
MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: 2002

*Rey Creek
Three Forks, Montana*



Prepared for:

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

February 2003

Project No: 130091.014

Prepared by:

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



MONTANA DEPARTMENT OF TRANSPORTATION

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YEAR 2002

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1.0 INTRODUCTION

This annual report summarizes methods and results from the second year of monitoring efforts at the Montana Department of Transportation's (MDT) Rey Creek mitigation site. MDT personnel monitored the site after its creation in 1999. Rey Creek is monitored one time per year and will be monitored for at least one more year to assess whether the US Army Corps of Engineers (COE) and other agencies' Section 404 requirements have been fulfilled.

The site is located approximately 2.5 miles west of the town of Logan and approximately 1.5 miles east of Three Forks, MT in Gallatin County. The project site is located within the Butte District Watershed (#6), Section 28, Township 2 North, Range 2 East (**Figure 1**). The wetland is situated south and adjacent to Frontage Road (Hwy 10) and north of Interstate-90 and the Burlington Northern railroad tracks (**Figure 2, Appendix A**); the ponds were constructed in what was historically a railroad bed. Construction was completed in September of 1999 with a goal of creating 1.2 acres of wetland. The elevation of the site is approximately 4,077 feet above sea level.

The Rey Creek mitigation wetland was developed adjacent to a perennial stream, Rey Creek, to mitigate wetland impacts associated with replacement of the onsite culvert and safety improvement to Hwy 10.

Two off-stream impoundments were created adjacent to Rey Creek (**Figure 2, Appendix A**) south of Hwy. 10 and were designed to capture seasonal high water flows. The impoundments were constructed without permanent control structures and have inlets originally designed at elevations to facilitate movement of high water flows into the created wetlands.

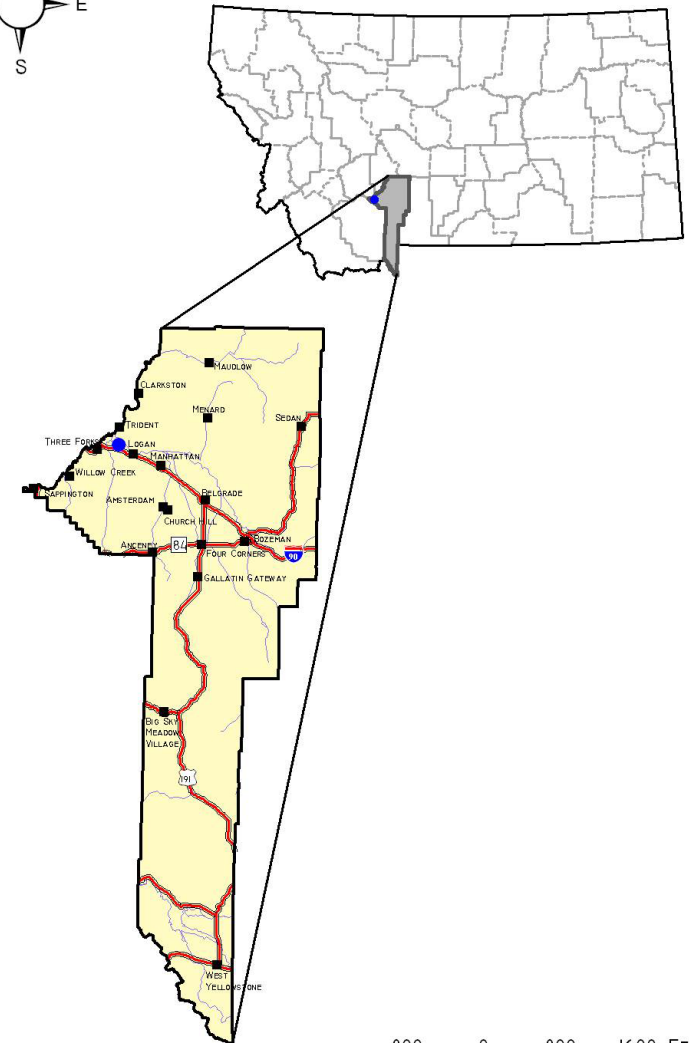
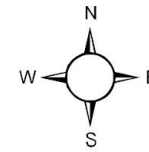
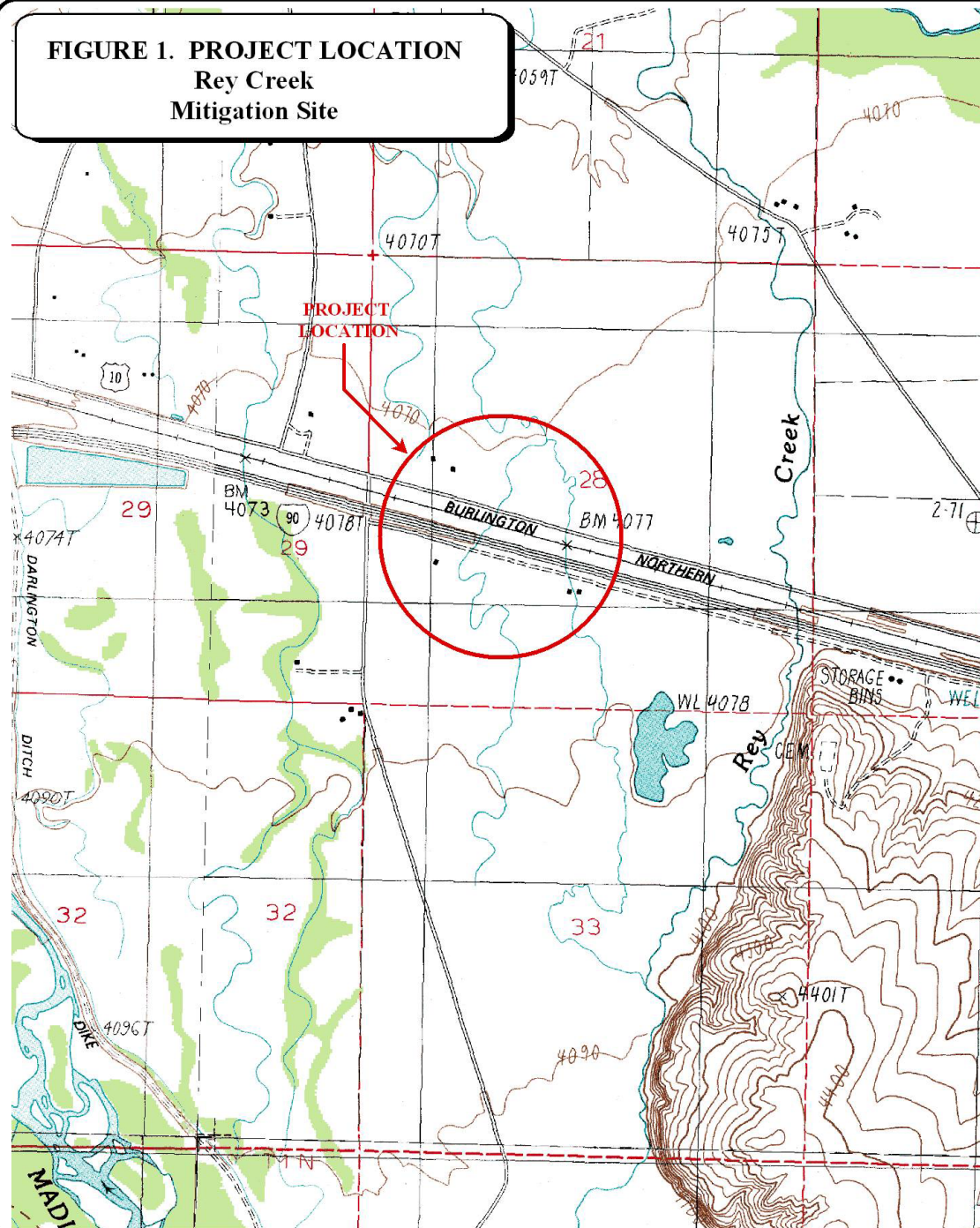
Impoundment #1, located on the east side of Rey Creek, was designed to hold approximately 8,438 ft² of standing water (**Appendix E**). This eastern impoundment has a direct connection to the stream via an inlet and an outlet channel. Impoundment #2, located on the west side of Rey Creek, was designed to hold approximately 7,680 ft² of standing water. This impoundment is separated from the stream by a riprapped inlet which allows the capture of overflow; the inlet functions as an outlet during high flows and allows the impoundment some degree of turnover. The Rey Creek site was designed to mitigate for specific wetland functions impacted by MDT roadway projects. These functions include: storm water retention, roadway runoff filtration, sediment and nutrient retention, water quality, groundwater recharge, waterfowl and wildlife habitats, and riparian restoration.

2.0 METHODS

2.1 Monitoring Dates and Activities

The Rey Creek wetland monitoring protocol was initially implemented on July 4, 2002. All collected information is presented on the Wetland Mitigation Site Monitoring Form (**Appendix B**).

FIGURE 1. PROJECT LOCATION
Rey Creek
Mitigation Site



800 0 800 1600 FEET
 1: 24,000

PROJECT #: 130091.014
 DATE: APRIL 2001
 LOCATION:
 PROJECT MANAGER: B. DUTTON
 DRAWN BY: B. NOECKER

LAND & WATER CONSULTING, INC.

1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

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, inflow and outflow structures (non-engineering).

2.2 Hydrology

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

All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). The boundary between emergent vegetation and open water was mapped on the air photograph (**Figure 3, Appendix A**). Precipitation data for the year 2002 were compared to the 1941-2001 average (WRCC 2002).

There are no groundwater monitoring wells at the site.

2.3 Vegetation

General vegetation types were delineated on an air photograph during the site visit (**Figure 3, Appendix A**). Coverage of the dominant species in each community type is listed on the monitoring form (**Appendix B**). A comprehensive plant species list for the entire site was compiled in 2001 and has been updated to include new species encountered during the 2002 field season. Observations from past years will be compared with new data to document vegetation changes over time. Woody species were not planted on this site.

One (1) transect was established in the vicinity of Impoundment #2 during the 2001 monitoring event to represent the range of current vegetation conditions. The location of the transect is shown on **Figure 2, Appendix A**. The transect will be used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. Percent cover for each species was recorded on the vegetation transect form within the monitoring form (**Appendix B**). The transect ends were marked with a metal fence post and its locations recorded with the GPS unit during the 2001 field season. Photographs of the transect were taken from both ends during the 2002 site visit (**Appendix C**).

2.4 Soils

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

2.5 Wetland Delineation

A wetland delineation was conducted within the assessment area (AA) according to the 1987 COE Wetland Delineation Manual. The AA includes the areas that were created during the mitigation efforts (impoundments), the inlets and outlet, and the segment of Rey Creek flowing through the site. A larger area, the Monitoring Limits, was investigated to monitor the effect of the impoundments on adjacent wetlands, particularly those areas parallel to the railroad tracks. The total wetland acreage will be adjusted to account for the wetlands that were likely present prior to creating the mitigation site.

All areas within the monitoring limits 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: Northwest Region 9 (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 E**). A general, qualitative bird list has been compiled using these observations. Observations will be compared between years in future studies. No bird nesting structures were observed on this site.

2.8 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

2.9 Functional Assessment

A functional assessment form was completed for the Rey Creek mitigation site using the 1999 MDT Montana Wetland Assessment Method. The assessment was conducted on the constructed mitigation site and did not include areas outside of the impoundments. Field data were collected on a condensed data sheet included in the mitigation site monitoring form (**Appendix B**). The remainder of the assessment was completed in the office and compared to the 2001 functional assessment.

2.10 Photographs

Photographs were taken showing the current land use surrounding the site, the wetland buffer, the monitored area, and the vegetation transects. A description and compass direction for each photograph were initially recorded on the wetland monitoring form during the 2001 season. Each photograph 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**. Photos were retaken during the 2002 field season in precisely the same locations and directions. All photographs were taken using a 50 mm lens. A 2002 aerial photo is also 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 E**). 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, and sample point locations were drawn on the 2001 aerial photograph-based plant community map.

2.12 Maintenance Needs

The condition of inflow and outflow structures, habitat enhancement structures or other mitigation related structures were evaluated. Inflow of both impoundments is controlled by a riprap berm and there is no control structure at the outlet stream of impoundment #1; the riprap and stream connections were examined for adequacy in controlling water levels in the ponded areas. This examination did not entail an engineering-level analysis.

3.0 RESULTS

3.1 Hydrology

The assessment area was redefined for the Rey Creek mitigation site to include only the mitigation impoundments, Rey Creek, and inlet/outlet streams (Urban, MDT pers. comm.). Approximately 95% of the mitigation area is classified as wetland; 85% of the wetland area was inundated at the time of investigation. The entire perimeter of the wetland included 1 to 5 feet of exposed muddy substrate. Water depth at the emergent vegetation/open water boundary was estimated at 2.5 feet. Water depth appears similar to that of 2001, or within a range of 0-6 feet deep.

According to the Western Regional Climate Center (WRCC, 2002), the Belgrade Airport station annual mean (1941 – 2001) precipitation was 14.28 inches; the average precipitation through the

month of July was 9.27 inches. For the year 2002, precipitation through July was 9.38 inches or 101% of the mean.

The riprap at the inlets of both impoundments was installed to prevent pond capture of the stream and allow water to flow into the ponds by infiltration and overtopping. The surface water levels in both ponds appear to be approximately that of the creek (non-surveyed levels). Photographs of the riprap are included in **Appendix C**.

3.2 Vegetation

Vegetation species identified on the site are presented in **Table 1** and in the monitoring form (**Appendix B**). Six (6) vegetation communities were mapped on the mitigation area map (**Figure 3, Appendix A**). The communities include five wetland and one upland types: Type 1, *Eleocharis palustris*/*Carex spp.*/*Juncus spp.*; Type 2, *Typha latifolia*/*Scirpus acutus*; Type 3, *Carex utriculata*/*Juncus balticus*; Type 4, *Agropyron dasystachyum* (UPL); Type 5, *Juncus balticus*/*Agrostis alba*; and, Type 6, *Scirpus acutus*. Dominant species within each community are listed on the monitoring form (**Appendix B**). Encroachment of the vegetation into open water areas has increased since 2001 (**Appendix C**). In addition, a significant development is the occurrence of willow seedlings in the exposed substrate (mud) areas, particularly the east end of impoundment #1.

The vegetation transect results are detailed in the monitoring form (**Appendix B**) and are summarized below. The length of the transect took into account the hill slopes and therefore is longer than the reported length (132') in 2001. The coverage of open water is decreasing and the plant communities are becoming more diverse.

2001 Transect Data

Transect 1 Start	Upland Type 4 (15')	Wetland Type 3 (15')	Wetland Type 2 (99')	Wetland Type 3 (3')	Upland Type 4 (15')	Total 132'	Transect 1 End
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2002 Transect Data

Transect 1 Start	Upland Type 4 (12')	Wetland Type 1 & 2 (9')	Wetland Type 2 (57')	Open Water (48')	Wetland Type 2 (3')	Upland Type 4 (18')	Total 147'	Transect 1 End
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3.3 Soils

The site was mapped as part of the Gallatin County Soil Survey (USDA unpublished). The soil on the site is mapped as the Greycliff-Toston-Threeriv Complex (Series 525A). The complex is comprised of: the Greycliff silt loam, the Toston loam, and the Threeriv silty clay loam components. Inclusions within this series are: Reycreek, Rivra, and Slickspots; all are unranked. The Greycliff and Toston soils, as independent series, are non-hydric soils. The Threeriv silty clay loam, however, is hydric. Soil characteristics at each wetland determination point were compared with those of the Greycliff-Toston-Threeriv complex.

Table 1: 2001 and 2002 Rey Creek Wetland Vegetation Species List

Scientific Name	Common Name	Indicator Status
<i>Agropyron trachycaulum</i> ^{1**}	slender wheatgrass	FAC
<i>Agropyron dasystachyum</i> *	thick-spike wheatgrass	FACU-
<i>Agrostis alba</i> *	redtop	FACW
<i>Amaranthus albus</i> **	tumble weed	FACU
<i>Aster conspicuous</i> **	aster	-
<i>Carex lasiocarpa</i> **	wooly -fruit sedge	OBL
<i>Carex nebrascensis</i> *	Nebraska sedge	OBL
<i>Carex utriculata</i> *	beaked sedge	OBL
<i>Centaurea maculosa</i> *	spotted knapweed	UPL
<i>Chenopodium spp.</i> *	pigweed	FACU+ to FACU -
<i>Cirsium arvense</i> *	Canada thistle	FACU+
<i>Crepis runcinata</i>	dandelion hawksbeard	FACU
<i>Eleocharis palustris</i> *	creeping spikerush	OBL
<i>Elymus condensatus</i> *	giant wild rye	FACU
<i>Equisetum arvense</i> *	field horsetail	FAC
<i>Helianthus spp.</i> *	sunflower	UPL
<i>Hordeum jubatum</i> *	fox-tail barley	FAC+
<i>Juncus balticus</i> *	Baltic rush	OBL
<i>Juncus longistylis</i> **	long-style rush	FACW
<i>Juncus nodosus</i> **	knotted rush	OBL
<i>Juncus torreyi</i> **	Torrey's rush	FACW
<i>Lactuca serriola</i> **	prickly lettuce	FAC-
<i>Melilotus officinalis</i>	yellow clover	FACU
<i>Mentha arvensis</i> **	field mint	FAC
<i>Phalaris arundinacea</i>	reed canary grass	FACW
<i>Poa pratensis</i> **	Kentucky bluegrass	FACU+
<i>Ribes aureum</i> **	golden currant	FAC+
<i>Rosa woodsii</i> *	rose	FACU
<i>Sagittaria cuneata</i> *	northern arrow-head	OBL
<i>Salix lutea</i> **	yellow willow	OBL
<i>Scirpus acutus</i> **	hard-stem bulrush	OBL
<i>Scirpus americanus</i> **	Olney's bulrush	OBL
<i>Solidago spp.</i> *	goldenrod	FAC to FACW-
<i>Stachys palustris</i> **	marsh hedgenettle	FAW+
<i>Stipa occidentalis</i> **	needlegrass	-
<i>Symphoricarpos albus</i> *	snowberry	FACU
<i>Sisymbrium altissimum</i> *	tall tumble mustard	FACU_
<i>Triglochin maritimum</i> **	seaside arrow- grass	OBL
<i>Typha latifolia</i> *	broad-leaf cattail	OBL
<i>Verbascum thapsus</i> **	wooly mullein	UPL
<i>Verbena hastate</i> **	blue vervain	FAC+
<i>Veronica catenata</i> **	pink water speedwell	OBL
<i>Vicia sativa</i>	common vetch	UPL

- : Species not listed in the Indicator Status manual.

*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

Soils were sampled at one wetland sample point (SP-1) and one upland sample point (SP-2). The soil at SP-1, taken at the west end of impoundment #2, was a very dark gray (7.5YR 3/1) clay loam from 0-12 inches without evident mottles. At a depth of 8 inches the soil was a gravelly clay loam (7.5YR 3/1). From 12-18 inches the soil was a very dark gray (7.5YR 3/1) gravelly clay loam (high percentage of gravels/small cobbles) with 1% fine dark brown mottles (7.5YR 3/3).

The soil at the upland site, SP-2, was a dark olive gray (5Y 3/2) sandy loam from 0-12 inches without mottles. From 12-18 inches the soil was a cobbly clay loam (5Y 3/2). Gravels and cobbles at a depth of 12 inches in both pits are presumed to be the result of the impoundment excavation.

3.4 Wetland Delineation

The delineated wetland boundary is depicted on **Figure 3, Appendix A**. The wetland boundary within the assessment area (mitigation area) encompasses 0.52 acre of wetland with an open water component of 0.30 acre; the net wetland area is 0.28 acre. An additional 0.2 wetland acre was identified outside the mitigation area, but within the monitoring limits. The COE data forms are included in **Appendix B**.

3.5 Wildlife

Very few direct or indirect signs of wildlife use were noted for mammals, amphibians, or reptiles at the Rey Creek site; deer tracks were observed in the saturated soil of the open water perimeter. The few wildlife observations are likely a result of the close juxtaposition of the site to the frontage road, railroad, and Interstate 90.

Wildlife species are listed in **Table 2**. Activities associated with these observations area included on the monitoring form in **Appendix B**.

Table 2. Fish and Wildlife Species Observed at the Rey Wetland Mitigation Site

BIRDS Common yellowthroat (<i>Geothlypis trichas</i>)* Swallow species (unknown: overhead flight)* Red-winged blackbird (<i>Agelaius phoeniceus</i>)* Spotted Sandpiper (<i>Actitis hypoleucos</i>)**
MAMMALS Deer track (<i>Odocoileus spp.</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 at this site.

3.7 Functional Assessment

Completed functional assessment forms for the mitigation area are included in **Appendix B** and summarized in **Table 3**. The two cells were assessed together along with the open-water component of the stream. The mitigation site ranked as a Category III wetland site but has improved since 2001. The site ranked poorly for wildlife but scored high for sediment/nutrient/toxicant removal as well as groundwater discharge/recharge. Based on the

functional assessment results (**Table 3**), approximately 3.38 functional units have been provided at the Rey Creek mitigation site as of 2002.

3.8 Photographs

Representative photographs taken from photo points and transect ends are included in **Appendix C**. A 2002 aerial photo is also included in **Appendix C**.

3.9 Maintenance Needs/Recommendations

No maintenance was required at the site. If the drought persists and/or spring runoff is low, the riprap may prove excessive by not allowing water to flow into the created wetlands. Observation of how the riprap is performing during spring run-off may be necessary to accurately assess how its placement is affecting inflow and turnover rates.

Table 3: Summary of 2001 and 2002 Wetland Function/Value Ratings and Functional Points at the Rey Creek Wetland Mitigation Project

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2001	2002
Listed/Proposed T&E Species Habitat	Low (0)	Low (.3)
MNHP Species Habitat	Low (0)	Low (.1)
General Wildlife Habitat	Low (.1)	Moderate (.4)
General Fish/Aquatic Habitat	Moderate (.6)	Moderate (.4)
Flood Attenuation	Low (.15)	Low (.15)
Short and Long Term Surface Water Storage	Low (.3)	Moderate (.4)
Sediment, Nutrient, Toxicant Removal	High (.95)	High (.95)
Sediment/Shoreline Stabilization	High (1)	High (1)
Production Export/Food Chain Support	Moderate (.6)	High (1)
Groundwater Discharge/Recharge	High (1)	High (1)
Uniqueness	Low (.2)	Low (.3)
Recreation/Education Potential	Low (.2)	Moderate (.5)
Actual Points/Possible Points	5.1/12	6.5/12
% of Possible Score Achieved	43%	55%
Overall Category	III	III
Total Acreage of Assessed Wetlands within Easement	0.54 ac	0.52
Functional Units (acreage x actual points)	2.754 fu	3.38 fu
Net Acreage Gain (Includes stream segment)	0.54 ac	0.52 ac
Net Functional Unit Gain	2.754 fu	3.38 fu
Total Functional Unit "Gain"	2.754 Total FU	3.38 Total FU

3.10 Current Credit Summary

Wetlands and/or waters of the U.S. that were impacted during the removal of the Hwy. 10 bridge and installation of the culvert totaled 0.27 acre; no wetlands or waters of the U.S were impacted to create these two mitigation impoundments. Mitigation wetland acreage totaled 0.52 acre for the 2002 season. An additional 0.2 wetland acre was identified outside the mitigation area and within the monitoring limits; the extent and change in wetland vegetation diversity within these areas will continue to be monitored as part of the mitigation investigation. Functional units increased from 2.75 in 2001 to 3.38 in 2002.

Although both impoundments have open water components, the depth is likely estimated at <6 feet. Obligate wetland species continue to encroach into the open water; credit for the entire 0.52 acre of wetland and waters of the U.S. should be considered for the entire site within the delineation boundary.

4.0 REFERENCES

- Berglund, J. 1999. *MDT Montana Wetland Assessment Method*. Prepared for Montana Department of Transportation. May 1999.
- Reed, P.B. 1988. National list of plant species that occur in wetlands: North West (Region 9). Biological Report 88(26.9), May 1988. U.S. Fish and Wildlife Service. Washington, D.C.
- Urban, L. 2002. Wetland Mitigation Specialist, Montana Department of Transportation. Helena, MT. November 2002 Telephone Phone Conversation.
- US Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual*. US Army Corps. Washington, DC.
- USDA Natural Resource Conservation Service. Soil Survey of Gallatin County, Montana.
- Western Regional Climate Center, 2002. Belgrade Airport Station: www.wrcc.dri.edu/cgi-bin/cliMONtpre.pl?mtbelg.

Appendix A

FIGURES 2 - 3

*MDT Wetland Mitigation Monitoring
Rey Creek
Three Forks, Montana*

Figure 2 -Monitoring Activity Locations 2002

Legend

- Monitoring Area Limits
- Vegetation Transect
- Photograph Points
- Aerial Reference Points
- Soil Sample



SCALE 1"=60ft

MONITORING AREA LIMITS



NOT TO SCALE

PROJECT NAME
MDT Rey Creek Wetland Mitigation
DRAWN BY
Monitoring Activity Locations 2002

PROJ. NO.: 130091.014
FILE NAME: TASK 14BASE.dwg
SCALE: 1"=60ft
LOCATION: Rey Creek

LONG & WATER CONSULTING, INC.
BIRMINGHAM, AL 35203

SHEET NUMBER
2
REV. 1
DATE 12-04-02

Figure 3 -Mapped Site Features 2002

Vegetation Community Type:

- ① Eleocharis palustris/Carex spp./Juncus spp.
- ② Typha latifolia/Sagittaria arifolia
- ③ Carex utriculata/Juncus balticus
- ④ Agropyron dasystachyum
- ⑤ Juncus balticus/Agrostis alba
- ⑥ Scirpus acutus
- Community Type outside of mitigation wetlands

Legend

- Monitoring Area Limits
- Wetland Boundary
- Wetland (out of mitigation area)
- Vegetation Community Boundary
- Open Water Boundary

2002 Wetland Area:

Gross Wetland Area	0.51 Acres
Open Water Area	-0.30 Acres
Wetland Island	+0.08 Acres
Upland Island	-0.02 Acres
Net Wetland Area	-0.27 Acres
Non-Mitigation Wetland Area	-0.20 Acres



SCALE 1"=60ft



MDT Rey Creek Wetland Mitigation
Mapped Site Features 2002

PROJECT NO. 130001 016
PROJECT NAME TASK: MDCR 001
SCALE 1"=60ft
LOCATION Rey Creek

DATE 12-09-02

SHEET NUMBER
3 OF 3

Appendix B

**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**

MDT Wetland Mitigation Monitoring

Rey Creek

Three Forks, Montana



LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Rey Creek Project Number: 130091 Assessment Date: 7 / 4 / 02
Location: Three Forks MDT District: Butte Milepost:
Legal description: T 2N R 2E Section 28 Time of Day: 8AM-2PM
Weather Conditions: clear Person(s) conducting the assessment: LB/LWC
Initial Evaluation Date: 7 / 23 / 02 Visit #: 2 Monitoring Year: 2002
Size of evaluation area: 0.52 acres Land use surrounding wetland: transportation corridors

HYDROLOGY

Surface Water Source: Rey Creek

Inundation: Present X Absent Average depths: 3 ft Range of depths: 0 - 6 ft

Assessment area under inundation: 58 %

Depth at emergent vegetation-open water boundary: 3 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.): bank-full line

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

COMMENTS/PROBLEMS:

VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): *Eleocharis palustris*/*Carex spp.*/*Juncus spp.*

Dominant Species	% Cover	Dominant Species	% Cover
ELEPAL	40	SAGCUN	<5
CARLAS	20	JUNTOR	<5
CARNEB	20	SALLUT	<5
CARUTR	10	AGRALB	<5
JUNBAL	<5	ALOARU	<5
		VERCAT	<5

COMMENTS/PROBLEMS: diverse wetland community

Community No.: 2 Community Title (main species): *Typha latifolia*/*Scirpus acutus*

Dominant Species	% Cover	Dominant Species	% Cover
TYPLAT	60	CARUTR	<5
SCIACU	20	MENARV	<5
CARNEB	5	PHAARU	<5
ELEPAL	10	SCIAME	<5
AGRALB	<5	ALOARU	<5
CIRARV	<5	JUNBAL	

COMMENTS/PROBLEMS: _____

Community No.: 3 Community Title (main species): *Carex utriculata*/*Juncus balticus*

Dominant Species	% Cover	Dominant Species	% Cover
CARUTR	40		
JUNBAL	40		
TYPLAT	15		
SYMsp	<5		
URTDIO	<5		

COMMENTS/PROBLEMS: This community outside of mitigation wetland; will monitor boundaries to assess whether size is increasing as a result of proximity to constructed WL.

Additional Activities Checklist:

☒ Record and map vegetative communities on air photo

VEGETATION COMMUNITIES (continued)

Community No.: 4 Community Title (main species): Agropyron dasystachyum

Dominant Species	% Cover	Dominant Species	% Cover
AGRDAS	25		
STIOCC	25		
SYSALT	50		
RIBAU	<1		

COMMENTS/PROBLEMS: _____

Community No.: 5 Community Title (main species): Juncus balticus/Acrostic alba

Dominant Species	% Cover	Dominant Species	% Cover
JUNBAL	80		
AGRALB	20		

COMMENTS/PROBLEMS: This CT type is outside of the constructed WL; will monitor boundaries to assess whether size is increasing as a result of proximity to constructed WL.

Community No.: 6 Community Title (main species): Scirpus acutus

Dominant Species	% Cover	Dominant Species	% Cover
SCIACU	60		
(open water)	(40)		

COMMENTS/PROBLEMS: This CT is represented by patches of Scirpus w/ in the open water area.

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Agropyron trachycaulum</i> ^{1**}	4	<i>Sisymbrium altissimum</i> *	4
<i>Agropyron dasystachyum</i> *	4	<i>Triglochin maritimum</i> **	1
<i>Agrostis alba</i> *	5, 2	<i>Typha latifolia</i> *	1, 2, 3
<i>Amaranthus albus</i> **	4	<i>Verbascum thapsus</i> **	4
<i>Aster conspicuous</i> **	3	<i>Verbena hastata</i> **	1
<i>Carex lasiocarpa</i> **	1	<i>Veronica catenata</i> **	1
<i>Carex nebrascensis</i> *	1, 2	<i>Vicia sativa</i>	4
<i>Carex utriculata</i> *	1, 2, 3		
<i>Centaurea maculosa</i> *	4		
<i>Chenopodium spp.</i> *	4		
<i>Cirsium arvense</i> *	4		
<i>Crepis runcinata</i>			
<i>Eleocharis palustris</i> *	1, 2		
<i>Elymus condensatus</i> *	4		
<i>Equisetum arvense</i> *	1, 3, 4		
<i>Helianthus spp.</i> *	4		
<i>Hordeum jubatum</i> *	1, 4		
<i>Juncus balticus</i> *	1, 3, 5		
<i>Juncus longistylis</i> **	1		
<i>Juncus nodosus</i> **	1		
<i>Juncus torreyi</i> **	1		
<i>Lactuca serriola</i> **	4		
<i>Melilotus officinalis</i>	4		
<i>Mentha arvensis</i> **	2		
<i>Phalaris arundinacea</i>	2		
<i>Poa pratensis</i> **	4		
<i>Ribes aureum</i> **	4		
<i>Rosa woodsii</i> *	4		
<i>Sagittaria cuneata</i> *	2		
<i>Salix lutea</i> **	1, 2, 4		
<i>Scirpus acutus</i> **	2, 6		
<i>Scirpus americanus</i> **	2		
<i>Solidago spp.</i> *	4		
<i>Stachys palustris</i> **	1	*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	
<i>Stipa occidentalis</i> **	4		
<i>Symphoricarpos albus</i> *	4		

COMMENTS/PROBLEMS: ____ 2002 additions are in **BOLD**. _____

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]

__NA__ Macroinvertebrate sampling (if required)

COMMENTS/PROBLEMS:

PHOTOGRAPHS

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

Checklist:

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

Location	Photo Frame #	Photograph Description	Compass Reading
A	006	rip rap to east (#1) impoundment	N
B	026	East Impoundment	W
C	none		
D	004	center of WL (Rey Creek)	S
E	018	West end of west impoundment (#2)	E
F	001	West end of #2 buffer zone	E
G	023	west end of transect	E
H	024	east end of transect	W
I	025	Riprap to #2	N
J	002	Riprap to #2	N
K	003	Outlet of #1	SE

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
- ☐ - ☐ 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: ☐ WL boundary drawn by hand 2002; photos taken from same locations.

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-draw 2002

FUNCTIONAL ASSESSMENT

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

COMMENTS/PROBLEMS: one FA done for whole site for 2002

MAINTENANCE

Were man-made nesting structures installed at this site? YES___ NO_N___

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_*see below*___ NO___

If no, describe the problems below.

COMMENTS/PROBLEMS: Riprap located in inlet to west impoundment still may be excessive to prevent adequate turnover during spring run-off. Water levels at time of investigation d not appear to be compromised because of riprap; water level in pond appears equal to that of creek; likely groundwater influenced.

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Rey Creek Date: 7/4/02 Examiner: LB/LWC Transect # 1

Approx. transect length: 147 Compass Direction from Start (Upland): 100

Vegetation type A: Ct 4		
Length of transect in this type:	12	feet
Species:	Cover:	
AGRDAS	90	
SYSALT	<5	
HORJUB	<1	
CIRARV	<1	
SILALB	<1	
STIOCC	<1	
LACSER	<1	
Total Vegetative Cover:		100%

Vegetation type B: CT 2 (+1 interspersed)		
Length of transect in this type:	9	feet
Species:	Cover:	
SCIACU	25	
LACSER	25	
JUNTOR	10	
SCIPUN	<5	
HORJUB	<1	
AGRALB	25	
EQUARV	<1	
CARNEB	<1	
CARLAS	<10	
Total Vegetative Cover:		100%

Vegetation type C: ct 2		
Length of transect in this type:	57	feet
Species:	Cover:	
SCIACU	50	
TYPLAT	45	
(OPEN WATER)	<5	
Total Vegetative Cover:		95%

Vegetation type D: OPEN WATER		
Length of transect in this type:	48	feet
Species:	Cover:	
Total Vegetative Cover:		

MDT WETLAND MONITORING – VEGETATION TRANSECT (continued)

Site: (Rey Creek) Date: Examiner: Transect # **PAGE 2**

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

Vegetation type E:	CT 2	
Length of transect in this type:	3	feet
Species:		Cover:
SCIACU		95
TYPLAT		<5
CARLAS		<1
Total Vegetative Cover:		100%

Vegetation type F:	CT 4	
Length of transect in this type:	18	feet
Species:		Cover:
CHENOPODIUM spp.		2
VICSAT		<5
MELOFF		<1
CENMAC		2
CIRARV		5
AGRDAS		90
SYSALT		3
Total Vegetative Cover:		100%

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 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: Well developed hydrophytic vegetation diversity. Noxious weeds a problem but this is typical of the Three Forks area.

[illegible]

Survey Time: 8AM-2PM

Survey Time: 8AM-2PM

[illegible]

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>Rey Creek</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>7/04/02</u> County: <u>Gallatin</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: Yes <input type="checkbox"/> No <input type="checkbox"/> Is the site significantly disturbed (Atypical Situation)? Yes <input type="checkbox"/> No <input type="checkbox"/> Is the area a potential Problem Area?: Yes <input type="checkbox"/> No <input type="checkbox"/> (If needed, explain on reverse.)	Community ID: <u>CT 1/2</u> Transect ID: <u>1</u> Plot ID: <u>SP-1</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	SCIACU	H	OBL	9	JUNTOR	H	FACW
2	SCIPUN	H	OBL	10	CARLAS	H	OBL
3	ELEPAL	H	OBL	11			
4	JUNBAL	H	FACW+	12			
5	HORJUB	H	FAC	13			
6	TRIMAR	H	OBL	14			
7	CARNEB	H	OBL	15			
8	LACSER	H	FACU	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 9/10

Diverse WL community.

HYDROLOGY

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

SOILS

Map Unit Name		525A Greycliff-Toston-Threeriv Complex		Drainage Class: somewhat poor; somewhat poor; very poor	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup): Frigid Aridic Natrustolls; Frigid Typic Fluvaquents; Frigid Aridic Natrustalfs				Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12	A	7.7 YR 3/1	-		0-8 clay loam; 8-12 gravelly clay loam
12+	A	7.5YR 3/1	7.5YR 3/3	1%	gravels

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

Hydric soil evident in this SP location at edge of mud circumference.

WETLAND DETERMINATION

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

Remarks:

Positive wetland area within highwater mark of west impoundment.

Approved by HQUSACE 2/92

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

Project/Site: <u>Rey Creek</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>7/04/02</u> County: <u>Gallatin</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>CT 4</u> Transect ID: <u>1</u> Plot ID: <u>SP-2</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	AGRDAS	H	FACU-	9			
2	SYSALT	H	--	10			
3	CIRARV	H	FACU+	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 0/3

--: no listing, likely UPL

No WL veg at this SP.

HYDROLOGY

<p><u>X</u> Recorded Data (Describe in Remarks):</p> <p style="padding-left: 40px;"><u> </u> Stream, Lake, or Tide Gauge</p> <p style="padding-left: 40px;"><u>X</u> Aerial Photographs</p> <p style="padding-left: 40px;"><u> </u> Other</p> <p><u> </u> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p style="padding-left: 40px;">Depth of Surface Water: <u> - </u> (in.)</p> <p style="padding-left: 40px;">Depth to Free Water in Pit: <u> - </u> (in.)</p> <p style="padding-left: 40px;">Depth to Saturated Soil: <u> - </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p style="padding-left: 20px;"><u> </u> Inundated</p> <p style="padding-left: 20px;"><u> </u> Saturated in Upper 12 Inches</p> <p style="padding-left: 20px;"><u> </u> Water Marks</p> <p style="padding-left: 20px;"><u> </u> Drift Lines</p> <p style="padding-left: 20px;"><u> </u> Sediment Deposits</p> <p style="padding-left: 20px;"><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p style="padding-left: 20px;"><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p style="padding-left: 20px;"><u> </u> Water-Stained Leaves</p> <p style="padding-left: 20px;"><u> </u> Local Soil Survey Data</p> <p style="padding-left: 20px;"><u> </u> FAC-Neutral Test</p> <p style="padding-left: 20px;"><u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p> <p>No hydrology at this SP.</p>	

SOILS

Map Unit Name		525A Greycliff-Toston-Threeriv Complex		Drainage Class: somewhat poor; somewhat poor; very poor	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		Frigid Aridic Natrustolls; Frigid Typic Fluvaquents; Frigid Aridic Natrustalfs		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12	A	5Y 3/2	-		sandy loam
12+	A	5Y 3/2	-		cobbly clay loam

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

Area was likely disturbed when WL created; likely fill area. Soil very dry.

WETLAND DETERMINATION

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

Remarks:

Area not within WL boundary.

Approved by HQUSACE 2/92

AA = all area inside of investigation rectangle

Field Data Sheet for 1999 MDT Wetland Assessment Form Site: Key Creek

Date: 7/4/02 By: LWC-UB

Estimated AA Size (Circle Ac.): <1 1-5 >5

Brief Description:

HGM Class (CIRCLE)	Cowardin Class	Est. % of AA	Predominant Water Regime (CIRCLE)
Mineral Soil Flats	<u>Emergent</u>	<u>90%</u>	<u>Perm Flood</u> Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
Organic Soil Flats	Aquatic Bed		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
Riverine (nonperennial)	Moss-Lichen		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
Riverine (upper perennial)	Scrub-Shrub		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
<u>Riverine (lower perennial)</u>	Forested		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
Lacustrine Fringe	Unconsolidated Bottom		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
Depression (closed)	Other: <u>rock bottom</u>	<u>10%</u>	Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
Depression (open, groundwater)	Total Estimated % Vegetated		
Depression (open, surface water)			
Slope			
Organic Soil Flats			

RELATIVE ABUNDANCE: rare com. abun. DISTURBANCE is: High Moderate Low w/ in AA

HYDROLOGY: 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 west pond east pond

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...]) <u>muddy ends</u>	<u>Perm / Peren</u>	<u>Seas / Intermit</u>	Temp / Ephem
Where fish are or historically were present (circle NA if not applicable)	<u>Perm / Peren</u>	Seas / Intermit	Temp / Ephem
% of waterbody containing cover objects	>25%	10-25%	<u><10%</u>
% bank or shore with riparian or wetland shrub or forested communities	>75%	50-74%	<u><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>>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): ≥10 2-10

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

*Evidence of groundwater discharge or recharge? Y N List: W. pond is essentially groundwater fed

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:

Secondary habitat (list species) D S T/E: D S MNHP:

Incidental habitat (list species) D S T/E: Bald Eagle D S MNHP: Ladies Tresses

No usable habitat D S T/E: D S MNHP:

Wildlife observations? deer track

Fish observations?

OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Y N From: high way - fence Rd
Potential to receive: low to moderate levels high levels On TMDL List? Y N

Does site contain bog, fen, warm springs, >80 year-old forested wetland, or MNHP "S1" or "S2" plant association? Y N
List: Watch for Ladies' Tresses! are known in 3-forks

Is AA a known recreation / education site? Y N Type:

Does AA offer strong potential for use as recreation / education site? Y N Type: wetland veg collected - nice site!

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

1. Project Name: MDT Bay Creek 2. Project #: 25 Control #: _____3. Evaluation Date: Mo. 7 Day 4 Yr. 02 4. Evaluator(s): LWC - Bacon 5. Wetlands/Site #(s) ponds 1/2 - Bay Creek area6. Wetland Location(s): I. Legal: T 2(N)S; R 2(E)W; S 28; T N or S; R E or W; S ;
II. Approx. Stationing or Mileposts: _____III. Watershed: 10020007 GPS Reference No. (if applies): _____
Other Location Information: _____

7. a. Evaluating Agency:
- LB-LWC
- ; 8. Wetland size: (total acres) _____ (visually estimated)
-
- b. Purpose of Evaluation:
- 52
- (measured, e.g. by GPS (if applies))
-
- 1.
-
- Wetlands potentially affected by MDT project
-
- 2.
-
- Mitigation wetlands; pre-construction
-
- 3.
- X
- Mitigation wetlands; post-construction
-
- 4.
-
- Other
-
9. Assessment area: (AA, tot., ac., _____ (visually estimated)
-
- see instructions on determining AA)
- 52
- (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
<u>Riverine</u>	<u>Riverine</u>	<u>Rock bottom</u>		<u>H</u>		<u>20%</u>
<u>Palustrine</u>		<u>Emergent</u>		<u>H</u>	<u>E, J</u>	<u>80%</u>

(Abbreviations: System: Palustrine (P) Subsystem: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO) System: Lacustrine (L) Subsystem: Littoral (L) Classes: RB, UB, AB/ Subsystem: Littoral (L) Classes: RB, UB, AB, US, EM/ System: Riverine (R) 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), Filled (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
(Circle one) Unknown Rare Common Abundant
Comments: _____

12. General condition of AA:

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

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

Comments: (types of disturbance, intensity, season, etc.): traffic vehicle/trainII. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) Knapweed, CAN ThistleIII. Provide brief descriptive summary of AA and surrounding land use/habitat: Frontage Rd to N; RR + I90 to S

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
<u>Rating (circle)</u>	High	<u>Moderate</u>	Low

Comments: _____

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

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

Primary or critical habitat (list species)

D S

Secondary habitat (list species)

D S

Incidental habitat (list species)

D S

No usable habitat

D S

Bird eagle - close to 3 Fks conference

Watch for
Ladies' Tresses -
more seen 7/4 -

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

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

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

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

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

Primary or critical habitat (list species)

D S

Secondary habitat (list species)

D S

Incidental habitat (list species)

D S

No usable habitat

D S

Ladies' tresses - potential habitat

GS S1

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

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

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

if ladies tresses found @ site this would become doc-primary

14C. General Wildlife Habitat Rating:

I. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

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

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

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

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

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

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

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

Structural diversity (see #13)	High								Moderate								Low							
	Even				Uneven				Even				Uneven				Even				Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even				Low			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L	H	M	L	L
High disturbance at AA (see #12)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L	L	L	L	L

reg communities spreading and becoming more homogeneous or even around

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

Evidence of wildlife use (I)	Wildlife habitat features rating (II)			
	Exceptional	High	Moderate	Low
Substantial	1 (E)	.9 (H)	.8 (H)	.7 (M)
Moderate	.9 (H)	.7 (M)	.5 (M)	.3 (L)
Minimal	.6 (M)	.4 (M)	.2 (L)	.1 (L)

Comments:

Changed disturbance up in AA from high to moderate - as area has history of alteration but is stable now
- willow seedlings emerging from muddy areas around perimeter

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 = NA]). 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 wet pond has rip rap

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 (L)
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.5 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: overestimated last year's assessment (said >25% cover) - these ponds are actually mostly mud edged.

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)	.5 (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 (H)	.5 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: 2001 - said <5/10 yrs - should be >5/10 years - "flood" meaning goes beyond 0.5m

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	75%		< 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: = .95 - both cases occur

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

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

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

Comments:

14I. Production Export/Food Chain Support:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral or absent [see instructions for further definitions of these terms].

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

Comments:

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

I. Discharge Indicators

- ☒ Springs are known or observed
☒ 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:

wet pond fed by gnd water because of mud hump b/w pond + stream + presence of rip rap

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)	.3 (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? (circle) 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 of AA (#12i)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage) 0.52AC
A. Listed/Proposed T&E Species Habitat	L	.3	1	
B. MT Natural Heritage Program Species Habitat	L	.1	1	
C. General Wildlife Habitat	m	.4	1	
D. General Fish/Aquatic Habitat	m	.4	1	
E. Flood Attenuation	L	.15	1	
F. Short and Long Term Surface Water Storage	m	.4	1	
G. Sediment/Nutrient/Toxicant Removal	H	.95	1	
H. Sediment/Shoreline Stabilization	H	1	1	
I. Production Export/Food Chain Support	H	1	1	
J. Groundwater Discharge/Recharge	H	1	1	
K. Uniqueness	L	.3	1	
L. Recreation/Education Potential	m	.5	1	
Totals:		6.5	12	3.38

5570

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

REPRESENTATIVE PHOTOGRAPHS **2002 AERIAL PHOTOGRAPH**

MDT Wetland Mitigation Monitoring
Rey Creek
Three Forks, Montana



Location: A **Photo Frame:** 006 **Description:** Rip rap to east impoundment (#1) **Compass Reading :** N



Location: B **Photo Frame:** 026 **Description:** East impoundment **Compass Reading:** W



Location: D **Photo Frame:** 004 **Description:** Center of wetland **Compass Reading:** S



Location: E **Photo Frame:** 018 **Description:** West end of west impoundment **Compass Reading:** E



Location: F **Photo Frame:** 001 **Description:** West end #2 buffer zone **Compass Reading:** E



Location: G **Photo Frame:** 023
Description: West end of transect **Compass Reading:** E



Location: I **Photo Frame:** 025
Description: Rip rap to #2 **Compass Reading:** N



Location: H **Photo Frame:** 024 **Description:** East end of transect **Compass Reading:** W



Location: J **Photo Frame:** 002 **Description:** Rip rap to #2 **Compass Reading:** N



Location: K **Photo Frame:** 003 **Description:** Outlet of #1 **Compass Reading:** SE

Appendix D

MDT POST-CONSTRUCTION MONITORING OF SITE 1999

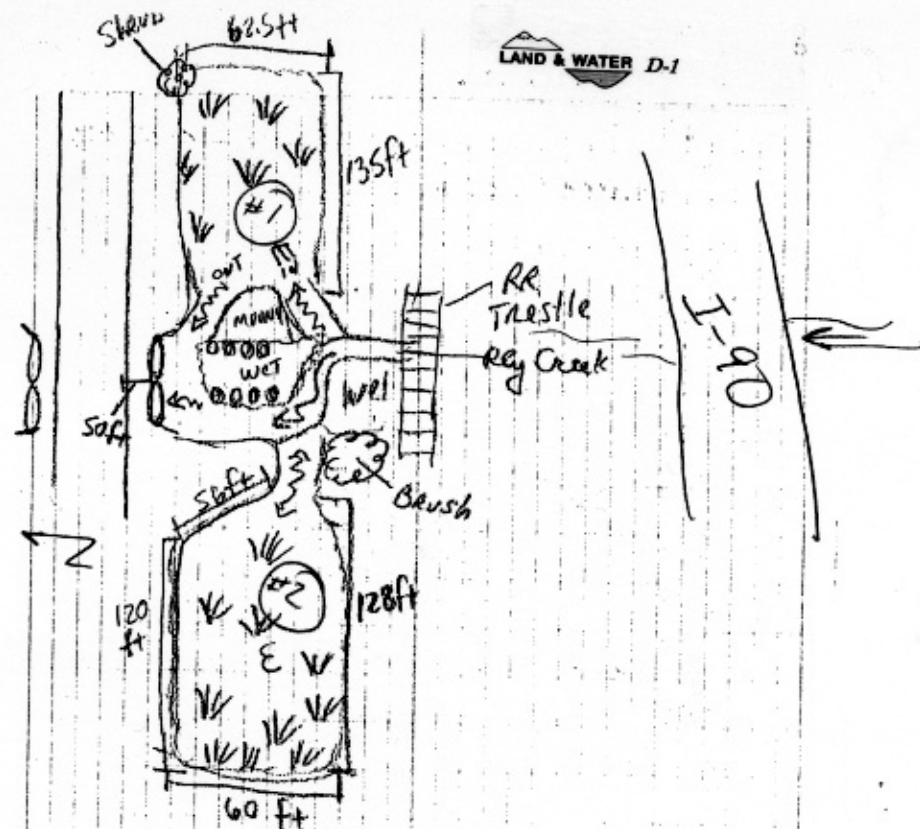
MDT Wetland Mitigation Monitoring

Rey Creek

Three Forks, Montana

POST INSTRUCTION

- Visited on 10/28/99 approximately 1 1/2 months after completion of project.
- Mitigation for impacts associated with replacement of timber bridge over Rey Creek with Twin galvanized culverts.
- Mitigation occurred in areas of excavation within an abandoned railroad grade to the south of the frontage road between I-90.
- Two impoundments were created on either side of Rey Creek with inlets to facilitate movement of high water flows into the created wetlands.
- Impoundment #1 situated to the East of Rey Creek is approximately 8,438 sq ft in size and contains an inlet and outlet.
- Impoundment #2 is situated to the west of Rey Creek, has a single inlet and is approximately 7,680 sq ft in size.
- wetland vegetation was salvaged from existing wetlands and utilized in both of the completed excavated wetland areas.

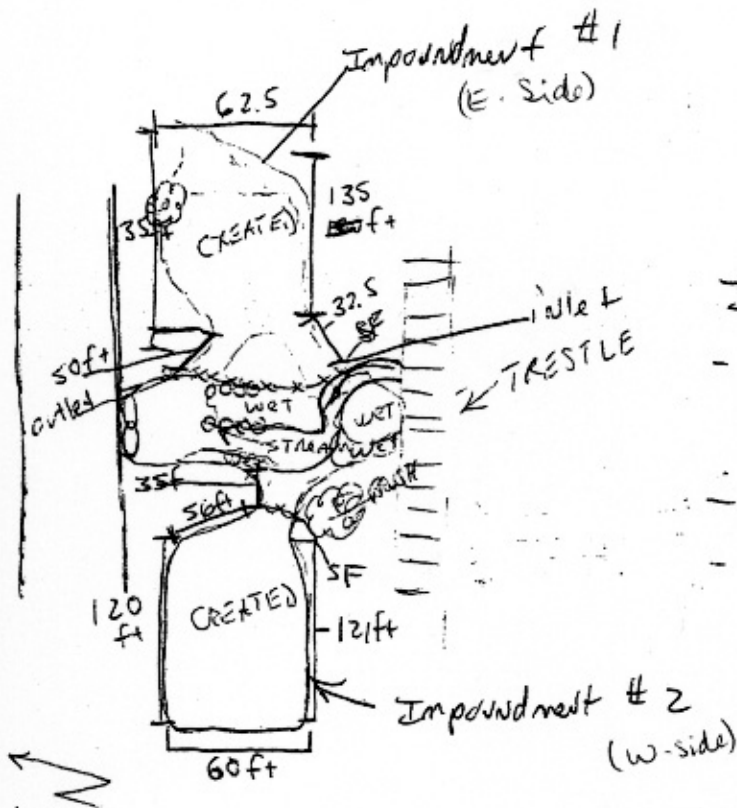


Problems observed:

- Both inlets to each wetland were constructed on an outside bend of Rey Creek which could potentially lead to capture of stream. Each inlet should be hardened with a rip-rap to prevent capture of stream.

h. lens observed:

- Why only an inlet on the wetland to the west of Key Creek? —?
- There is some concern that project impacted more wetlands than necessary as culvert on south side of road extends 50 feet from edge of pavement. Slopes and fill into wetland was it really necessary? Why wasn't graded rail considered?
- Wetlands Eng. ween should be contacted for advice during construction and finalization of wetland projects.



- Impoundment #1 - standing water
- Area has been revegetated with wetland plants + soils
 - has an inlet and an outlet
 - concern about capture of stream in inlet area - recommended hardening of inlet with large rip-rap #2 or 3
 - island in interior needs to be seeded and/or brought down to a lower elevation

Impoundment #2

- west of stream channel
- inlet area needs to be hardened or vegetated quickly
- concern about outside bend of stream being captured by inlet
- Area has been revegetated with salvaged vegetation + soils
- concern that project impacted more wetlands than necessary - end of culvert abutment 50 feet from edge of pavement Why??
- Recommend that Wetlands Engineer be involved in future construction of this nature
- Substantial fill placed into north side wetlands needed

Appendix E

BIRD SURVEY PROTOCOL GPS PROTOCOL

*MDT Wetland Mitigation Monitoring
Rey Creek
Three Forks, 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.