 1-5 >5 (if no flooding/ponding, go to groundwater\* 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>	Seas / Intermit	Temp / Ephem
in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...])		Perm / Peren	<u>Seas / Intermit</u>	Temp / Ephem
Where fish are or historically were present (circle NA if not applicable)		Perm / Peren	Seas / Intermit	Temp / Ephem
% of waterbody containing cover objects		>25%	<u>10-25%</u>	<10%
% bank or shore with riparian or wetland shrub or forested communities		>75%	50-74%	<u>&lt;50%</u>
adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave action (circle NA if not applicable)		<u>Perm / Peren</u>	Seas / Intermit	Temp / Ephem
% cover of wetland bank or shore by sp. with binding rootmasses		<u>&gt;65%</u>	35-64%	<35%

Flood Attenuation: 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):

≥102-10

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

≥7525-74<25\*Evidence of groundwater discharge or recharge? Y NList: on stream enhancement and @ toe of bench

## HABITAT

Habitat for Listed or Proposed Threatened, Endangered, or Montana Natural Heritage Program S1, S2, or S3 Plants or Animals:

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

Primary or critical habitat (list species)

D S

T/E:

D S

MNHP:

N. Leopard frog

Secondary habitat (list species)

D S

T/E:

D S

MNHP:

Red-tailed hawk

Incidental habitat (list species)

D S

T/E:

Bald Eagle

D S

MNHP:

No usable habitat

D S

T/E:

D S

MNHP:

Wildlife observations?

Fish observations?

## OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Y N

Potential to receive: low to moderate levels

high levels

From: drainage inlet from bench area

On TMDL List?

Y

N

Does site contain bog, fen, warm springs, &gt;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:ed / scientific - H. schoolgrade school science class -bird + plant ID

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

1. Project Name: Circle wetland 2. Project #: B0091-021 Control #: \_\_\_\_\_3. Evaluation Date: Mo. 7 Day 17 Yr. 02 4. Evaluator(s): UB/LWC 5. Wetlands/Site #(s) \_\_\_\_\_6. Wetland Location(s): I. Legal: T 19 N or S; R 16 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: LWC 8. Wetland size: (total acres) \_\_\_\_\_ (visually estimated)  
b. Purpose of Evaluation: 4.62 (measured, e.g. by GPS [if applies])  
1. \_\_\_\_\_ Wetlands potentially affected by MDT project  
2. \_\_\_\_\_ Mitigation wetlands; pre-construction  
3. ☒ Mitigation wetlands; post-construction  
4. \_\_\_\_\_ Other  
9. Assessment area: (AA, tot., ac., \_\_\_\_\_ (visually estimated)  
see instructions on determining AA) 4.62 (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
Depressional	Palustrine		EM	1, J, 6 CB	F, T	90
Riverine	Riverine	lower perennial	UB	G	F	10

(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 (LV), Subsystem: Littoral (4)/ Classes: RB, UB, AB, US, EM/ System: Riverine (RV) Subsystem: Lower Perennial (2)/ Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3)/ Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Flooded (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, 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 occupied buildings	low disturbance	<u>low disturbance</u>	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, cleaning, or hydrological alteration; high road or building density	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc.): rocky

II. Prominent weedy, alien, &amp; introduced species (including those not domesticated, feral): (list) \_\_\_\_\_

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

rangeland, grazing on SW end

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	<u>Low</u>

Comments: \_\_\_\_\_



## SECTION PERTAINING to FUNCTIONS &amp; 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)	<u>.3 (L)</u>	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 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 N leopard frog  
 Secondary habitat (list species) D S greenish catfish  
 Incidental habitat (list species) D S black tern  
 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)	<u>.8 (H)</u>	.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

avian spp diverse in 2001, and green lake this of  
 day + mid summer - fewer  
 spp. seen 2002

## 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 $\geq 10\%$ of AA																				
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	<u>E</u>	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	<u>1 (E)</u>	.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 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)	.8(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:

stormwater runoff

**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)

LAND & WATER B-21

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	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
- ☒ 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 (#12j)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

Bird watching and wet plant ID - great for science classes

## FUNCTION &amp; VALUE SUMMARY &amp; OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	.3	1	4.62
B. MT Natural Heritage Program Species Habitat	H	.8	1	+ pre-existing =
C. General Wildlife Habitat	E	1	1	7.6 ac.
D. General Fish/Aquatic Habitat	NA			
E. Flood Attenuation	M	.5	1	
F. Short and Long Term Surface Water Storage	H	.8	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	H	1	1	(4.62) = (7.6) =
Totals:		8.5	11	39.27 64.6

77%

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

## Appendix C

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### **REPRESENTATIVE PHOTOGRAPHS** **2002 AERIAL PHOTOGRAPH**

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





**Location:** A    **Photo Frame:** 10    **Description:** Wetland view    **Compass Reading:** N



**Location:** B    **Photo Frame:** 11    **Description:** Upland us (across WL)    **Compass Reading:** 320°



**Location:** C    **Photo Frame:** 12    **Description:** WL buffer (across WL)    **Compass Reading:** W



**Location:** D    **Photo Frame:** 3    **Description:** Wetland view    **Compass Reading:** W



**Location:** E    **Photo Frame:** 8    **Description:** Wetland view    **Compass Reading:** S



**Location:** F    **Photo Frame:** 9    **Description:** Wetland view    **Compass Reading:** E



**Location:** G    **Photo Frame:** 4    **Description:**  
Beginning transect (new 2002)    **Compass Reading:** NW



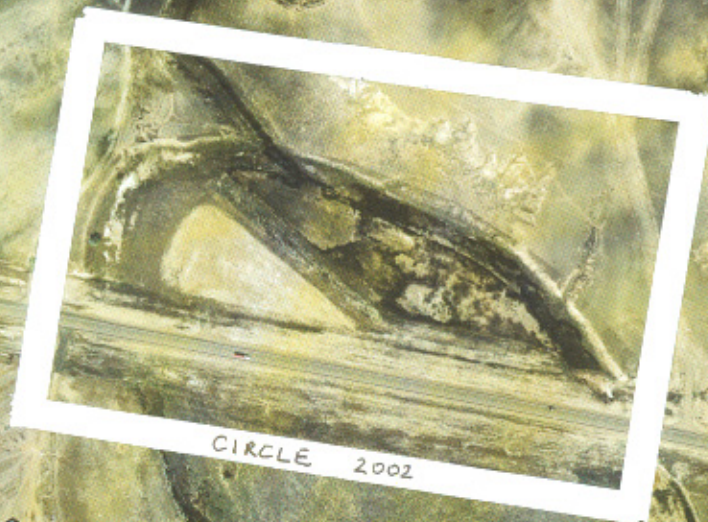
**Location:** H    **Photo Frame:** 5    **Description:** End  
transect (new 2002)    **Compass Reading:** SE



**Location:** cover    **Photo Frame:** 7    **Description:**  
Wetland overview    **Compass Reading:** SW



JOB:CIRCLE WETLAND ROLL:000 SCALE:1:6000 FLT:40 07/22/2002 12:05:17



FS100 1/ 500 f/5.6

FF1.0 EC 0 SIN

dt435.4

27.6V -58mb



## **Appendix D**

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### **BIRD SURVEY PROTOCOL GPS PROTOCOL**

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*MDT Wetland Mitigation Monitoring  
Circle Mitigation Site  
Circle, 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.

## **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.