
MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2004

*Ringling - Galt
Ringling, Montana*



Prepared for:

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

Prepared by:

LAND & WATER CONSULTING
~ A DIVISION OF PBS&J
P.O. Box 239
Helena, MT 59624

June 2005

Project No: B43054.00 - 0214



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1.0 INTRODUCTION

The Ringling/Galt wetland mitigation project was constructed in 2000 to provide partial mitigation for projected wetland impacts resulting from MT Dept. of Transportation's (MDT) Ringling – North highway reconstruction project. Constructed in Watershed #7 (Missouri-Sun-Smith) and the MDT Butte District, the 20-acre mitigation site is located approximately 7 miles north of Ringling in Meagher County (**Figure 1**). The site occurs on private land (Galt Ranch) located northeast of US Hwy 89, in the Agate Creek drainage.

Design features included minor excavation and placement of a dike across Agate Creek to retain surface water drainage. A primary water control structure was built near the north end of the dike, with an emergency spillway constructed around the north end of the dike. Wetland hydrology is to be primarily provided by surface water from Agate Creek, and supplemented by precipitation. Following construction, the dike and other disturbed areas were seeded with a graminoid seed mix.

No wetland habitat occurred at the site prior to project implementation (Urban pers. comm.). Target wetland communities to be produced at the site included open water/aquatic bed and shallow marsh/wet meadow. Target wetland functions to be provided at the site included habitat diversity, flood control & storage, general wildlife habitat, sediment filtration, and nutrient cycling.

MDT has conducted no formal monitoring; however, MDT personnel have visited the site intermittently. Photographs taken during these visits have not been incorporated into a report format, but are available in the MDT project files. To date, and potentially due to extreme drought conditions, the site has not yet retained enough surface water for a sufficient length of time to begin the establishment of wetland communities. The site was formally monitored in 2001 and 2003, but was not monitored in 2002 due to extreme drought conditions and lack of surface water. This site is presently being monitored twice per year to document wetland and other biological attributes.

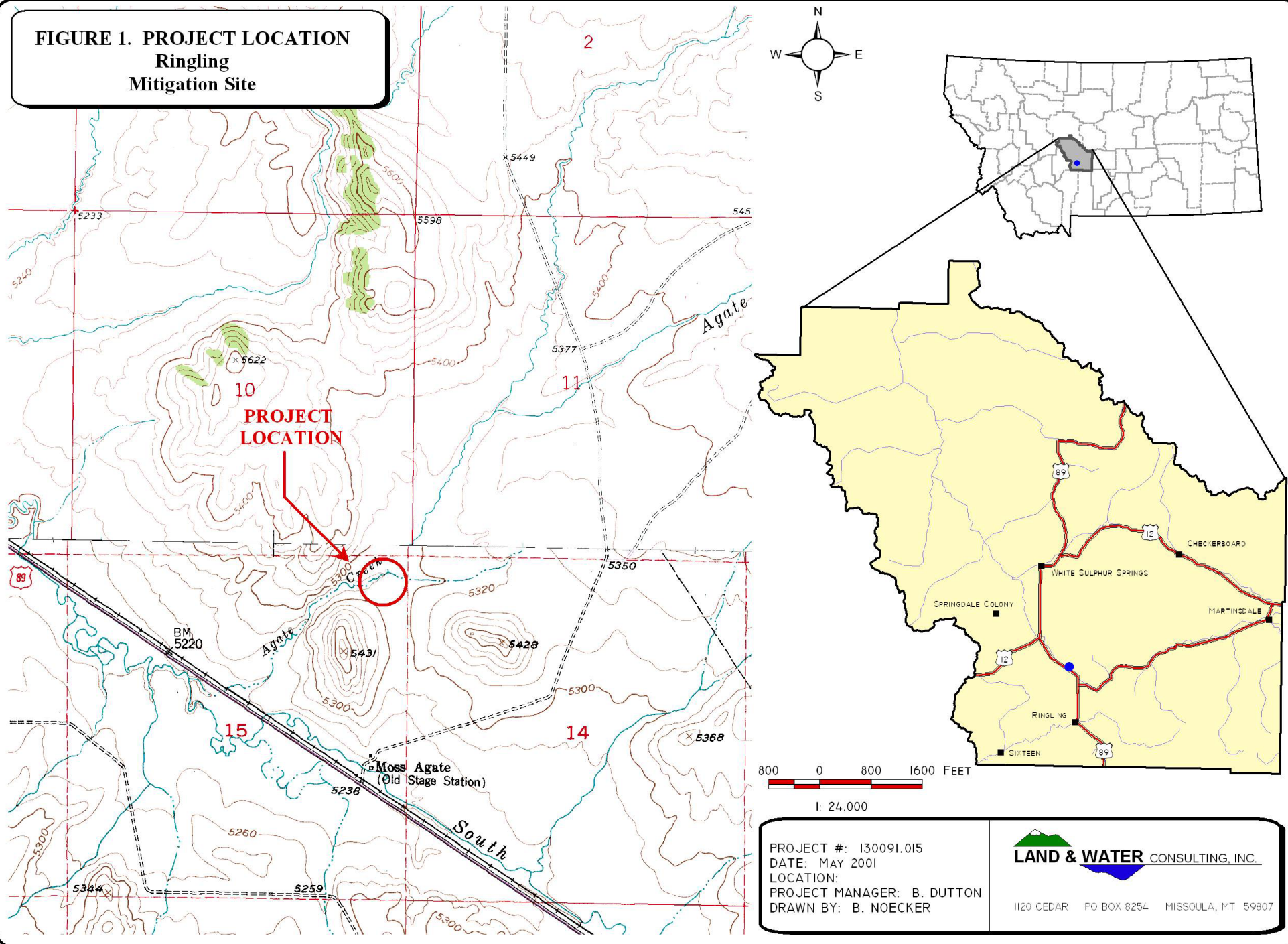
In May 2000, the U.S. Army Corps of Engineers (COE) determined that this site could not be used as permanent mitigation for the Ringling – North project due to the lack of a perpetual conservation easement (COE 2000). Monitoring of the site will proceed in order to document the establishment of wetland habitat to be used as mitigation should the landowner agree to a perpetual conservation easement in the future. The monitoring area is illustrated in **Figure 2 (Appendix A)**.

2.0 METHODS

2.1 Monitoring Dates and Activities

The site was visited on June 3 and August 4, 2004. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected during these two site visits.

FIGURE 1. PROJECT LOCATION
Ringling
Mitigation Site



Activities and information conducted/collected included: vegetation community mapping; vegetation transect; soils data; hydrology data; bird and general wildlife use; photograph points; and (non-engineering) examination of the dike structure. As no wetland habitat has yet established within the monitoring area, a wetland delineation was not performed. Consequently, a wetland functional assessment was not performed. Although enough water was retained at the site in 2003 to allow for a macro-invertebrate sample, the site did not retain water in 2004 and therefore a sample was not taken.

2.2 Hydrology

Hydrologic indicators were evaluated during the mid-season visit. Wetland hydrology indicators were recorded using procedures outlined in the COE 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**).

There are no groundwater monitoring wells at the site. If located within 18 inches of the ground surface (soil pit depth for purposes of delineation), groundwater depths were documented on the routine wetland delineation data form.

2.3 Vegetation

General dominant species-based vegetation community types were delineated on an aerial photograph during the mid-season visit. Standardized community mapping was not employed as many of these systems are geared towards climax vegetation. Estimated percent cover of the dominant species in each community type was recorded on the site monitoring form (**Appendix B**).

The 10-foot wide belt transect that was established in 2001 was evaluated for the third time **Figure 2 (Appendix A)**. Percent cover was estimated for each successive vegetative species encountered within the “belt” using the following values: + (<1%); 1 (1-5%); 2 (6-10%); 3 (11-20%); 4 (21-50%); and 5 (>50%). The purpose of the transect is to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect location was marked on the air photo and all data recorded on the mitigation site monitoring form. Transect endpoint locations were initially recorded in 2001 with the GPS unit. Photos along the transect were taken from both ends during the mid-season visit.

No woody species were planted at the site. Consequently, no monitoring relative to the survival of such species was conducted.

2.4 Soils

Soils were evaluated during the mid-season visit according to procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded on the COE Routine Wetland Delineation Data Form (**Appendix B**). The most current Natural Resources Conservation Service (NRCS) terminology was used to describe hydric soils (USDA 1998). The Meagher

County soil survey has not yet been published by the NRCS; however, a draft copy of preliminary mapping completed in 2001 was obtained from the NRCS (NRCS 2001). Map units and associated properties listed in this draft survey were used in describing project area soils.

2.5 Wetland Delineation

Wetland delineation was conducted during the mid-season visit according to the 1987 COE Wetland Delineation Manual. The monitoring area was 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: Northwest Region 9 (Reed 1988). The information was recorded on a COE Routine Wetland Delineation Data Form (**Appendix B**).

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during the site visits. Indirect use indicators, including tracks; scat; burrows; eggshells; skins; bones; etc., were also recorded. These observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not implemented. A comprehensive wildlife species list for the entire site was compiled.

2.7 Birds

Bird observations were also recorded during the site visits. No formal census plots, spot mapping, point counts, or strip transects were conducted. Bird observations were recorded incidental to other monitoring activity observations, using the bird survey protocol (**Appendix D**) as a general guideline. Observations were categorized by species, activity code, and general habitat association (see data forms in **Appendix B**). A comprehensive bird list was compiled using these observations.

2.8 Macroinvertebrates

No macroinvertebrate sample was collected during the mid-season site visit due to the absence of standing water within the monitoring area.

2.9 Functional Assessment

A functional assessment, using the 1999 MDT Montana Wetland Assessment Method, was proposed for this site prior to monitoring. Upon conducting the mid-season field survey, it was determined that no wetland habitat had yet established within the monitoring area, and therefore a functional assessment was deemed unnecessary for the 2004 monitoring season.

2.10 Photographs

Photographs were taken in 2004 showing the current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transect. Four photograph points were established and recorded with a resource grade GPS unit in 2001. The approximate locations of these photo points are shown on **Figure 2 (Appendix A)**. All photographs were taken using a 50 mm lens. A description and compass direction for each photograph was recorded on the wetland monitoring form.

2.11 GPS Data

During the 2001 monitoring season, survey points were collected with a resource grade GPS unit at the vegetation transect beginning and ending locations, and at all photograph locations. No new GPS data were collected during the 2004 monitoring year.

2.12 Maintenance Needs

The dike near the north end of the site was examined during the 2004 site visit for obvious signs of breaching, damage, or other problems. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current or future potential problems were documented.

3.0 RESULTS

3.1 Hydrology

Unlike the spring of 2003, the site did not retain surface water upstream of the dike in 2004 and thus no inundation was recorded on the site during the mid-season visit in 2004.

Agate Creek is an ephemeral tributary of the South Fork of the Smith River and is dammed by the dike constructed for this project. No other dike structures are known in this drainage upstream of the project area. Agate Creek has a defined low water channel, and narrow floodplain, indicating that during most years, water drains through the project area during spring runoff. However, the absence of wetland vegetation within the drainage prior to dike construction indicates that the length of inundation is insufficient to support wetland vegetation.

Drought conditions are likely responsible for the overall lack of water being retained behind the dike. According to the Western Regional Climate Center, White Sulphur Springs yearly precipitation totals for 2001 (9.62 inches), 2002 (10.9 inches), 2003 (10.22), and 2004 (11.15) were 76, 86, 81, and 88 percent, respectively, of the total annual mean precipitation (12.63 inches) in this area.

Surface water retention in 2003 was encouraging, as it was the first time water had been documented on the site. Continued inundation in future years could result in the establishment of wetland habitat where none has yet developed.

3.2 Vegetation

Vegetation species identified on the site are presented in **Table 1** and on the attached data form. The entire site was comprised of upland vegetation including big sagebrush (*Artemisia tridentata*), bluebunch wheatgrass (*Agropyron spicatum*), western wheatgrass (*Agropyron smithii*), blue gramma (*Bouteloua gracilis*), needle-and-thread grass (*Stipa comata*), lupine (*Lupinus sp.*), common yarrow (*Achillea millefolium*), licorice (*Glycyrrhiza lepidota*), iris (*Iris missouriensis*) and hound's tongue (*Cynoglossum officinale*).

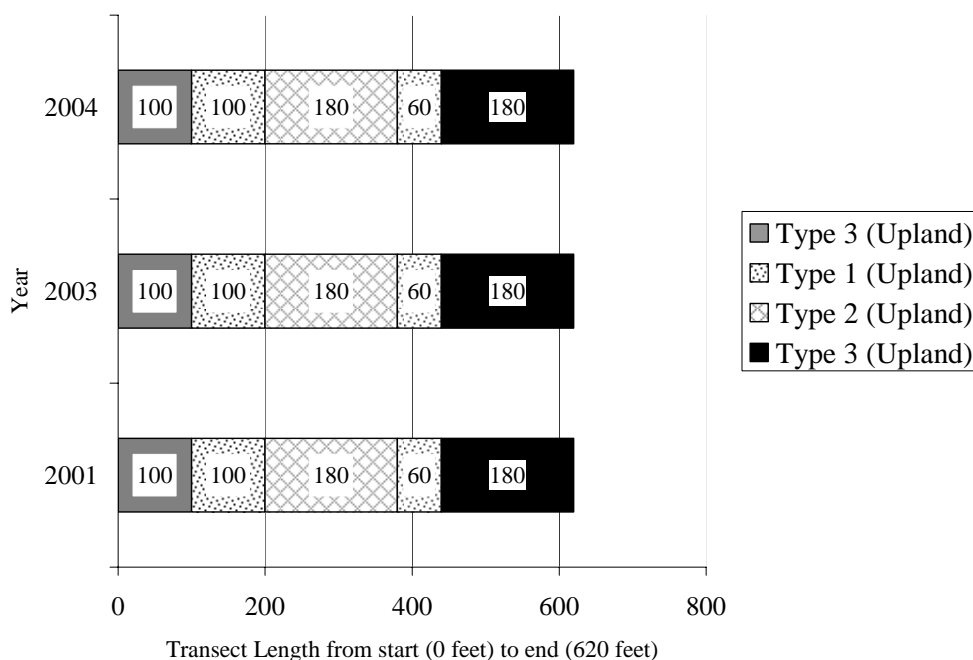
Table 1: 2001 - 2004 Ringling/Galt Mitigation Site vegetation species list.

Scientific Name ¹	Region 9 (Northwest) Wetland Indicator
<i>Achillea millefolium</i>	FACU
<i>Agropyron smithii</i>	--
<i>Agropyron spicatum</i>	FACU
<i>Artemisia tridentata</i>	--
<i>Bouteloua gracilis</i>	--
<i>Carex aquatilis</i>	OBL
<i>Cirsium arvense</i>	FAC-
<i>Cynoglossum officinale</i>	--
<i>Glycyrrhiza lepidota</i>	FAC+
<i>Hordeum jubatum</i>	FAC-
<i>Iris missouriensis</i>	FACW+
<i>Juncus balticus</i>	FACW+
<i>Lupinus sp.</i>	FACU
<i>Potentilla anserina</i>	OBL
<i>Rumex crispus</i>	FAC+
<i>Solidago canadensis</i>	FACU
<i>Stipa comata</i>	--
<i>Taraxacum officinale</i>	FACU

¹**Bolded** species indicate those documented within the analysis area for the first time in 2004.

Vegetation transect results are detailed in the attached data form in **Appendix B**, and are summarized in the transect map (**Chart 1**). Sagebrush communities dominate the landscape with the exception of a narrow band along the Agate Creek channel, where sagebrush does not persist. This area showed some minor changes in 2004 with trace amounts of hydrophytic vegetation showing up along the defined channel as a result of inundation in 2003. The area is actively grazed by cattle and receives substantial use by ground squirrels, elk and mule deer, thus possibly having an effect on species composition.

Chart 1: Transect maps showing vegetation types from the start of transect (0 feet) to the end of transect (620 feet) for each year monitored. Due to lack of water, the site was not monitored in 2002.



3.3 Soils

According to the draft Meagher County soil survey (NRCS 2001), soils at the site are comprised of Martinsdale-Meagher cobbly loams. These are moderately well drained to well drained soils that range from loams to clays. This soil type is mapped along the Agate Creek drainage and is not listed as a hydric soil despite having hydric components.

Soils examined adjacent to Agate Creek closely resemble the description provided in the soil survey referenced above. Soils near the surface are a dark loam, with clay/loam from 6-18". Soils were dry, with no inundation or other hydric indicators in the first 18 inches.

3.4 Wetland Delineation

Prior to project implementation, MDT did not document any wetland habitat in the analysis area. Despite the fact that water was retained on-site in 2003, the site has not had sufficient hydrology to begin wetland development and thus no wetlands were delineated within the monitoring area. Continued inundation in future years may result in wetland establishment behind the dike and will be documented during future monitoring.

3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2004 monitoring effort are listed in **Table 2**. Specific evidence observed, as well as activity codes pertaining to birds, are provided on the completed monitoring form in **Appendix B**. Ground squirrels (*Spermophilus*

richardsonii) are prevalent in the monitoring area, while elk (*Cervus elaphus*), pronghorn antelope (*Antilocapra americana*), and mule deer (*Odocoileus hemionus*) use the area on a seasonal basis. Few birds and no reptiles or amphibians were observed in 2004.

Table 2: Fish and wildlife species observed at the Ringling – Galt Mitigation Site 2001 – 2004.

FISH, AMPHIBIANS, REPTILES
None
BIRDS
American Kestrel (<i>Falco sparverius</i>)
American Wigeon (<i>Anas americana</i>)
Common Goldeneye (<i>Bucephala clangula</i>)
Common Raven (<i>Corvus corax</i>)
Green-winged Teal (<i>Anas crecca</i>)
Killdeer (<i>Charadrius vociferous</i>)
Mallard (<i>Anas platyrhynchos</i>)
Mourning Dove (<i>Zenaida macroura</i>)
Northern Pintail (<i>Anas acuta</i>)
Northern Shoveler (<i>Anas clypeata</i>)
Redhead (<i>Aythya americana</i>)
Red-tailed Hawk (<i>Buteo jamaicensis</i>)
Western Meadowlark (<i>Sturnella neglecta</i>)
Wilson's Phalarope (<i>Phalaropus tricolor</i>)
MAMMALS
Pronghorn Antelope (<i>Antilocapra americana</i>)
Mule Deer (<i>Odocoileus hemionus</i>) (scat only)
Elk (<i>Cervus elaphus</i>) (scat only)
Richardson's Ground Squirrel (<i>Spermophilus richardsonii</i>)

Bolded species were documented during the 2004 monitoring. All other species have been documented during one or more of the previous monitoring seasons.

3.6 Macroinvertebrates

Macroinvertebrate sampling was not conducted in 2004 due to the lack of open water on the site.

3.7 Functional Assessment

As no wetland habitat occurs within the monitoring area, a functional assessment form was not completed for this site.

3.8 Photographs

Representative photos taken from photo-points and transect ends are provided in **Appendix C**. A 2004 aerial photograph is also provided in **Appendix C**.

3.9 Maintenance Needs/Recommendations

The dike, water control structure, and emergency spillway were generally in good condition during the mid-season visit. Cattle are using the standpipe near the top of the dike as a

scratching post; however, it does not appear as though the pipe has sustained any damage from such use. Ground squirrels are burrowing into the lower part of the dike, especially in the vicinity of the inlet pipe. Disturbance of the dike by ground squirrels could leave the dike vulnerable to erosion during a heavy stormwater or runoff event.

In general, it appears that the water available to the site is insufficient during some years to support the proposed wetland creation. This is likely due to persistent drought conditions in the area. However, according to NRCS personnel familiar with the drainage (Brooker pers. comm.), Agate Creek flows enough water during years of normal or above normal precipitation, to flood the basin behind the dike. Monitoring of the site will continue to document any changes that may occur as a result of increased water delivery to the site through runoff and precipitation.

At this time, no corrective actions are recommended, as lack of wetland development to date has apparently resulted from sub-normal precipitation and runoff.

3.10 Current Credit Summary

As previously stated, in May 2000, the COE determined that this site could not be used as permanent mitigation for the Ringling – North project due to the lack of a perpetual conservation easement. No specific performance criteria were required to be met at this site in order to document its success. To date, the site has yet to create any wetland habitat and therefore no credit, COE approved or otherwise, for wetland creation can be attributed to this project.

4.0 REFERENCES

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Appendix A

FIGURE 2

MDT Wetland Mitigation Monitoring
Ringling/Galt
Ringling, Montana

Figure 2 - Monitoring Activity Locations



Scale 1" = 100 ft

LEGEND

Monitoring Area Limits

Vegetation Transect

Photograph Point

Aerial Reference Point

Base Photograph Date July 11, 2000



MONITORING AREA LIMITS

Vegetation Transect

MONITORING AREA LIMITS

MONITORING AREA LIMITS

PP4

PROJECT NAME
MDT Ringling/Gault Wetland Mitigation
DRAWING TITLE
Monitoring Activity Locations

FIGURE NO. 330024.214
FIGURE NAME TASK/DRAWING
SCALE
LOCATION Ringling/Gault

DATE 3/20/06
REV 1
DATE 3/20/06

2

Appendix B

**COMPLETED 2004 WETLAND MITIGATION SITE
MONITORING FORM**

COMPLETED 2004 BIRD SURVEY FORMS

COMPLETED 2004 WETLAND DELINEATION FORMS

MDT Wetland Mitigation Monitoring

Ringling/Galt

Ringling, Montana

LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Ringling - Galt Project Number: B43054.00 – 0214 Assessment Date: 8/4/04
Location: 7 miles N of Ringling MDT District: Butte Milepost: _____
Legal description: T7N R7E Section 15 Time of Day: 1000-1300
Weather Conditions: Sunny approx. 75degrees Person(s) conducting the assessment: Traxler
Initial Evaluation Date: 5 / 29 / 01 Visit #: 2 Monitoring Year: 2004 (year 4)
Size of evaluation area: 10+ acres Land use surrounding wetland: Agriculture, grazing,

HYDROLOGY

Surface Water Source: Agate Creek
Inundation: Present _____ Absent X Average depths: NA Range of depths: NA
Assessment area under inundation: 0%
Depth at emergent vegetation-open water boundary: NA – no emergent vegetation
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 X
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:

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

COMMENTS/PROBLEMS:

VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): ARTTRI - Upland

Dominant Species	% Cover	Dominant Species	% Cover
ARTTRI	21-50		
AGRSPI	21-50		
AGRSMI	21-50		
Lupinus	11-20		

COMMENTS/PROBLEMS:

Community No.: 2 Community Title (main species): IRI MIS / HOR JUB - Upland

Dominant Species	% Cover	Dominant Species	% Cover
IRI MIS	21-50	CAR AQU	<1
ACHMIL	21-50	POT ANS	<1
HOR JUB	21-50		
STICOM	21-50		
RUM CRI	1-5		

COMMENTS/PROBLEMS: Occurs along drainage bottom

Community No.: 3 Community Title (main species): CYNOFF

Dominant Species	% Cover	Dominant Species	% Cover
CYNOFF	11-20		
SOLCAN	11-20		

COMMENTS/PROBLEMS: Disturbed area where dike material was obtained. Area is less than 50% vegetated.

Additional Activities Checklist:

X Record and map vegetative communities on air photo

COMPREHENSIVE VEGETATION LIST

[illegible]

COMMENTS/PROBLEMS: Bolded Species are new in 2004 .

PLANTED WOODY VEGETATION SURVIVAL

[illegible]

COMMENTS/PROBLEMS: NA

[illegible]

WILDLIFE

BIRDS

(Attach Bird Survey Field Forms)

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

MAMMALS AND HERPTILES

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other
Mule deer	0	yes	yes		
Antelope	0	yes			
Elk	0	yes	yes		
Badger	0			yes	
Richardson's ground squirrel	>50	yes		yes	

Additional Activities Checklist:

_____ Macroinvertebrate sampling (if required)

COMMENTS/PROBLEMS:

[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	Compass Reading
A		See photo sheets	
B			
C			
D			
E			
F			
G			
H			

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 for site in designated GPS field notebook

Checklist:

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

COMMENTS/PROBLEMS: GPS unit was not utilized during the 2003 monitoring.

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

 NA Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: See attached completed delineation forms. No wetland habitat on-site.

FUNCTIONAL ASSESSMENT

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

COMMENTS/PROBLEMS: NA

MAINTENANCE

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

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

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:

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Ringling - Galt Date: 8/4/04 Examiner: MT Transect # 1

Approx. transect length: 620 feet Compass Direction from Start (Upland): _____

Vegetation type A: Type 3 - CYNOFF		
Length of transect in this type:	100	feet
Species:	Cover:	
SOLCAN	2	
GLYLEP	2	
CYNOFF	2	
Total Vegetative Cover:	50%	

Vegetation type B: Type 1 - ARTTRI		
Length of transect in this type:	100	feet
Species:	Cover:	
ARTTRI	3	
AGRSPI	4	
AGRSMI	4	
Lupinus sp.	3	
Total Vegetative Cover:	90%	

Vegetation type C: Type 2 – HORJUB/IRIMIS		
Length of transect in this type:	180	feet
Species:	Cover:	
HORJUB	2	
IRIMIS	3	
ACHMIL	3	
JUNBAL	3	
Total Vegetative Cover:	90%	

Vegetation type D: Type 1 - ARTTRI		
Length of transect in this type:	60	feet
Species:	Cover:	
ARTTRI	3	
AGRSPI	4	
AGRSMI	4	
Lupinus sp.	3	
Total Vegetative Cover:	90%	

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Ringling - Galt Date: 8/4/04 Examiner: MT Transect # 1

Approx. transect length: 620 feet Compass Direction from Start (Upland): _____

Vegetation type E:		Type 3 - CYNOFF	
Length of transect in this type:		65	feet
Species:		Cover:	
SOLCAN		2	
GLYLEP		2	
CYNOFF		2	
Total Vegetative Cover:		40	

Vegetation type F:			
Length of transect in this type:			feet
Species:		Cover:	
Total Vegetative Cover:			

Vegetation type G:			
Length of transect in this type:			feet
Species:		Cover:	
Total Vegetative Cover:			

Vegetation type H:			
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 % 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:

Bolded species are new additions in 2004. Changes in species cover percentages are indicated by *italics*, with the 2001 percentages included in parentheses

Date: 6/4/04

Survey Time: 1100

SITE: Ringling/Galt

[illegible]

Notes: Conditions: Partly Cloudy & Windy, approximately 70 degrees

Wildlife observations: groundsquirrels, antelope tracks, elk scat.

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

SITE: S. F. Smith

Page 1 of 1

Date: 8/4/04

Survey Time: 1200

[illegible]

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

Project/Site: Ringling/Galt Wetland Mitigation Site	Project No: Task 015	Date: 4-Aug-2004
Applicant/Owner: Montana Department of Transportation		County: Meagher
Investigators: Traxler		State: Montana
		Plot ID: 1

Do Normal Circumstances exist on the site?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Community ID: Upland
Is the site significantly disturbed (Atypical Situation:)?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Transect ID:
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes <input type="radio"/> No <input checked="" type="radio"/>	Field Location:

(USFWS Region No. 9)

[illegible]

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 2/5 = 40.00%	FAC Neutral: 1/4 = 25.00% Numeric Index: 17/5 = 3.40
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Remarks:
Plot is in upland veg. community near the Agate Creek drainage bottom.

<u>NO</u> Recorded Data(Describe in Remarks): <u>N/A</u> Stream, Lake or Tide Gauge <u>N/A</u> Aerial Photographs <u>N/A</u> Other		Wetland Hydrology Indicators Primary Indicators <u>NO</u> Inundated <u>NO</u> Saturated in Upper 12 inches <u>YES</u> Water Marks <u>NO</u> Drift Lines <u>NO</u> Sediment Deposits <u>NO</u> Drainage Patterns in Wetlands Secondary Indicators <u>NO</u> Oxidized Root Channels in Upper 12 Inches <u>NO</u> Water-Stained Leaves <u>NO</u> Local Soil Survey Data <u>NO</u> FAC-Neutral Test <u>NO</u> Other(Explain in Remarks)	
<u>YES</u> No Recorded Data			
Field Observations			
Depth of Surface Water:	N/A (in.)		
Depth to Free Water in Pit:	> 18 (in.)		
Depth to Saturated Soil:	> 18 (in.)		
Remarks:			
Fair water line on dike. Soil is very dry and not saturated within 18 inches of surface.			

Project/Site:	Ringling/Galt Wetland Mitigation Site	Project No:	Task 015	Date:	4-Aug-2004
Applicant/Owner:	Montana Department of Transportation			County:	Meagher
Investigators:	Traxler			State:	Montana
				Plot ID:	1

Map Unit Name (Series and Phase):	Martinsdale-Meagher cobbly loams	Mapped Hydric Inclusion? no
Map Symbol: 554B	Drainage Class:	Field Observations Confirm Mapped Type? <input checked="" type="radio"/> Yes <input type="radio"/> No
Taxonomy (Subgroup):		
Profile Description		

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc
18		N/A	N/A	N/A N/A	Loam

<u>NO</u> Histosol	<u>NO</u> Concretions
<u>NO</u> Histic Epipedon	<u>NO</u> High Organic Content in Surface Layer in Sandy Soils
<u>NO</u> Sulfidic Odor	<u>NO</u> Organic Streaking in Sandy Soils
<u>NO</u> Aquic Moisture Regime	<u>NO</u> Listed on Local Hydric Soils List
<u>NO</u> Reducing Conditions	<u>NO</u> Listed on National Hydric Soils List
<u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Other (Explain in Remarks)

Remarks:

Hydrophytic Vegetation Present?	Yes	<input checked="" type="radio"/> No	Is the Sampling Point within the Wetland?	Yes	<input checked="" type="radio"/> No
Wetland Hydrology Present?	Yes	<input checked="" type="radio"/> No			
Hydric Soils Present?	Yes	<input checked="" type="radio"/> No			

Remarks:
Sampling point is not within a wetland. No wetland habitat within the analysis area.

Appendix C

REPRESENTATIVE PHOTOGRAPHS 2004 AERIAL PHOTOGRAPH

*MDT Wetland Mitigation Monitoring
Ringling/Galt
Ringling, Montana*

2004 RINGLING – GALT



Photo Point 2, 85 degrees E.



Photo Point 3, 180 degrees S.



Photo Point 2, 200 degrees SW.



Photo Point 1, 0 degrees N.



Vegetation Transect Start, 330 degrees NW.



Vegetation Transect End, 150 degrees SE. Photo date 8/7/03.

Ringling-Galt 2004 Aerial Photograph



Appendix D

BIRD SURVEY PROTOCOL GPS PROTOCOL

*MDT Wetland Mitigation Monitoring
Ringling/Galt
Ringling, 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.