MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2002

Lame Deer - East Mitigation Site
Lame Deer, Montana

Prepared for:

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

Prepared by:

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

March 2003

Project No: 130091.040

LAND & WATER

MONTANA DEPARTMENT OF TRANSPORTATION

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1.0 INTRODUCTION

This annual report summarizes methods and results from the first year (2002) of monitoring for the Montana Department of Transportation's (MDT) Lame Deer - East mitigation site. The Lame Deer - East wetlands, located in Watershed #4 of the Glendive District, were constructed to mitigate in part for the 2.5 acres of wetland impact to the Alderson Creek corridor during the Hwy. 212 reconstruction project. The monitoring site is located in Rosebud County within the town of Lame Deer, Section 34, Township 2 South, Range 41 East **(Figure 1)**. There are three (3) mitigation sites within this area: the Lame Deer – East site is adjacent to a school in the center of town and is often referred to as the "school mitigation or reserve site"; and two recreated wetlands are located along Highway 212, Wetland 369 and Wetland 380 (the numbers correlate with MDT project stations). Elevations of all three mitigation sites range from 3,250 to 4,337 feet above sea level.

The Lame Deer - East monitoring site wetland (school mitigation site) was constructed in July/August 2001 within the historic floodplain of Lame Deer Creek; fill was historically placed within the current mitigation site to create a ball field for the school **(Figure 2, Appendix A)**. The fill was removed to create and restore wetlands in the area; the intent was to create 1.23 acres and restore 0.56 acres for a total of 1.79 acres. The wetland is bisected by a sewer line that was in place prior to the wetland construction; fill removed from the constructed wetland areas was placed on top of the sewer line to create a thermal barrier (Martin 2001) and, in effect, an access trail to the creek. The area represented by the sewer line/trail system represents approximately 0.1 acre, which adjusts the intended size of the mitigation wetland to 1.68 acres. The resulting areas within the bisected wetland are referred to as the north and south cell in this report. Because of the bisected characteristic of the wetland, the north cell was not assessed during 2002.

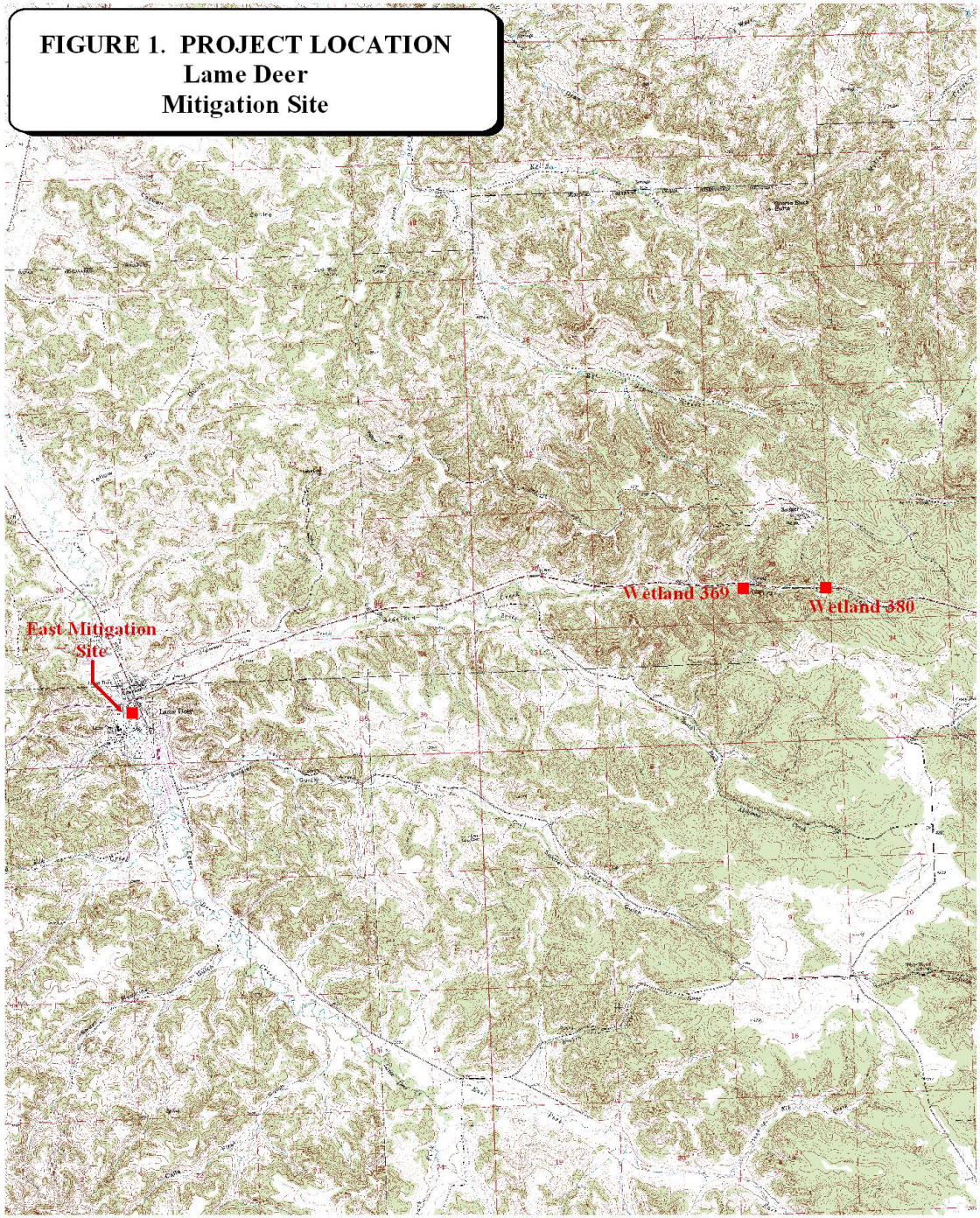
The two recreated wetlands along Hwy. 212 are adjacent to Alderson Creek: Wetland 369 is approximately 4.75 miles from the intersection of Hwy. 39 and 212 in Lame Deer (station numbers increase in an easterly direction from Lame Deer), and Wetland 380 is 5.5 miles from the intersection. The intent of these mitigation efforts was to recreate approximately 1.5 acres of wetland (Harris 1999, on file at MDT) site plans are included in **Appendix F**. The recreated wetlands were photographed to monitor wetland development and the wetland acreage was estimated using off-site methods **(Figure 3, Appendix F)**.

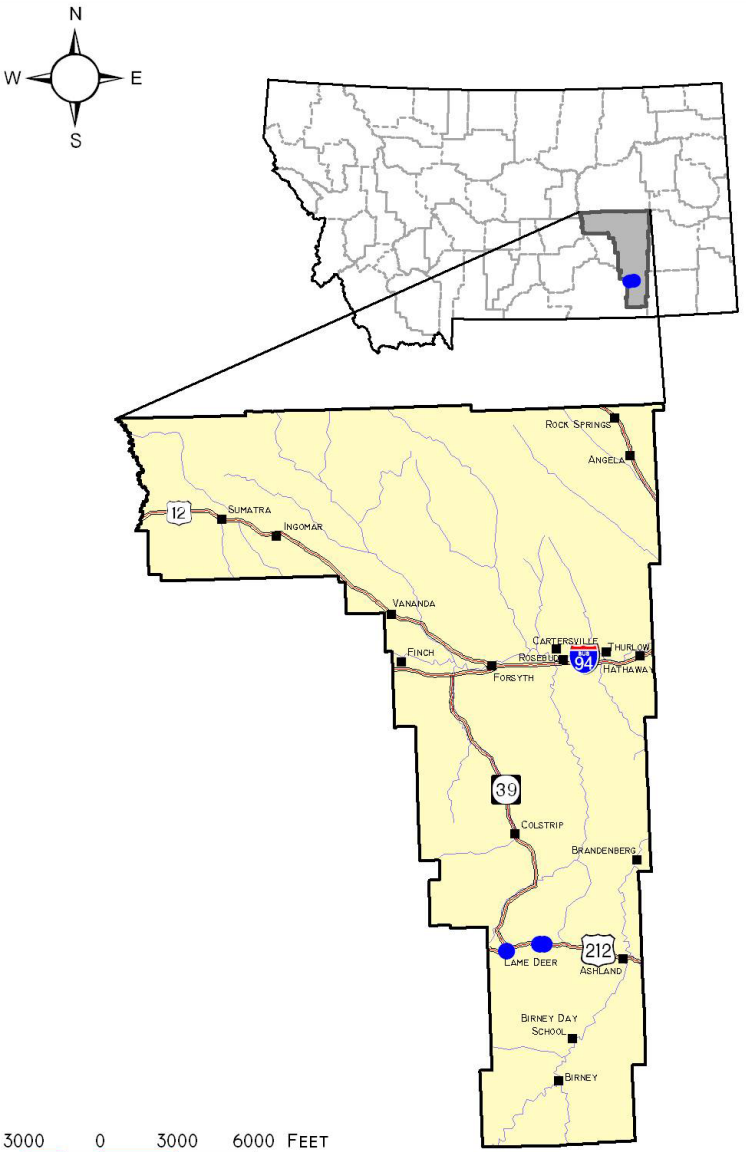
2.0 METHODS

2.1 Monitoring Dates and Activities

The Lame Deer - East wetland (school mitigation site) was monitored on July 18, 2002; photographs were taken of the north cell on August 8. All information contained within the Wetland Mitigation Site Monitoring Form **(Appendix B)** was collected at this time.

FIGURE 1. PROJECT LOCATION
Lame Deer
Mitigation Site





PROJECT #: 130091.040
DATE: Dec 2002
LOCATION:
PROJECT MANAGER: J. Berglund
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 data; vegetation community mapping; vegetation transects; soils data; hydrology data; bird and general wildlife use; photograph points; GPS data points; functional assessment; and, maintenance assessment of any inflow/outflow structures (non-engineering).

Photographs were taken and aerial photo reference points were recorded at the recreated Hwy. 212 wetlands during the same monitoring event. Per MDT instruction, no other data were collected at these two sites during 2002.

2.2 Hydrology

Wetland hydrology indicators were recorded using procedures outlined in the US Army Corps' (COE) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on the Routine Wetland Delineation Data Form **(Appendix B)** at each wetland determination point. Precipitation data for the year 2002 were compared to the 1944-2001 average (WRCC 2002).

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

2.3 Vegetation

General vegetation types were delineated on an aerial photograph during the site visit (**Figure 3, Appendix A)**. Coverage of the dominant species in each community type is listed on the monitoring form **(Appendix B)**. A comprehensive plant species list for the entire site was compiled and will be updated as new species are encountered. Observations from past years will be compared with new data to document vegetation changes over time. Woody species were planted at the school mitigation site and are listed on the monitoring form.

The location of the transect is shown on **Figure 2, Appendix A**. Percent cover for each species was recorded on the vegetation transect form **(Appendix B)**. Transect ends were marked with metal fence posts and their locations recorded on the vegetation map. Photos of the transect were taken from both ends during the site visit.

2.4 Soils

Soils were evaluated during the site visit according to the procedure outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Form **(Appendix B)**.

2.5 Wetland Delineation

A wetland delineation was conducted within the assessment area according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The

indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: North Plains Region 4 (Reed 1988). The information was recorded on the COE Routine Wetland Delineation Forms **(Appendix B)**. The wetland/upland and open water boundaries were used to calculate the wetland area **(Figure 3, Appendix A)**.

The wetland acreage of wetlands 369 and 380 was estimated by off-site methods, as MDT requested this information subsequent to the field visit. Geo-referenced aerial photos and onsite photographs taken during the summer of 2002 were used to estimate the wetland boundary **(Figure 2, Appendix F**). The wetland area was computed by using AutoCAD Land Development program **(Figure 3, Appendix F)**.

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.

2.8 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

2.9 Functional Assessment

A functional assessment form was completed in 2002 for mitigation monitoring site using the 1999 MDT Montana Wetland Assessment Method. Field data necessary for this assessment were collected on a condensed data sheet included in the mitigation site monitoring form. The remainder of the assessment was completed in the office **(Appendix B)**.

2.10 Photographs

Photographs were taken showing the current land use surrounding the mitigation monitoring site, the wetland buffer, the monitored area, and the vegetation transect **(Appendix C)**. A description and compass direction for each photograph were recorded on the wetland monitoring form. During the 2002 monitoring season, each photo-point was marked on the ground with a wooden stake and the location recorded with a resource grade GPS. The approximate locations are shown on **Figure 2, Appendix A**.

Photographs were also taken of the recreated wetlands east of Lame Deer along Hwy. 212 **(Appendix F)**; aerial photographs and photo logs of the recreated wetlands are also included in **Appendix F**. All on-site photographs were taken using a 50 mm lens.

2.11 GPS Data

During the 2002 monitoring season, survey points were collected at the monitoring site using a resource grade Trimble, Geoexplorer III hand-held GPS unit **(Appendix E)**. Points collected at the school site included: the vegetation transect beginning and ending locations; photograph locations; and the jurisdictional wetland boundary. In addition, survey points were collected at several landmarks recognizable on the air photo for purposes of line fitting to the topography. At wetlands 369 and 380, photo reference points and photo location data were also collected using GPS.

2.12 Maintenance Needs

No bird boxes or were located within this site. The inflow structure was checked for obstructions.

3.0 RESULTS

3.1 Hydrology

The Lame Deer - East mitigation monitoring site was constructed in July/August 2001 to be a 1 to 1.5-acre wetland within the floodplain of Lame Deer Creek. The hydrologic source of the mitigation wetland is primarily ground and stormwater and secondarily overbank flows from Lame Deer Creek. Stormwater enters the southwest corner of the south cell through an up-gradient culvert under the access road. The north and south cells were created when fill from the wetland construction was placed over the sanitary sewer line to protect it from damage; the sewer line and fill effectively create the two cells.

During the July 18, 2002 visit, the site had no standing water but it was evident that small pools had formed after recent rain events. Groundwater was within 6-12 inches of the ground surface within the south cell. The north cell has no substantial source of surface hydrology and, given the vegetation communities (see **Section 3.2** Vegetation), it is doubtful that groundwater reaches the root zone. The north cell will be investigated in 2003.

Wetlands 369 and 380 were constructed along Alderson Creek. Water from the stream has access to a shallow excavated area in both wetlands **(Appendix F)**.

Precipitation data for the Busby station indicate that the yearly average (1944-2001) is 14.2 inches (WRCC 2002); through the month of July the average precipitation was 9.32 inches. (Note: There is a weather station in Lame Deer, however data have not been available since 1998.) During 2002, precipitation through the month of July was 7.65 inches or 82% of the

average. A drought has been in effect for four years in Eastern Montana, which may explain the low precipitation levels for 2002 through the month of July.

3.2 Vegetation

Vegetation species identified within the south cell of the monitoring site are presented in **Table 1** and in the monitoring form **(Appendix B)**. Four (4) vegetation communities are mapped on the mitigation area map (**Figure 3, Appendix A**). The communities are similar in composition but differ in percent cover. The communities include: Type 1, *Scirpus* spp.; Type 2, *Hordeum jubatum;* Type 3, *Salix exigua;* and, Type 4, Upland (Undeveloped Wetland). The Type 4 community was classified as upland because of the lack of hydric soil characteristics and non-hydrophytic or unknown indicator status of the vegetation in that community. The site is less than 1 year old; hydric soil and a hydrophytic plant community will likely develop over time under saturated conditions. Dominant species within each community are listed on the monitoring form **(Appendix B)**. The vegetation transect results are detailed in the monitoring form **(Appendix B)** and are summarized below.

Table 1: ***2002 Lame Deer - East School Mitigation Site Vegetation Species List***

Scientific Name	Common Name	Indicator Status
Agropyron spp.	wheatgrass	FAC-FACU
Chenopodium hybridum	goosefoot	*
Carex spp.	sedge	(FACW-OBL)
Equisetum hyemale	rough horsetail	FACW
Glyceria elata	tall manna grass	* (OBL in Region 9)
Hordeum jubatum	barley fox-tail	FACW
Juncus bufonius	toad rush	OBL
Lactuca serriola	prickly lettuce	FACU
Melilotus officinalis	yellow sweetclover	FACU-
Rumex crispus	curly dock	FACW
Salix exigua (planted)	sandbar willow	FACW+
Scirpus acutus	hard-stem bulrush	OBL
Scirpus pungens	three-square bulrush	OBL
Trifolium spp.	clover	(varies)
Typha latifolia	broad-leaf cattail	OBL

* Not included in the Wetland Indicator manual; NI-No Indicator; insufficient data according to the manual.

Transect 1 Start	Wetland Type 1 (45')	Upland Type 4 (99')	WL/UPL Type 3/4 (48')	Wetland Type 3 (15')	Total 207'	End Transect 1

3.3 Soils

The site was mapped as part of the Rosebud County Soil Survey. The soil series on the mitigation site is Straw-Canburn complex (Map Unit 172). The Straw component is a non-hydric well drained loam and the Canburn is a hydric very poorly drained loam. The dominant parent material in both components is alluvium with infrequent flooding of the Straw component and frequent flooding of the Canburn component.

Soils were sampled at one wetland location (SP-1) and one upland (SP-2). Soils at SP-1 were a dark olive brown (2.5Y 3/3 & 4/4) clay sand from 0-3 inches. From 3-10 inches the soil was a black sandy clay (2.5Y 4/1) with yellowish red (5YR 4/6) mottles (20%). From 10-18 inches the soil was a grayish and light olive brown (2.5Y 5/2 & 5/3) sandy clay with yellowish red (5yr 4/6) mottles (50%). Soils at SP-2 were a sandy dark grayish brown (2.5Y 4/2) from 0-18 inches; at 8 inches gravels (<1" diam.) and cobbles (4" diam.) entered the profile. Water was seeping into the pit at the gravel level. No mottles or other hydric soil indicators were observed in the SP-2 low-chroma soil profile and therefore did not qualify as hydric soil. Hydric characteristics will likely develop over time under a saturated regime.

3.4 Wetland Delineation

The delineated wetland boundary is depicted on **Figure 3, Appendix A**. The delineation resulted in 0.15 acre of wetland within the basin of the south cell. Most of the basin did not qualify as wetland because of the lack of or absence of hydric soil indicators or hydrophytic vegetation. Surface water was not present but there was recent evidence of stormwater accumulation in the lowest areas. Groundwater appeared to be within 1 foot of the ground surface within most of the constructed wetland basin. The COE data forms are included in **Appendix B;** 1999 data forms for a larger area are included in **Appendix D**.

The estimated wetland acreages for the recreated wetlands along Hwy. 212 were 0.69 acre at Wetland 369 and 0.29 acre for Wetland 380 for a total of 0.98 acre **(Figure 3, Appendix F)**. Open water was not estimated but likely represents greater than 95% of the total acreage; the open water depth appears shallow and less than 1 to 2 feet deep in both wetlands. The ponded areas appear to be operating at full-pool because the streams were freely flowing into and out of the open water areas. The grand total wetland acreage in the Lame Deer-East area is 1.13 acres.

3.5 Wildlife

Wildlife species are listed in **Table 2;** no signs were observed although several species of birds and mammals were noted during the 1999 survey (Harris 1999). No bird boxes have been installed at this site.

Table 2. ***Fish and Wildlife Species Observed at the Lame Deer - East Mitigation Site 2002***

BIRDS
Common Yellowthroat *(Geothlypis trichas)*
MAMMALS
none

3.6 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

3.7 Functional Assessment

Completed functional assessment forms for the school monitoring site are included in **Appendix B** and summarized below in **Table 3**. The 1999 functional assessment is not directly comparable because the AA included 20-30 acres of floodplain on the north and south sides of Hwy. 212. The assessment does provide valuable information regarding the baseline characteristics of floodplain wetlands in that area; the general wetland floodplain rated as a Category III wetland in 1999 (Harris 1999, **Appendix D**).

The mitigation monitoring site scored as a Category III wetland primarily as a result of a high rating in the groundwater discharge parameter and moderate ratings for sediment removal and water storage variables. Per MDT instruction, functional assessment was not conducted at either of the recreated wetland sites (Wetlands 369 and 380) east of Lame Deer.

Table 3: ***Summary of 2002 Wetland Function/Value Ratings and Functional Points at the Lame Deer - East Wetland Mitigation Project***

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	1999	2002
Listed/Proposed T&E Species Habitat	Low (.3)	Low (0)
MNHP Species Habitat	Low (0)	Low (0)
General Wildlife Habitat	High (.7)	Moderate (.5)
General Fish/Aquatic Habitat	NA	NA
Flood Attenuation	Moderate (.4)[1]	Low (.2)
Short and Long Term Surface Water Storage	-	Moderate (.6)
Sediment, Nutrient, Toxicant Removal	High (1)	Moderate (.7)
Sediment/Shoreline Stabilization	Moderate (.7)	NA
Production Export/Food Chain Support	High (.8)	Moderate (.5)
Groundwater Discharge/Recharge	NA	High (1)
Uniqueness	Moderate (.5)	Low (.3)
Recreation/Education Potential	Moderate (.5)	Low (.1)
Actual Points/Possible Points	4.9/9	39/10
% of Possible Score Achieved	54%	39%
Overall Category	III	III
Total Acreage of Assessed Wetlands within Monitoring Area	20-30	0.15
Total Functional Units (acreage x actual points)	-	0.58
Net Acreage Gain ("new" wetlands)	-	0.15
Net Functional Unit Gain (new acreage x actual points)	-	0.58

[1] flood attenuation and short and long term storage were combined as one variable on the 1999 form.

3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix C.** Photos of the recreated wetlands along Hwy. 212 are included in **Appendix F.**

3.9 Maintenance Needs/Recommendations

The stormwater inlet culvert in the southwest corner of the south cell was in working order and requires no maintenance. However, the sewer line that bisects the wetland effectively creates two separate and somewhat disconnected cells. The line is essentially a berm which will slow the movement of stormwater from the south to the north cells unless the storm event is large enough to fill the south cell basin. Floodwater would have access to the north cell around the east and west ends of the berm. Groundwater flow is not inhibited by the sewer line.

3.10 Current Credit Summary

Wetlands impacted during the Lame Deer – East project totaled 2.5 acres (Harris, 1999). The intended size of the school mitigation site wetland was 1.68 acres. The site is bisected by a sewer line which has effectively created a north and south cell within the AA.

The school mitigation site wetland was constructed in July/August 2001 and is in the initial stages of developing hydric characteristics. The south cell had developed 0.15 acre of wetlands as of July of 2002. The north cell was not investigated during 2002; a transect will be extended through the north cell during the 2003 field season. Acreage of the Wetlands 369 and 380 was estimated at a total of 0.98 acre. The total wetland mitigation acreage for the three sites within Lame Deer area as of July 2002 was approximately 1.13 acres.

The Lame Deer - East mitigation wetland is rated as a Category III wetland primarily as a result high rating in the ground water discharge and moderate ratings for sediment removal and water storage variables.

4.0 REFERENCES

Bell, D. 2000. Letter of Communication, Carter-Burgess.

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Harris, R. 1999. *Biological Resources Report and Wetland Finding MDT's Lame Deer-East and East of Lame Deer-East Projects*, Turnstone Biological.

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Montana Department of Transportation, 2001. Site Plans Recreated Wetlands 369+00 and 380+00.

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

Sickerson, L. 2002. Wetland Mitigation Specialist, Montana Department of Transportation. Helena, MT. December 2002 E-mail Correspondences.

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

Western Regional Climate Center, 2002. Busby, MT Station: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?mtbusb.

Appendix A

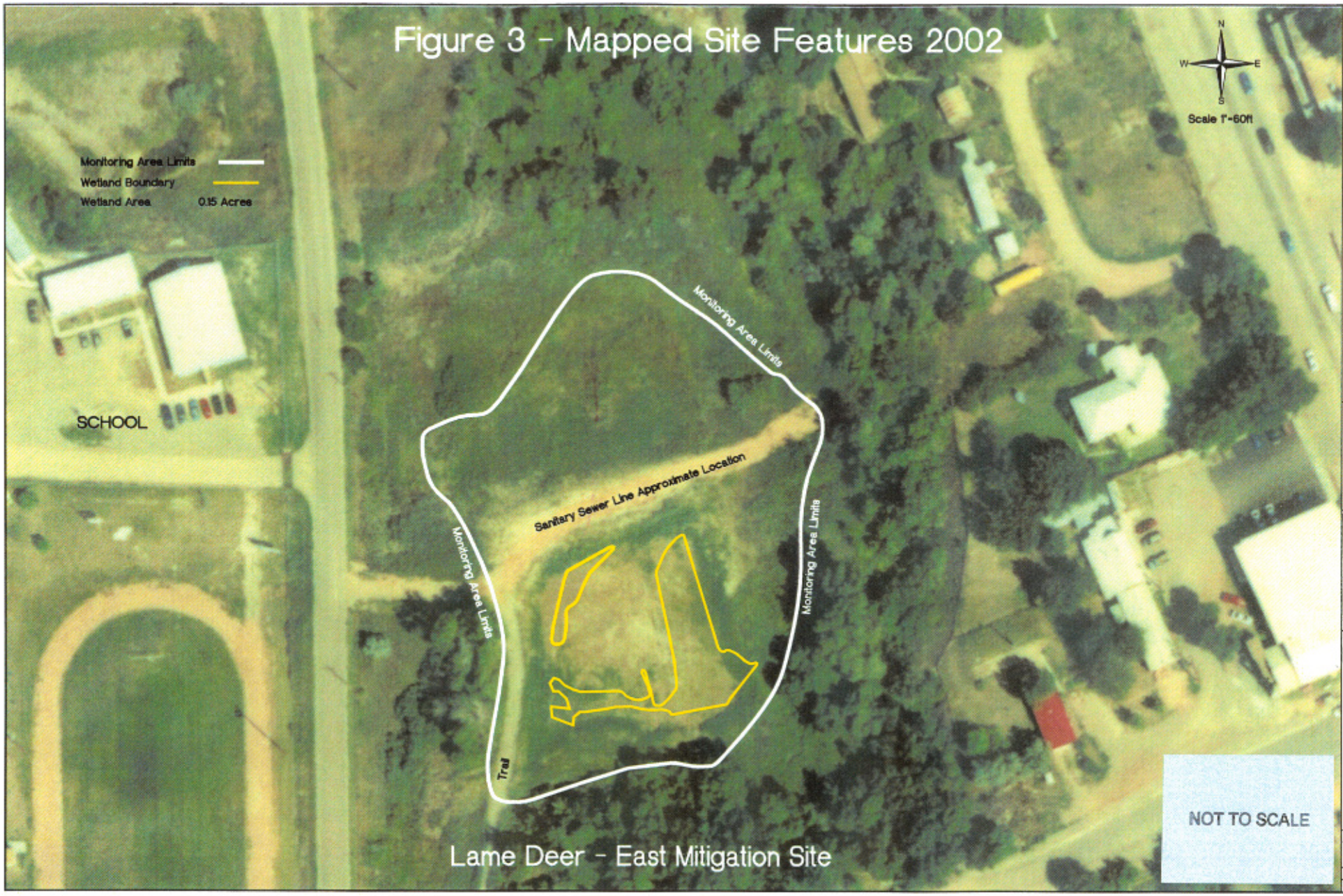
FIGURES 2 – 3
LAME DEER – EAST (SCHOOL MITIGATION SITE)

MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana

LAND & WATER


Figure 2 - Monitoring Activity Locations 2002
Monitoring Area Limits
Vegetation Transect
Aerial Reference Point
Photo Point
Soil Sample
N
W
E
S
Scale 1"=60ft
SCHOOL
Monitoring Area Limits
Sanitary Sewer Line Approximate Location
PP-I,J
PP-K,L
End
PP-H
PP-A,B,C,D,E
SS-2
SS-1
Begin
Trail
PP-F,G
NOT TO SCALE
Lame Deer - East Mitigation Site
PROJECT NAME
MDT Lame Deer - East Mitigation Site
DRAWING TITLE
Monitoring Activity Locations 2002
DRAWN: RAA
CHECKED: LB
APPVD: JB
PROJ MGR: J.Bergland
PROJ NO: 130091T40
FILE NAME: TASK40BASE2002
SCALE: 1"=60ft
LOCATION: Lame Deer
LAND & WATER CONSULTING, INC.
SHEET NUMBER
F2
REV -
DATE: 1-02-03

Figure 3 - Mapped Site Features 2002



Lame Deer - East Mitigation Site

PROJECT NAME: MDT Lame Deer - East Mitigation Site

DRAWING TITLE: Mapped Site Features 2002

PROJ NO.: 1300911(40)
FILE NAME: TASK40BASE2002
SCALE: 1"=60ft
LOCATION: Lame Deer

DRAWN: RAA
CHECKED: LB
APPVD: JB
PROJ MGR: J.Bergland

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

SHEET NUMBER: F3.0
REV: -
DATE: 1-02-03

Appendix B

COMPLETED 2002 WETLAND MITIGATION SITE MONITORING FORM
COMPLETED 2002 BIRD SURVEY FORMS
COMPLETED 2002WETLAND DELINEATION FORMS
COMPLETED 2002 FIELD AND FULL FUNCTIONAL ASSESSMENT FORMS

MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana

LAND & WATER

LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Lame Deer Project Number: 130091-040 Assessment Date: 7 / 18 / 02
Location: Lame Deer MDT District: #4 Glendive Milepost:
Legal description: T 2 S R 41 E Section 34 Time of Day: 8AM-2PM
Weather Conditions: clear Person(s) conducting the assessment: LB/LWC
Initial Evaluation Date: 7 / 23 / 02 Visit #: 1 Monitoring Year: 2002
Size of evaluation area: <1 AC acres Land use surrounding wetland: transportation corridors; school

HYDROLOGY

Surface Water Source: stormwater and groundwater
Inundation: Present Absent X Average depths: ft Range of depths: ft
Assessment area under inundation: %
Depth at emergent vegetation-open water boundary: 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.): water lines evident from stormwater inflow

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.)
- GPS survey groundwater monitoring wells locations if present

COMMENTS/PROBLEMS: Investigation conducted on south cell only, only photographs were taken of north cell.

VEGETATION COMMUNITIES

Community No.:__1__ Community Title (main species):__*Scirpus* spp.__

Dominant Species	% Cover	Dominant Species	% Cover
SCIACU/SCIPUN	70	CAREX spp.	<1
(mud)	(3%)		
HORJUB	<2%		
CHEHYB	<1		
GLYELA	<1		
JUNBUF	<1		

COMMENTS/PROBLEMS: _developing wetland community___________________________________

Community No.:_2___ Community Title (main species):__*Hordeum jubatum*____________

Dominant Species	% Cover	Dominant Species	% Cover
CHEHYB	<1	(MUD)	(30%)
GLYELA	10		
HORJUB	60		
JUNBUF	<1		
SCIACU/SCIPUN	<1		

COMMENTS/PROBLEMS: ____

Community No.:_3___ Community Title (main species):__*Salix exigua*___________

Dominant Species	% Cover	Dominant Species	% Cover
CAREX spp.	<10	SALEXI	30
GLYELA	<10	SCIACU/SCIPUN	<10
HORJUB	<10	TYPLAT	<10
JUNBUF	<10	(MUD)	(50%)
LACSER	<10		

COMMENTS/PROBLEMS: Wetland community is developing; this CT was near the stormwater inlet and had highest diversity and percent cover.

Additional Activities Checklist:

_X___Record and map vegetative communities on air photo

VEGETATION COMMUNITIES (continued)

Community No.:_4___ Community Title (main species): Upland (Undeveloped Wetland)_____

Dominant Species	% Cover	Dominant Species	% Cover
(MUD)	(65%)	GLYELA	<5
SALEXI	10	TRIFOLIUM spp.	10
LACSER	<5		
CHEHYB	<5		
JUNBUF	<5		

COMMENTS/PROBLEMS: _____

Community No.:_____ Community Title (main species):_____

Dominant Species	% Cover	Dominant Species	% Cover

COMMENTS/PROBLEMS:

Community No.:_____ Community Title (main species):_____

Dominant Species	% Cover	Dominant Species	% Cover

COMMENTS/PROBLEMS:

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
Agropyron spp.	1		
Chenopodium hybridium	1, 2, 4		
Carex spp.	1, 3		
Equisetum hyemale	4		
Glyceria elata	1, 2, 3, 4		
Hordeum jubatum	1, 2, 3, 4		
Juncus bufoius	1, 2, 3, 4		
Lactuca serriola	3, 4		
Rumex crispus	1		
Melilotis officinale	4		
Salix exigua (planted)	3, 4		
Scirpus acutus	1, 2, 3		
Scirpus pungens	1, 2, 3		
Trifolium spp.	4		
Typha latifolia	3		

COMMENTS/PROBLEMS:

PLANTED WOODY VEGETATION SURVIVAL

Species	Number Originally Planted	Number Observed	Mortality Causes
Salix exigua (inside wetland)	?	250	
Ribes spp. (outside wetland)	?	13	
Prunus virginiana (outside wetland)	?	7	
indeterminate shrub	-	8	

COMMENTS/PROBLEMS: _____Unknown how many were planted of each species. A bundle of willows was found laying on the ground at time of investigation; investigator (LB) planted most of them. __________

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
deer		X			

Additional Activities Checklist:

__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:

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

Location	Photo Frame #	Photograph Description	Compass Reading
A	10A	south cell wetland view, border	170
B	11A	south cell wetland view, center	130
C	12A	south cell wetland view, border	76
D	14A	across dike from south cell toward school	290
E	13A	across dike from south cell toward north cell	17
F		(retake 2003)	
G	17A	south cell, beginning of transect	130
H	16A	south cell, end of transect	210
I	1	north cell view from central dike toward 212 stop sign	16
J	2	north cell view toward creek	314
K	3	north cell, vegetation along north side of dike	44
L	4	north cell, vegetation east of road and north of dike	18

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:

__X___ Jurisdictional wetland boundary **SOUTH CELL ONLY 2002**
__X___ 4-6 landmarks recognizable on the air photo
_ X___ Start and end points of vegetation transect(s)
__X___ Photo reference points
__NA__ Groundwater monitoring well locations

COMMENTS/PROBLEMS:

WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:
__X___Delineate wetlands according to the 1987 Army Corps manual.
__X___ Delineate wetland-upland boundary on the air photo
__X__ Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: Only the South Cell was delineated in 2002.

FUNCTIONAL ASSESSMENT

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

COMMENTS/PROBLEMS: FA done on south cell only for 2002.

MAINTENANCE

Were man-made nesting structures installed at this site? YES____ NO __X __
If yes, do they need to be repaired? YES____ NO____
If yes, describe problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures build or installed to impound water or control water flow into or out of the wetland? YES__(X)___ NO____
If yes, are the structures working properly and in good working order? YES _*see below*_ NO_____
If no, describe the problems below.

COMMENTS/PROBLEMS: ____Dike (= "trail") has been constructed on north side of the South Cell, this construction was done by locals. Stormwater flowing into the South Cell will not enter the North Cell unless a culvert is installed through the dike and thus the likelihood of the North Cell developing into a wetland may be minimal.

MDT WETLAND MONITORING – VEGETATION TRANSECT

LAND & WATER *B-9*

Site: Lame Deer Date: 7/18/02 Examiner: LB/LWC Transect # 1

Approx. transect length: 45 deg (SW to NE) Compass Direction from Start (G): 207 ft

Vegetation type A:	CT 1
Length of transect in this type:	45' feet
Species:	Cover:
HORJUB	10
TRIFOLIUM spp.	5
GLYELA	10
CHEHYB/	5
LACTSER	5
AGROPYRON spp.	1
(mud)	(50)
Total Vegetative Cover:	<50%

Vegetation type B:	CT 4
Length of transect in this type:	99' feet
Species:	Cover:
SALEXI	10
SERLAC	10
TRIFOLIUM spp.	10
JUNBUF	<5
GLYELA	<5
CHEHYB	<5
(mud)	(65)
Total Vegetative Cover:	35%

Vegetation type C:	CT 3/4 mixed
Length of transect in this type:	48 feet
Species:	Cover:
SALEXI	<5
SERLAC	25
TRIFOLIUM spp.	25
JUNBUF	<1
EQUARV	<1
CHEHYB	25
HORJUB	negl.
(mud)	(20)
Total Vegetative Cover:	80%

Vegetation type D:	CT 3
Length of transect in this type:	48 feet
Species:	Cover:
HORJUB	<5
SERLAC	25
TRIFOLIUM spp.	35
JUNBUF	<1
CHEHYB	25
(mud)	(15)
Total Vegetative Cover:	95%

Cover Estimate		**Indicator Class:**	**Source:**
+ = <1%	3 = 11-20%	+ = Obligate	P = Planted
1 = 1-5%	4 = 21-50%	- = Facultative/Wet	V = Volunteer
2 = 6-10%	5 = >50%	0 = Facultative	

Percent of perimeter 11-20% (3) % developing wetland vegetation – excluding dam/berm structures.

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

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

Most of the South Cell has not had sufficient time to develop into a wetland, although hydrophytic vegetation was observed in scattered, sparse groups, particularly in the lowest elevation areas.

BIRD SURVEY – FIELD DATA SHEET

Page 1 of 1
Date: 7/4/02
Survey Time: 11AM

SITE: Lame Deer

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Common Yellowthroat	1	BD	Shrubs in adj. forest				

Notes:

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

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

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

Project/Site:	Lame Deer	Date:	7/18/02
Applicant/Owner:	MDT	County:	Rosebud
Investigator:	LB/LWC	State:	MT

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: Developing WL
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID: 1
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: SP-1
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	SALEXI	S	FACW+	9			
2	SCIACU	H	OBL	10			
3	JUNBUF	H	OBL	11			
4	LACSER	H	FACU	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/4

Hydrophytic plant community developing; Salix are sprigged and < 1 year old.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 16 (in.)
- Depth to Saturated Soil: @ surface (in.)

Wetland Hydrology Indicators:

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

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

Remarks:

Area shows sign of stormwater inflow recently and groundwater also a source of hydrology.

SOILS

Map Unit Name (Series and Phase):	Straw-Canburn	Drainage Class:	
Taxonomy (Subgroup):	mixed Cumulic Haploborolls; frigid Cumulic Haploborolls	Field Observations Confirm Mapped Type?	X Yes ___ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3	B	2.5Y 3/3;2.5Y4/4			clay sand
3-10	B	2.5Y 4/1	5YR 4/6	20%	sandy clay
10-18	B	2.5Y 5/3;2.5Y 5/2	5YR 4/6	50%	sandy clay (sand at 16")

Hydric Soil Indicators:

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

Wetland was excavated down to clays and groundwater source.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X Yes ___ No		
Wetland Hydrology Present?	X Yes ___ No		
Hydric Soils Present?	X Yes ___ No	Is this Sampling Point Within a Wetland?	X Yes ___ No

Remarks:

Site has developed wetland vegetation and willow sprigs have been planted in the wetter regions (lowest elevation and near stormwater culvert).

Approved by HQUSACE 2/92

LAND & WATER B-14

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

Project/Site:	Lame Deer	Date:	7/18/02
Applicant/Owner:	MDT	County:	Rosebud
Investigator:	LB/LWC	State:	MT

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: Undeveloped WL
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID: 1
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: SP-2
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	CHEHYB	H	not in manual	9			
2	Unknown grass blades*	H	unk	10			
3	GLYELA	H	no status	11			
4	SCIACU	H	OBL	12			
5				13			
6				14			
7				15			
8				16			

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

Blue-green grass blades, may be HORJUB or AGRspp.; unknown.

Only one dominant vegetation species had a definitive WL status; area weak suggestion of wetland vegetation characteristics however not well developed and will not place in wetland category; area <5% vegetated.

HYDROLOGY

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

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 8 (in.)
- Depth to Saturated Soil: @surface (in.)

Wetland Hydrology Indicators:

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

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

Remarks:

Evidence of wetland hydrology present.

SOILS

Map Unit Name (Series and Phase):	Straw-Canburn	Drainage Class:	well; very poor (resp.)
Taxonomy (Subgroup):	mixed Cumulic Haploborolls; frigid Cumulic Haploborolls (resp.)	Field Observations Confirm Mapped Type?	X Yes ____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8	B	2.5Y 4/2			sand
8-18	C	2.5Y 4/2			<1"gravelly, cobbly (>4") sand

Hydric Soil Indicators:

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

No mottling was observed in 4/2 "low-chroma" layers. More hydric soil indicators will likely develop under the moisture regime noted (water coming into pit at level of gravels, 8").

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	____	Yes	X	No			
Wetland Hydrology Present?	X	Yes	____	No			
Hydric Soils Present?	____	Yes	X	No	Is this Sampling Point Within a Wetland?	____ Yes	X No

Remarks:

Border-line upland area; hydric indicators in hydrology only with a 'leaning' toward WL veg, however not enough FAC-OBL spp. and the soil does not classify as hydric.

Approved by HQUSACE 2/92

LAND & WATER B-16 on N and S Cells (only wl is in S cell)

Field Data Sheet for 1999 MDT Wetland Assessment Form Site: Lame Deer Date: 7/18/02 By: VB/LWC

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 Organic Soil Flats Riverine (nonperennial) Riverine (upper perennial) Riverine (lower perennial) Lacustrine Fringe Depression (closed) Depression (open, groundwater) Depression (open, surface water) Slope Organic Soil Flats	Emergent	10090	Perm Flood Int Exp Sem Perm Flood Seas Flood (Sat) Tem Flood (Int Flood)
	Aquatic Bed		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
	Moss-Lichen		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
	Scrub-Shrub		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
	Forested		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
	Unconsolidated Bottom		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
	Other:		Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood
	Total Estimated % Vegetated	70%	

RELATIVE ABUNDANCE: rare (com.) abun. **DISTURBANCE** is: High (Moderate) Low Trail through center

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

Longest duration of surface water:		Surface Water Duration and other attributes (circle)		
at any wetlands within AA		Perm / Peren	(Seas / Intermit)	Temp / Ephem
in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...]		Perm / Peren	Seas / Intermit	(Temp / Ephem)
Where fish are or historically were present (circle NA if not applicable)		Perm / Peren	Seas / Intermit	Temp / Ephem
	% of waterbody containing cover objects	>25%	10-25%	(<10%)
	% bank or shore with riparian or wetland shrub or forested communities	>75%	50-74%	(<50%)
adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave action (circle NA if not applicable) N cell		Perm / Peren	Seas / Intermit	(Temp / Ephem)
	% cover of wetland bank or shore by sp. with binding rootmasses	>65%	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	(<2)
Estimated % of flooded wetland classified SS, FO or both:	≥75	25-74	(<25)

*Evidence of groundwater discharge or recharge? (Y) N List: base of WL close to grd water; gravels beneath loam ~ 12"

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: Ø	D S	MNHP: Ø	
Incidental habitat (list species)	D S	T/E:	D S	MNHP:	
(No usable habitat)	D S	T/E:	D S	MNHP:	

Wildlife observations? Ø

Fish observations? Ø

Not a wl yet → N cell – Lame Deer creek flooding

OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? (Y) N From: Storm water culvert

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:

Is AA a known recreation / education site? Y (N) Type: Lame Deer creek adjacent to AA but not part

Does AA offer strong potential for use as recreation / education site? (Y) N Type: education once developed – WL education

LAND & WATER B-17 For Both N and S cells

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

1. Project Name: Lame Deer 2. Project #: 120091-040 Control #:

3. Evaluation Date: Mo. 7 Day 18 Yr. 02 4. Evaluator(s): JB/LWC 5. Wetlands/Site #(s)

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

III. Watershed: 10100003 GPS Reference No. (if applies):
Other Location Information:

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

8. Wetland size: (total acres) ___ (visually estimated) Scell GPSed
0.15 (measured, e.g. by GPS [if applies]) 0.15 within N cell

9. Assessment area: (AA, tot., ac., see instructions on determining AA) ___ (visually estimated)
0.15 (measured, e.g. by GPS [if applies])

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

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
Depressional (S cell)	Palustrine		Em	G, C, B, J	E	100%
Riverine (S cell) Floodplain - no wetlands in this area as of 2002						

(Abbreviations: System: Palustrine(P)/ Subsyst.: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO)/ System: Lacustrine (L)/ Subsyst.: Limnetic (2)/ Classes: RB, UB, AB/ Subsystem: Littoral (4)/ Classes: RB, UB, AB, US, EM/ System: Riverine (R)/ Subsyst.: Lower Perennial (2)/ Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3)/ Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

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

12. General condition of AA:
I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

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

Comments: (types of disturbance, intensity, season, etc.): trail through center of AA
II. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) thistle, Chenopodium, Yellow sweet clover
III. Provide brief descriptive summary of AA and surrounding land use/habitat: School across Lame Deer avenue

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

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

Comments: Sprigged willows in South cell

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	_____

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

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

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

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

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

Primary or critical habitat (**list species**)	D S	_____
Secondary habitat (**list species**)	D S	_____
Incidental habitat (**list species**)	D S	_____
No usable habitat	D S	_____

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

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

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

14C. General Wildlife Habitat Rating:

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

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

Low (based on any of the following [check]):
- ___ few or no wildlife observations during peak use periods
- ___ little to no wildlife sign
- ___ sparse adjacent upland food sources
- ___ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- ___ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ___ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☒ adequate adjacent upland food sources
- ☒ interviews with local biologists with knowledge of the AA Rob Harris Observations 1999

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

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

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

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

Comments:

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

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

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

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

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

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

Comments:

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

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

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

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with the evaluation.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments:

14H Sediment/Shoreline Stabilization: (applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If does not apply, circle NA here and proceed to next function) LAND & WATER B-20

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:

14K. Uniqueness:

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

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MNHP			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MNHP			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)
Moderate disturbance at AA (#12i)	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)
High disturbance at AA (#12i)	.8 (H)	.7 (M)	.6 (M)	.6 (M)	.4 (M)	.3 (L)	.3 (L)	.2 (L)	.1 (L)

Comments:

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

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

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

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

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

Comments: Not a potential yet for educ. study

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage) 0.15 AC
A. Listed/Proposed T&E Species Habitat	L	0	1	
B. MT Natural Heritage Program Species Habitat	L	0	1	
C. General Wildlife Habitat	m	.5	1	
D. General Fish/Aquatic Habitat	NA	-	-	
E. Flood Attenuation	L	.2	1	
F. Short and Long Term Surface Water Storage	m	.6	1	
G. Sediment/Nutrient/Toxicant Removal	m	.7	1	
H. Sediment/Shoreline Stabilization	NA	-	-	-
I. Production Export/Food Chain Support	m	.5	1	
J. Groundwater Discharge/Recharge	H	1	1	
K. Uniqueness	L	.3	1	
L. Recreation/Education Potential	L	.1	1	
Totals:		3.9	10	0.58

39%

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: SCHOOL MITIGATION SITE

MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana

LAND & WATER

Location: A **Photo Frame:** 10A **Description:** South cell wetland view, border **Compass Reading:** 170°

Location: B **Photo Frame:** 11A **Description:** South cell wetland view, center **Compass Reading:** 130°

Location: C **Photo Frame:** 12A **Description:** south cell wetland view, border **Compass Reading:** 76°

Location: D **Photo Frame:** 14A **Description:** Across dike from south cell toward school **Compass Reading:** 290°

Location: E **Photo Frame:** 13A **Description:** Across dike from south cell toward north cell **Compass Reading:** 17°

Location: F **Photo Frame:** **Description:** retake (2003) **Compass Reading:**

Location: G **Photo Frame:** 17A **Description:** South cell, beginning of transect **Compass Reading:** 130°

Location: H **Photo Frame:** 16A **Description:** South cell, end of transect **Compass Reading:** 210°

Location: I **Photo Frame:** 1 **Description:** North cell view from central dike toward 212 stop sign **Compass Reading:** 16°

Location: J **Photo Frame:** 2 **Description:** North cell view toward creek **Compass Reading:** 314°

Location: K **Photo Frame:** 3 **Description:** North cell, vegetation along north side of dike **Compass Reading:** 44°

Location: L **Photo Frame:** 4 **Description:** North cell, vegetation east of road and north of dike **Compass Reading:** 18°

Appendix D

1999 GRADING AND PLANTING PLANS, SCHOOL RESERVE MITIGATION SITE
MARTIN LETTER: SANITARY SEWER LINE
CARTER-BURGESS LETTER PERTAINING TO WETLAND MITIGATION ACREAGE
1999 LAME DEER – EAST (SCHOOL MITIGATION SITE) BASELINE FUNCTIONAL ASSESSMENT AND COE DATA FORM

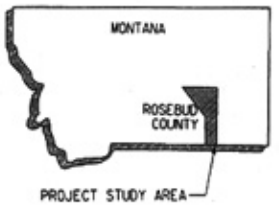
MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana

LAND & WATER

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH37-2(16)42, NH37-2(17)49	1

LAND & WATER D-1

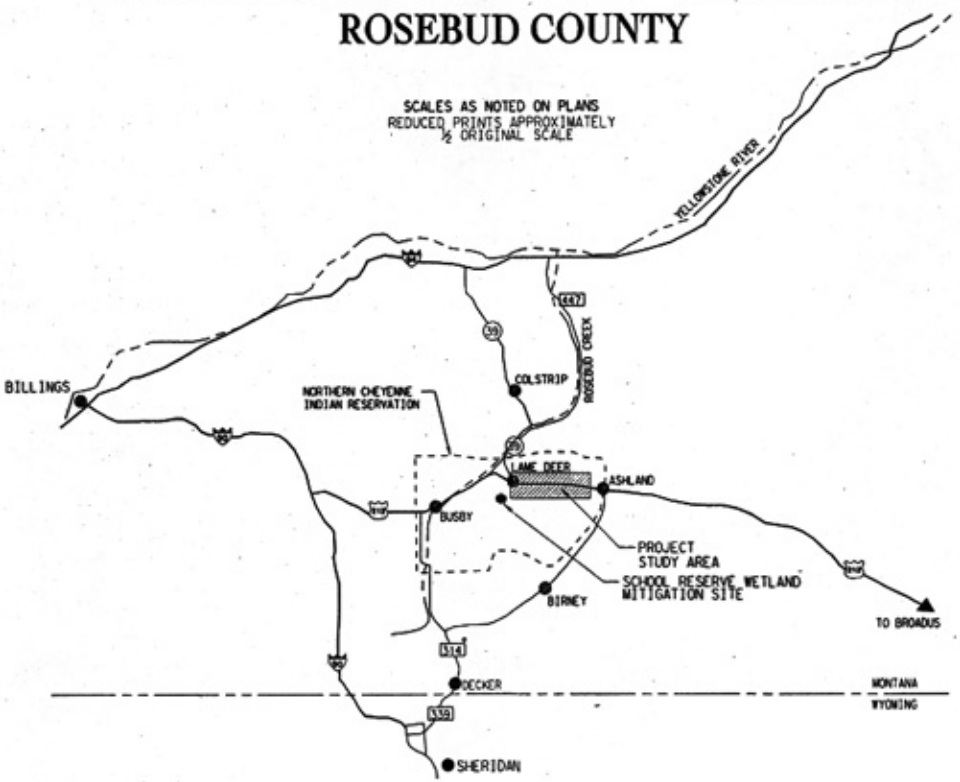
MONTANA DEPARTMENT OF TRANSPORTATION



FEDERAL AID PROJECT NO.NH37-2(16)42, NH37-2(17)49.
LAME DEER-EAST AND EAST OF LAME-DEER-EAST.
SCHOOL RESERVE WETLAND MITIGATION SITE
ROSEBUD COUNTY

SCALES AS NOTED ON PLANS
REDUCED PRINTS APPROXIMATELY
½ ORIGINAL SCALE

PRELIMINARY- FOR REVIEW
FINAL PLANS



PLANS PREPARED BY

Carter-Burgess
216 SIXTEENTH STREET MALL, SUITE 1700
DENVER, COLORADO 80202
(303) 820-5240

RELATED PROJECTS

LAME DEER-EAST AND EAST OF LAME DEER-EAST ROAD IMPROVEMENTS.
RP(MP) 42.1 TO 54.3

MONTANA
DEPARTMENT OF TRANSPORTATION

APPROVED:
_____ 19 ____
MARVIN DYE
DIRECTOR OF TRANSPORTATION
BY_____
PRECONSTRUCTION ENGINEER

CARL S. PEIL 2614PE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

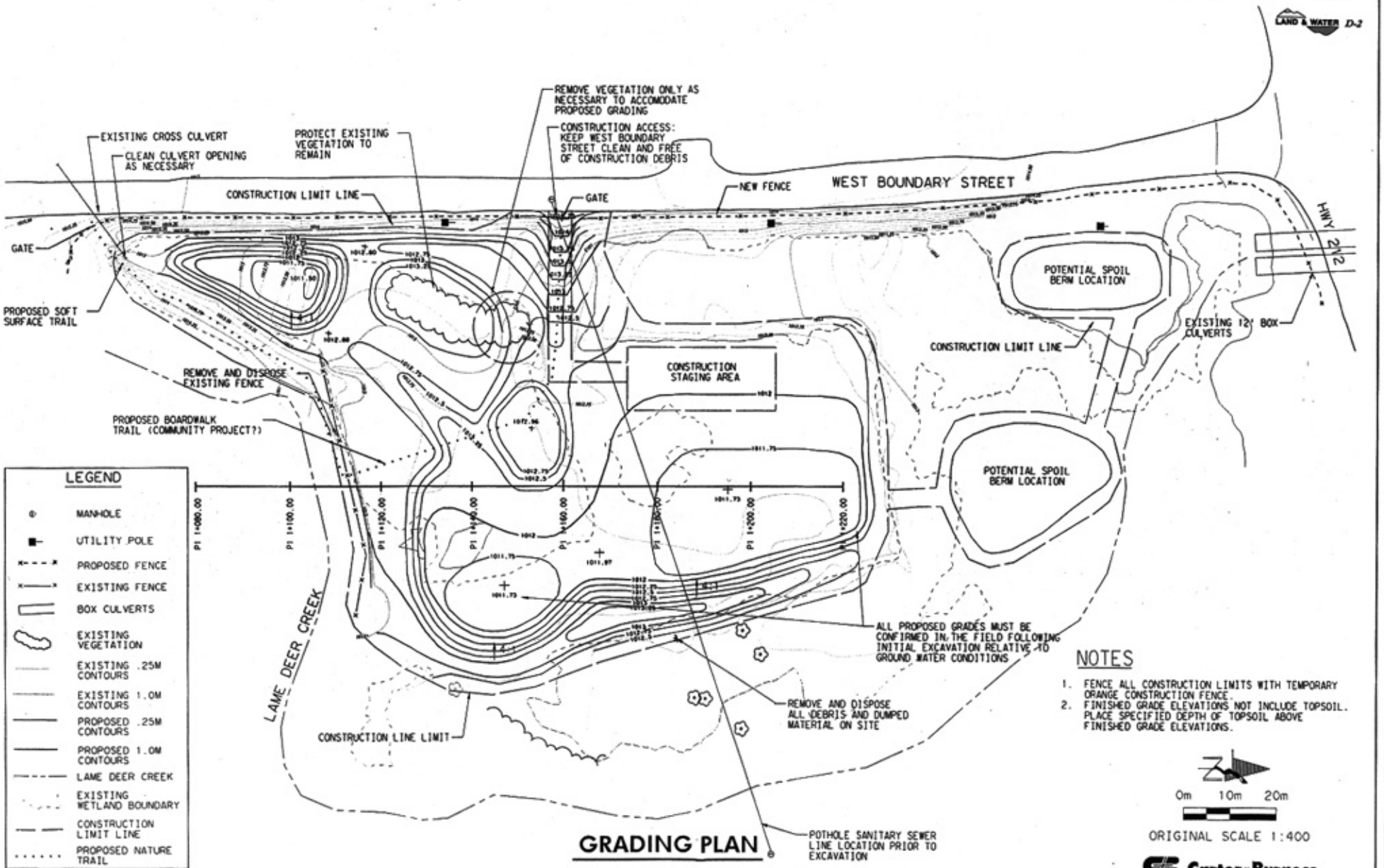
APPROVED:
DIVISION ADMINISTRATOR DATE

ITEM	UNITS	QUANTITY
AREA OF WETLAND MITIGATION	ACRES (HECTARES)	1.79 (.06)

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHS7-2(116)42, NHS7-2(117)49	7

MONTANA DEPARTMENT OF TRANSPORTATION

LAND & WATER D-2



GRADING PLAN

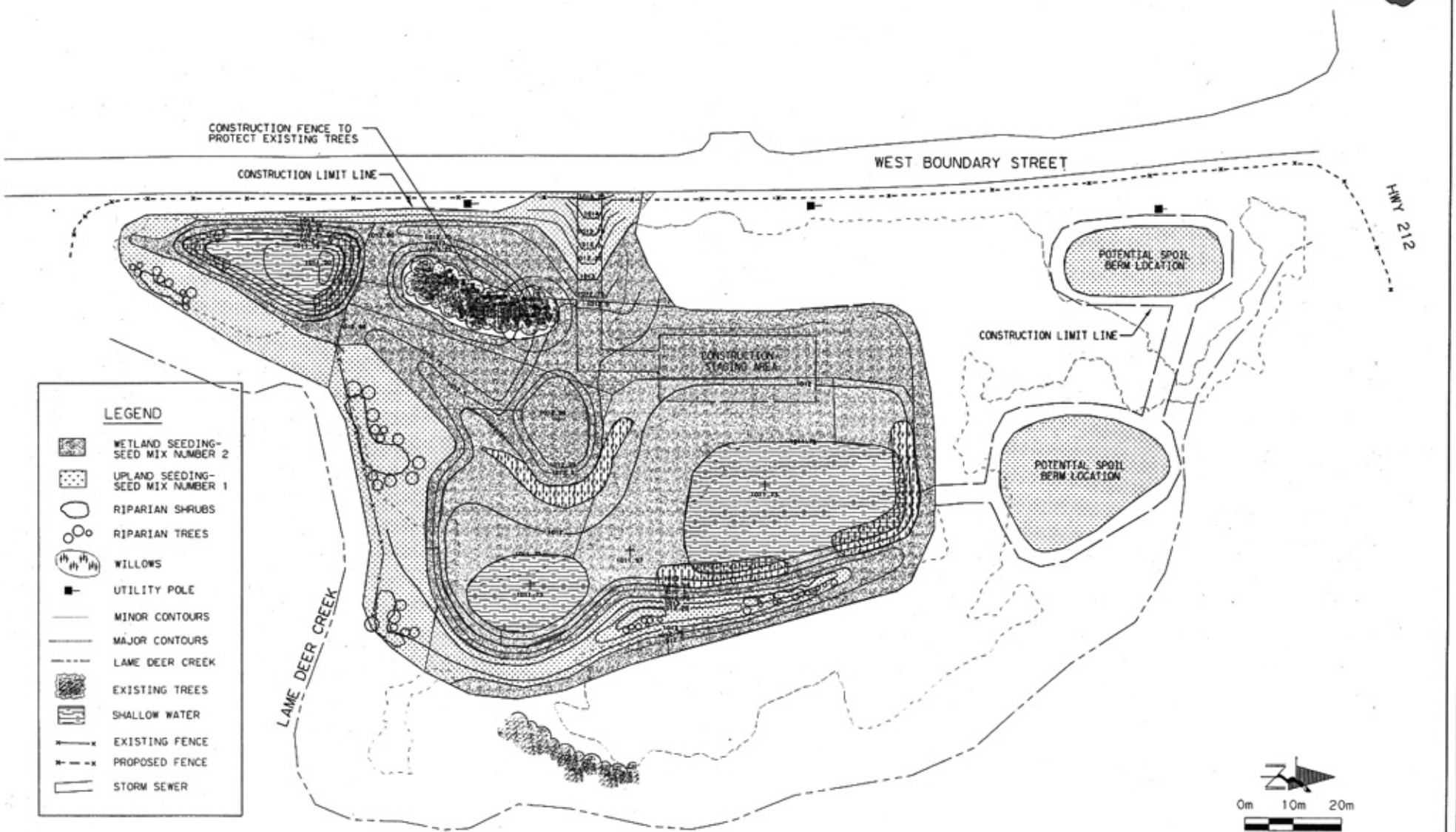
Carter Burgess

ITEM	UNITS	QUANTITY
AREA OF WETLAND MITIGATION	ACRES (HECTARES)	1.79 (.06)

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHS7-2(16)42, NHS7-2(17)49	9

MONTANA DEPARTMENT OF TRANSPORTATION

LAND & WATER D.J



PLANTING PLAN

ORIGINAL SCALE 1:400

Carter-Burgess

LAND & WATER D-4

Montana Department of Transportation
P.O. Box 460
Miles City MT 59301

March 16, 2001

David Milligan
Environmental Protection Department
Northern Cheyenne Tribe

RECEIVED
MAR 19 2001
ENVIRONMENTAL

Subject: NH 37-2(16)42F
Lame Deer-East
Lame Deer Wetland Site

Due to concerns from the Northern Cheyenne's Utility Department, further survey work was done at the subject site to determine cover for the sanitary sewer line running through the wetland. This survey led to the discovery that no cut could be made over the existing sewer line due to freeze and thaw causing future breaks. Department project personnel redesigned this area to leave a 6m ster wide area at existing elevation over the existing sewer. In addition a 6:1 slope is to be built from this area down to plan elevations of the wetland on both sides of the existing sewer line.

At this time, no other changes will be made to the designed wetland site. With no fill being placed over the sewer line, a good chance exists that no substantial acreage will be lost, as the soil over the line will be wet and seeded as per contract plans.

If you have any questions, please contact me.

Respectfully,

Douglas J. Martin
Engineering Project Manager

Cc: Project File
Dist. Construction File
Terry Yarger
Larry Sickerson
Riverside Contracting Inc.

DJM: jj

Carter :: Burgess

Consultants in Planning, Engineering, Architecture, Construction Management, and Related Services

cc: G. Stock
J. Mar
B. Bre
T. Hik
L. Lirb
S. Althe
L. Sickerson
File(or)

January 19, 2000

Mr. Paul Ferry
Montana Department of Transportation
2701 Prospect Avenue
Helena, MT 59620-1001

RE: Lame Deer East
NH 37-2 (16) 42
Control No. 0874

Dear Paul:

Please find attached our final plans submittal for the Lame Deer-East project. We have incorporated the comments and direction received from recent e-mails from Larry Sickerson, Ray Mengel, Todd Tillinger and you, in addition to comments received from the P-I-H meeting.

1). I contacted the NCT regarding the seed mix content and ratios and Desi Roleffson had already gone back to Washington, D.C. Phil Johnson had given me direction to raise the Great Basin Wild Rye to (9.5) kgs. per hectare.

2). I was able to locate some information on the water (tap?) from the NCT utilities. (see attached. It doesn't appear to be affected by the project's excavation. However, please review the attached to see if you agree with this assumption.

3) We have included a soft surface trail with crusher fines through the site. As directed by the Corps (Todd Tillinger), this quantity of surface area has been deleted from the total mitigation acreage. Direction is needed regarding a culvert crossing beneath the path at the drainage swale.

4) The mitigation acreage previously estimated will be reduced to 0.68 hectares (1.68 acres) due to the trail. This is information the Corps will be interested in. This roughly equates to 0.5 hectare (1.23 acres) of wetland creation and 0.18 hectare (0.45 acre) of restoration.

5) An outstanding issue was a staking plan. We have provided elevations on the cross-sections at every 20 meters from the centerline and at key elevation changes. Please advice if this is sufficient or another method is preferred.

6) While Todd Tillinger's response to the erosion control plan allowed that further coordination with the EPA may be required, we kept the erosion control item quantities in the plans as directed at the P-I-H meeting.

At this time, I think it is appropriate to re-iterate that Carter-Burgess staff and consultants have prepared these plans based on the information we had available. It is Carter-Burgess'

standard practice to design a wetland mitigation site, particularly creation sites, with multi-year studies on groundwater levels. In addition no information was available on the adjacent creek or culvert water levels or flow data for the Lame Deer-East project. We would like to recommend again that MDT or the contractor monitor the ground, culvert and creek water elevations and flow quantities on a bi-monthly basis throughout the next year and preferably two years. We have written on the plans that the contractor verify site conditions for ground and surface water levels. MDT could make this a requirement.

We recommend MDT have a wetland specialist on-site through construction to judge site conditions, make judgements on how to excavate, whether to dewater the site or not, modify the grading plans as needed, and determine where to plant the shrubs and sow seeds based on final site conditions.

We recommend the construction documents include a contractor's warrantee for the survival and establishment of all wetland plants (seeded or planted) for at least one year after construction is complete and accepted by MDT. In regards to the performance standards required by the Corps, we recommend to incorporate maximum flexibility. These should not specify the size of each wetland type (ie. Area of surface water, wet meadow or marsh). This allows MDT to change the planting plan in response to site conditions without having to change the grading or re-grade the site. I requested a copy of the performance standards from Larry Urban, but haven't received them yet.

It is our intent to provide MDT with the most successful product (plans) possible and hence, these recommendations. Please let me know if you have any comments on the plans or these recommendations.

Sincerely,

Diana Bell

Diana Bell
Carter-Burgess

Attachments

cc. Larry Sickerson
Gordon Stockstad
Ray Mengel
Bill McChesney
Tom Atkins
Diane Yates
Chris Ricciardiello
Jeanette Lostracco
file
J:\97705901\Deer\manage\Corr\finalplans.doc

LAND & WATER D-7
1997

1. Project Name: LAME DEER MIT. | 2. Project # and Control #: F-37-2(3)42F CN 0874

3. Evaluation Date: 20-21 Apr | 4. Evaluator(s): R. HARRIS | 5. Wetland/Site #(s): School Mit. Site

6. Wetland Location(s): Lame Deer floodplain immed. south of Hwy 212

7. Evaluation is to assess functions and values of:
___ Wetlands that may be affected by an MDT project
X Mitigation wetlands: pre-construction
X Mitigation Wetlands: post-construction
___ Other:

8. Estimated total wetland size (acres): 2-3 acres south of road - restoration

9. Estimated acreage of assessment area (AA): includes WL system north of road. 20-30 ac.
(see detailed instructions on how to determine AA)

10. Classification of AA (HGM according to Brinson; system, subsystem, class, water regime, and special modifier according to Cowardin [1979])

HGM Class (Brinson)	System (Cowardin)	Subsystem (Cowardin)	Class (Cowardin)	Water Regime (Cowardin)	Modifier (Cowardin)	% of AA
Riverine	Riverine	Low. Perenn.	Emergent	Saturated	Riparian	90%

11. Circle estimated occurrence frequency (see definitions) of similarly classified sites within the same USGS Hydrologic Unit:
Rare (Common) Abundant

12. Circle general condition of AA (see definitions): Undisturbed (Encroached Upon) Directly Disturbed

13. Habitat Diversity
A). # of persistent vegetated classes (circle points)
≥3 = 5 points
(2 = 3 points)
≤1 = 1 point

B). Open water (see definition) in the AA is (circle points):
(present = 2 points) - marginally so, by Lame Deer Crk.
absent = 1 point

Score	Rating	Functional Points
10	Excep	NA
(6)	(High)	NA
2-3	Mod	NA
1	Low	NA

Comments: More open water could further use by shorebirds, waterfowl, etc.

Score is (A) x (B) = 6

14. Brief descriptive summary of AA and surrounding land use and habitat:
A small piece of floodplain that has been encroached upon on all sides by the community of Lame Deer. The only remaining 'green space' left within the town. Largely emergent WL w/ shrub-scrub component.

15. Functions and Values Assessment

15.a) Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

AA is documented or suspected (circle D or S) to receive:
D S Regular use or is designated critical habitat (list species):
D S Occasional (infrequent, sporadic) use (list species):
D (S) Incidental (chance, inconsequential) use (list species): bald eagle migrants
D S No use

Source(s) for documented use (e.g., observation, records, etc.):
Comments:

Highest Level Use:	Rating	Functional Points
doc/reg	High	1
doc/occ	High	.9
sus/reg	Mod	.8
sus/occ	Mod	.7
doc/incid	Low	.5
sus/incid	(Low)	(.3)
none	None	0

15.b) Habitat for Plants or Animals Rated S1, S2, or S3 by the Montana Natural Heritage Program

AA is documented or suspected (circle D or S) to receive:
D S Regular use (list species):
D S Occasional (infrequent, sporadic) use (list species):
D S Incidental (chance, inconsequential) use (list species):
D (S) (No use)

Source(s) for documented use (e.g., observation, records, etc.):
Comments: No MNHP or Tribal listings of any sort. Apprec. human disturbance from nearby schools.

Highest Level Use:	Rating	Functional Points
doc/reg	High	1
doc/occ	High	.8
sus/reg	Mod	.7
sus/occ	Mod	.6
doc/incid	Low	.2
sus/incid	Low	.1
none	(None)	0

15 c) General Wildlife Habitat
AA is known or suspected (circle K or S) to receive (fill in blank) substantial (s), moderate (m), or little to no (l) use (see definitions for these terms) by the listed wildlife groups (see definitions for aquatic/semi-aquatic and non-aquatic wildlife)

(K) S m Aquatic/semi-aquatic birds (list examples): c. snipe
(K) S m Non-aquatic birds (list examples): r.w. blackbirds, etc. neo-tropicals
K (S) l Aquatic/semi-aquatic mammals (list examples): possible skunk, raccoon, etc.
K (S) l Non-aquatic mammals (list examples):
(K) S l Aquatic/semi-aquatic reptiles (list examples): painted turtles
K (S) l Non-aquatic reptiles (list examples):
K (S) l Amphibians (list examples):
K (S) l Invertebrates (list examples):

i. Assessed wildlife use (circle points):
≥3 S's or ≥5 M's = 7 points
1-2 S's or 2-4 M's = (3 points)
No S's and < 2 M's = 1 point

ii. Habitat diversity from #13 (circle points)
High to exceptional rating = (3 points)
Moderate rating = 2 points
Low rating = 1 point

Comments: More practically a moderate at present with potential for betterment through enhancement and clean-up.

Score is (i) x (ii) = 9

Score	Rating	Functional Points
21	High	1
14	High	.9
7	High	.8
(9)	(High)	(.7)
6	Mod	.5
3	Mod	.4
2	Low	.3
1	Low	.1

15.d) General Fish Habitat (If AA does not contain or is not surficially connected to a stream or standing water body [e.g., pond or lake], circle NA here and proceed to next function) (NA)
i. AA is known or suspected (circle K or S) to support listed groups for portion of their life cycle (circle points)
K S Game fish = 3 points
K S Rough fish, but no game fish = 2 points
K S No fish = 1 point

ii. Surface water in AA is (circle points):
Permanent/perennial = 3 points
Seasonal/intermittent = 2 points
Temporary/ephemeral = 1 point

Comments: NA

Score is (i) x (ii) = _____

Score	Rating	Functional Points
9	High	1
6	High	.8
4	Mod	.6
3	Mod	.5
2	Low	.3
1	Low	.1

15.e) Flood Attenuation and Storage (Applies only to wetlands subject to flooding via overbank flow. If wetlands in the AA are not flooded from overbank flow, circle NA here and proceed to next function. See 15.l) for wetlands that flood, but not from overbank flow.)
i. Estimated acreage of jurisdictional wetland in the AA that is subject to periodic flooding (circle points):
Flooded wetlands ≥ 20 acres = 7 points
20 acres > Flooded wetlands > 5 acres = (5 points)
Flooded wetlands ≤ 5 acres = 1 point

ii. Estimated % of flooded wetland area classified as as forested(fo), scrub-shrub (ss), or both (circle points)
> 75% fo/ss = 3 points
25-75% fo/ss = 2 points
(< 25% fo/ss) = (1 point)

iii. AA contains no outlet or restricted outlet = 1 point
AA contains unrestricted outlet = (0 points)

iv. Are residences, businesses, or other features which may be damaged by floods located within 0.5 miles downstream of AA? yes If so, list here: occasional residences adjacent to floodplain.

Comments: Lame Deer Crk. may experience brief, 'flashy' run-off events vs. major spring run off.

Score is [(i) x (ii)] + (iii) = 5

Score	Rating	Functional Points
22	High	1
16, 21	High	.9
14,15	High	.8
11	High	.7
8	Mod	.6
6,7	Mod	.5
(5)	(Mod)	(.4)
3	Low	.3
2	Low	.2
1	Low	.1

15.f) Sediment/Nutrient/Toxicant Retention and Removal
Circle true (T) of false (F) for each of the following statements:
i. (T) F AA receives direct discharge of managed water (municipal or road stormwater drainage, agricultural drainage, industrial/municipal wastewater) or accumulation of sediment/excess nutrients evident (deposits on vegetation, algal mats or other signs of eutrophication present) or immediate upstream land use has potential to deliver significant sediment/nutrient loads to AA.
ii. (T) F Evidence of flooding or ponding occurs in AA but minimally overall.
iii. T (F) AA contains restricted outlet or no outlet such that flow is slowed or detained.
iv. (T) F Percent cover or emergent and/or dense woody vegetation in the AA exceeds 50%.

(i) is true and at least two of (ii),(iii), or (iv) are true = (High rating)
Rating is neither High or Low = Moderate rating
(i) is false and at least two of (ii), (iii), or (iv) are false = Low rating

Comments: This may be one of the AA's stronger functions.

Score	Rating	Functional Points
NA	(High)	(1)
NA	Mod	.5
NA	Low	.1

15.g) Sediment/Shoreline Stabilization (applies only if AA occurs on the banks of a river, stream, or other natural or manmade drainage, or on the shoreline of a standing water body which has a maximum depth exceeding 6.6 feet at low water (e.g., subject to wave action). If does not apply, circle NA here and proceed to next function.

i. Estimated % cover of rooted vegetated component in AA (circle points)
- > 30% rooted vegetation = (3 points)
- 10-30% rooted vegetation = (2 points)
- < 10% rooted vegetation = 1 point

ii. Water body adjacent to rooted vegetation is (circle points):
- Permanent/perennial = 5 points
- Seasonal/intermittent = (3 points)
- Temporary/ephemeral = 2 points

rejected—current --

Comments: Lame Deer Crk. flowed less than 1 cfs. at time of April's delineation.

Score is (i) x (ii) = 6 vs. 15

Score	Rating	Functional Points
15	High	1
9	High	.9
10	High	.8
6	Mod	.7
4	Mod	.5
5	Mod	.4
3	Low	.2
2	Low	.1

15.h) Production Export/Food Chain Support

i. Acreage of vegetated component in AA (circle points)
- > 5 acres = (10 points)
- 1-5 acres = 5 points
- <1 acre = 1 point

ii. Habitat diversity rating (from #13; circle points)
- High - Exceptional = (3 points)
- Moderate = 2 points
- Low = 1 point

iii. Outlet presence (circle points)
- AA contains an outlet = 3 points
- AA contains no outlet = 1 point

iv. Surface water in AA is (circle points):
- Permanent/perennial = 3 points
- Seasonal/intermittent = (2 points)
- Temporary/ephemeral or absent = 1 point

Comments: Seems artificially high in light of small, intermittent stream volumes.

Score is [(i) x (ii)] + [(iii) x (iv)] = 36

Score	Rating	Functional Points
39	High	1
21-36	High	.9
16-19	High	.8
10-14	Mod	.7
8-9	Mod	.6
7	Mod	.5
5,6	Low	.4
4	Low	.3
3	Low	.2
2	Low	.1

15.i) Groundwater Discharge/Recharge

i. Check the discharge indicators listed below that apply to the AA
- ___Springs are known or observed in the AA.
- ___Vegetation is growing during dormant season or drought.
- ___Wetland occurs at the toe of a natural slope.
- ___Other:
- ___Seeps are present at the wetland edge.
- ___AA permanently flooded during drought periods.
- ___Wetland contains an outlet, but no inlet.

ii. Check the recharge indicators listed below that apply to the AA
- ___Permeable substrate present without underlying impeding layer.
- ___Wetland contains inlet, but no outlet.
- ___Other:

AA is known discharge or recharge area or one or more indicators of discharge or recharge present = High rating
No discharge or recharge indicators present = Moderate rating
Available information pertaining to AA is inadequate to judge discharge/recharge potential = (Unknown)

Comments: Needs further research. Upstream reach of Lame Deer Crk. appears to be subsurface source of recharge on the School site.

Score	Rating	Functional Points
NA	High	1
NA	Low	.1
NA	Unkn	NA

15.j) Uniqueness

i. Estimated occurrence frequency of similarly classified sites within the USGS Hydrologic Unit (#11; circle points):
- Rare = 3 points
- Common = (2 points)
- Abundant = 1 point

ii. Replacement potential/habitat diversity (#12; circle points):
- AA is/contains bog, fen, warm springs or mature (>80 years) forested wetland = 10 points
- AA does not contain above but habitat diversity is high - exceptional = (3 points)
- AA does not contain above and habitat diversity is low - moderate = 1 point

iii. Condition of AA (from #12; circle points):
- Undisturbed = 3 points
- Encroached Upon = (2 points)
- Directly Disturbed = 1 point

Comments:

Score is [(i) x (ii)] + (iii) = 8

Score	Rating	Functional Points
33	High	1
31,32	High	.9
22,23	High	.8
12-21	High	.7
10,11	Mod	.6
8,9	Mod	.5
5,6,7	Mod	.4
4	Low	.3
2,3	Low	.2
1	Low	.1

15.k) Recreation/Education Potential

i. Is the AA a known rec/ed site (circle)? Y (N) (If yes, rate as High and go to ii. If no, go to iii.)

ii. Check the categories listed below that apply to the AA:
- ✓ education/scientific study
- ___consumptive recreation
- ___non-consumptive recreation
- ___others:

projected

iii. Based on the location, diversity, size, and other attributes of the site, is there strong potential for recreational/educational use (circle)? (Y) N (If yes, go to ii, then proceed to iv. If no, rate as Low [.1].)

iv. Condition of AA (from #12; circle points):
- Undisturbed = 3 points
- Encroached Upon = (2 points)
- Directly Disturbed = 1 point

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

Comments: This is possibly the sites strongest suit in the overall mitigation plan.

Score is (iv) x (v) = 4

Score	Rating	Functional Points
6	High	1
3	Mod	.7
4	Mod	.5
2	Low	.2
1	Low	.1

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

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

Flooded wetlands ≥ 5 acres = 3 points
5 acres > Flooded wetlands > 1 acre = 2 points
Flooded wetlands < 1 acre = .5 point

ii. Estimated flood frequency (circle points)

Wetland floods ≥ 5/10 years = 1 points
Wetland floods < 5/10 years = 1 point

Score	Rating	Functional Points
5	High	1
4	[illegible]	.8
2.3	Mod	.5
1	Low	.3
.5	Low	.1

Comments: applies to the school site only just south of Hwy 212

Score is (i) x (ii) = ___

Function & Value Summary and Overall Rating

Function & Value Parameters		Rating	Actual functional points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A.	Listed/Proposed T&E Species Habitat	Low	.3	1	
B.	MNHP Species Habitat	none	0	1	
C.	General Wildlife Habitat	High	.7	1	
D.	General Fish/Aquatic Habitat	—	NA	NA	
E.	Flood Attenuation and Storage	Mod	.4	1	
F.	Sediment/Nutrient/Toxicant Removal	High	1.0	1	
G.	Sediment/Shoreline Stabilization	Mod	.7	1	projected .9 High
H.	Production Export/Food Chain Support	High	.8	1	
I.	Groundwater Discharge/Recharge UNK.	none	none	✗	
J.	Uniqueness	Mod	.5	1	
K.	Recreation/Education Potential	Mod	.5	1	projected 1.0
L.	Dynamic Surface Water Storage	NA	NA	—	
Totals			4.9	9.0	as now occurs

54%

5.6 ÷ 9.0 = 62% projected

Overall 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:

- Score of .9 or 1 functional point for Threatened or Endangered Species; or
- Score of .9 or 1 functional points for Uniqueness or "High" rating for Uniqueness and Condition (#12) is "Undisturbed"; or
- Score of 1 functional point for Flood Attenuation and Storage and answer to Question 14.E.3 is "yes"; or
- Total actual functional points > 80% (round to nearest tenth) of total possible functional points.

Category II Wetland - Does not satisfy criteria for Category I and:

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

Category III Wetland - Does not satisfy criteria for Category I, Category II, or Category IV.

Category IV Wetland - Does not satisfy criteria for Category I, Category II, or Category III and:

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

(F4)

Wetlands of the smaller school sites just south of Hwy 212 are more appropriately a Cat. IV when considered apart from the headwater system north of the road.

PROJECT NAME Lame Deer Crk. School Site

WETLAND SITE # N/A

DATAPOINT # N/A

	GENUS/SPECIES	COMMON NAME	STRATA	INDICATOR
WETLAND				
C -	Typha latifolia	broad-leaved cattail	F	OBL
C -	Carex nebrascensis	Nebraska sedge	G	OBL
R -	Carex spp. (aquatilis?)	sedge spp.	G	OBL
R -	Scirpus acutus	hard-stem bulrush	F	OBL
T -	Scirpus validus	soft-stemmed bulrush	F	OBL
C -	Scirpus americanus	Olney 3-square bulrush	F	OBL
C -	Salix exigua	streambank willow	S	OBL
T -	Salix spp.	willow spp.	S	likely FACW
C -	Hordeum jubatum	foxtail barley	G	FAC+
T -	Spartina pectinata	prairie cordgrass	G	FACW
R -	Rumex crispus	curly dock	F	FACW
C -	Muhlenbergia spp.	muhly spp.	G	likely FACW
R -	Heracleum lanatum	cow parsnip	F	FAC
R -	Glycyrhizza lepidota	American licorice	F	FAC+
C -	Equisetum hyemale	rough horsetail	F	FACW
T -	Tragapogon dubius	western salsify	F	NI
C -				
UPLAND	Populus deltoides	plains cottonwood	SAP-Tree	FAC
R -	Acer negundo	boxelder	S - SAP	FAC+
R -	Fraxinus pennsylvanica	green ash	SAP-Tree	FAC
R -	Prunus virginiana	common chokecherry	S	FACU
C -	Prunus americana	American plum	S	FACU
R	Symphoricarpos occidentalis	w. snowberry	S	FACU
R -	Grindelia squarrosa	curly-cup gumweed	F	FACU
T -	Carduus nutans	musk thistle	F	NI
R -	Solidago occidentalis	western goldenrod	F	NI
C -	Cirsium arvense	canada thistle	F	FACU+
C -	Agropyron spp.	wheatgrass spp.	G	likely FACU
C -	Rosa acicularis	prickly rose	S	FACU
C-R -	Melilotus officinalis	yellow sweetclover	F	FACU

PROJECT NAME LAME DEER CRK. SCHOOL SITE - continued

LAND & WATER D.12

WETLAND SITE # N/A

DATAPOINT # N/A

	GENUS/SPECIES	COMMON NAME	STRATA	INDICATOR
UPLAND cont.				
R -	Bromus inermis	smooth brome	G	NI
T -	Arctium minus	burdock	F	NI
C -	Clematis spp.	virgins-bower (western?)	vine	likely FACU
R	Lactucca serriola	prickly lettuce	F	FAC-
T -	Urtica dioica	stinging nettle	F	FAC+
R -	Rosa arkansana	prairie rose	S	NI
R -	Shepardia argentea	buffaloberry	S	NI
UPLAND				

Appendix E

BIRD SURVEY PROTOCOL
GPS PROTOCOL

MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana

LAND & WATER

BIRD SURVEY PROTOCOL

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

Species Use within the Mitigation Wetland: Survey Method

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

Sites that can be circumambulated or walked throughout.

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

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

Sites that cannot be circumambulated.

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

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

Species Use within the Mitigation Wetland: Data Recording

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

1. Bird Species List

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

2. Bird Density

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

3. Bird Behavior

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

4. Bird Species Habitat Use

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

GPS Mapping and Aerial Photo Referencing Procedure

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

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

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

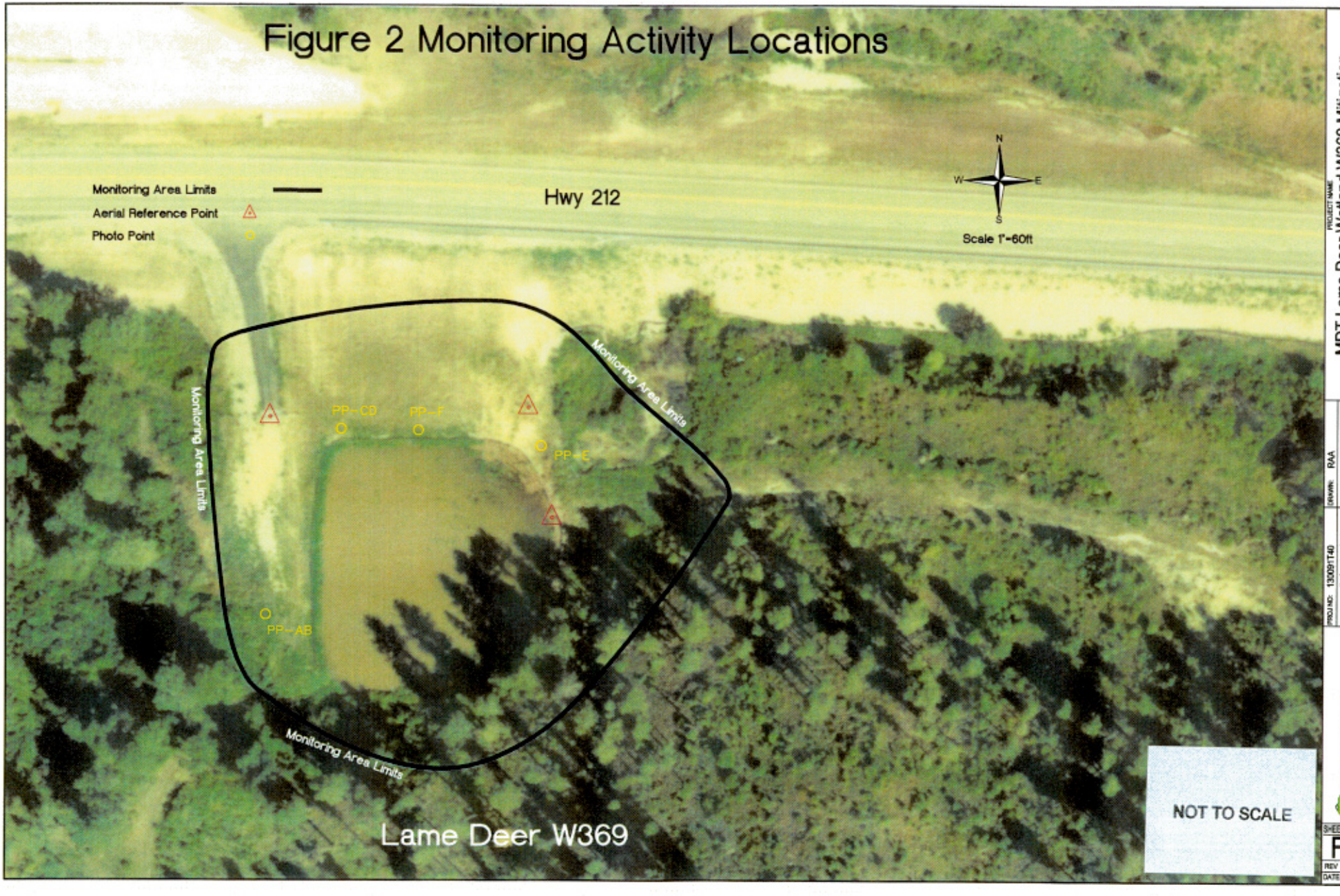
Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.

Appendix F

FIGURES 2 – 3: RECREATED HWY. 212 WETLANDS
PHOTOGRAPH LOG: RECREATED HWY. 212 WETLANDS
REPRESENTATIVE PHOTOGRAPHS: RECREATED HWY. 212 WETLANDS
SITE PLANS: RECREATED HWY. 212 WETLANDS

MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana

LAND & WATER



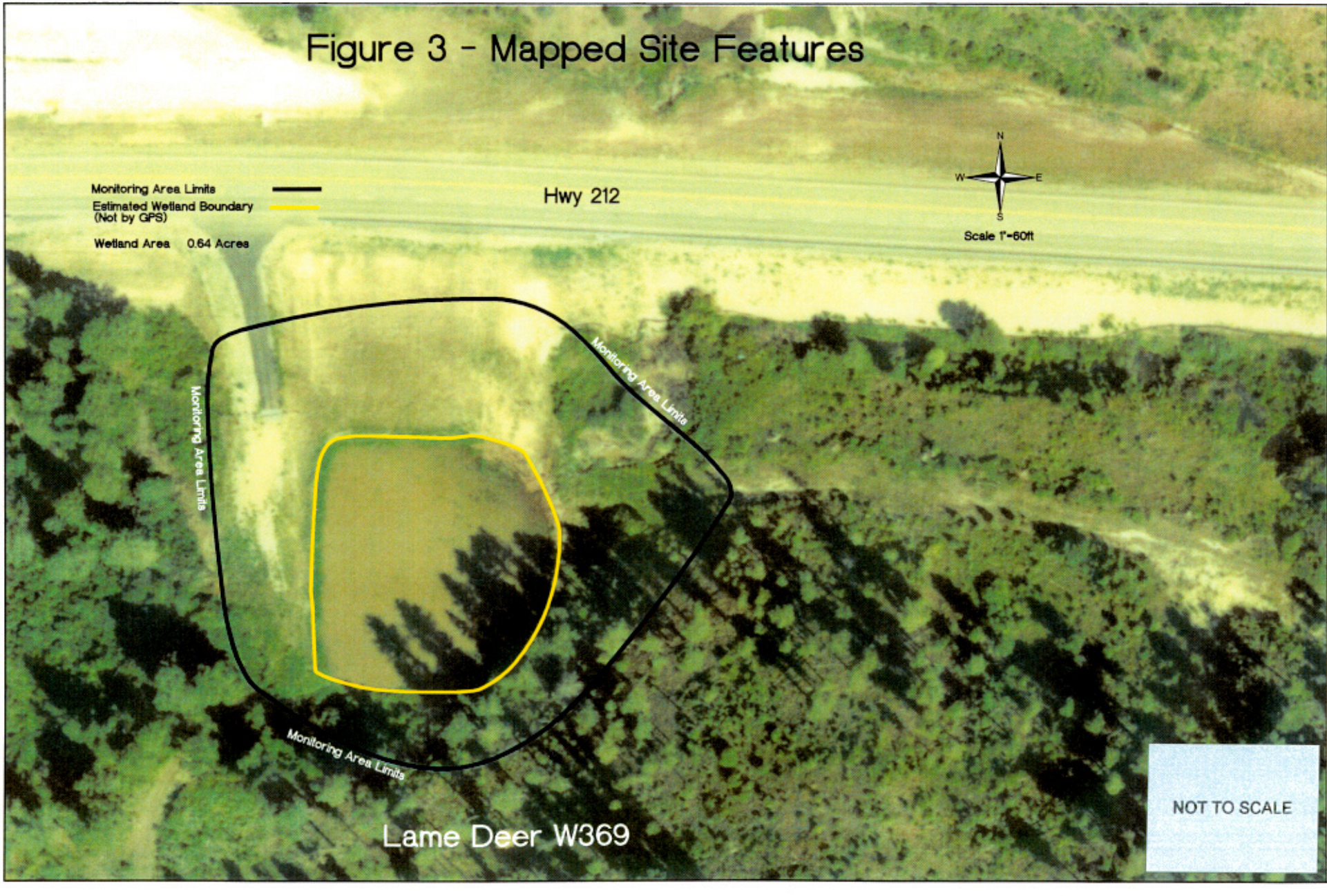
PROJECT NAME: MDT Lame Deer Wetland W369 Mitigation
DRAWING TITLE: Monitoring Activity Locations 2002

PROJ NO: 13009T40
FILE NAME: TASK4IBASE2002
SCALE: 1"=60ft
LOCATION: Lame Deer
DRAWN: RAA
CHECKED: LB
APPVD: JB
PROJ MGR: J.Bergland

LAND & WATER CONSULTING, INC.
P.O. BOX 884
Missoula, MT 59807

SHEET NUMBER: F2
REV: -
DATE: 1-02-03

Figure 3 - Mapped Site Features



PROJECT NAME: MDT Lame Deer Wetland W369 Mitigation
DRAWING TITLE: Mapped Site Features 2002

PROJ NO: 13091T40
FILE NAME: TASK4\BASE2\W2
SCALE: 1"=60ft
LOCATION: Lame Deer
DRAWN: RAA
CHECKED: LB
APP'D: JB
PROJ MGR: J.Bergland

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P.O. BOX 8254
Missoula, MT 59807

SHEET NUMBER: F3
REV: -
DATE: 1-02-03

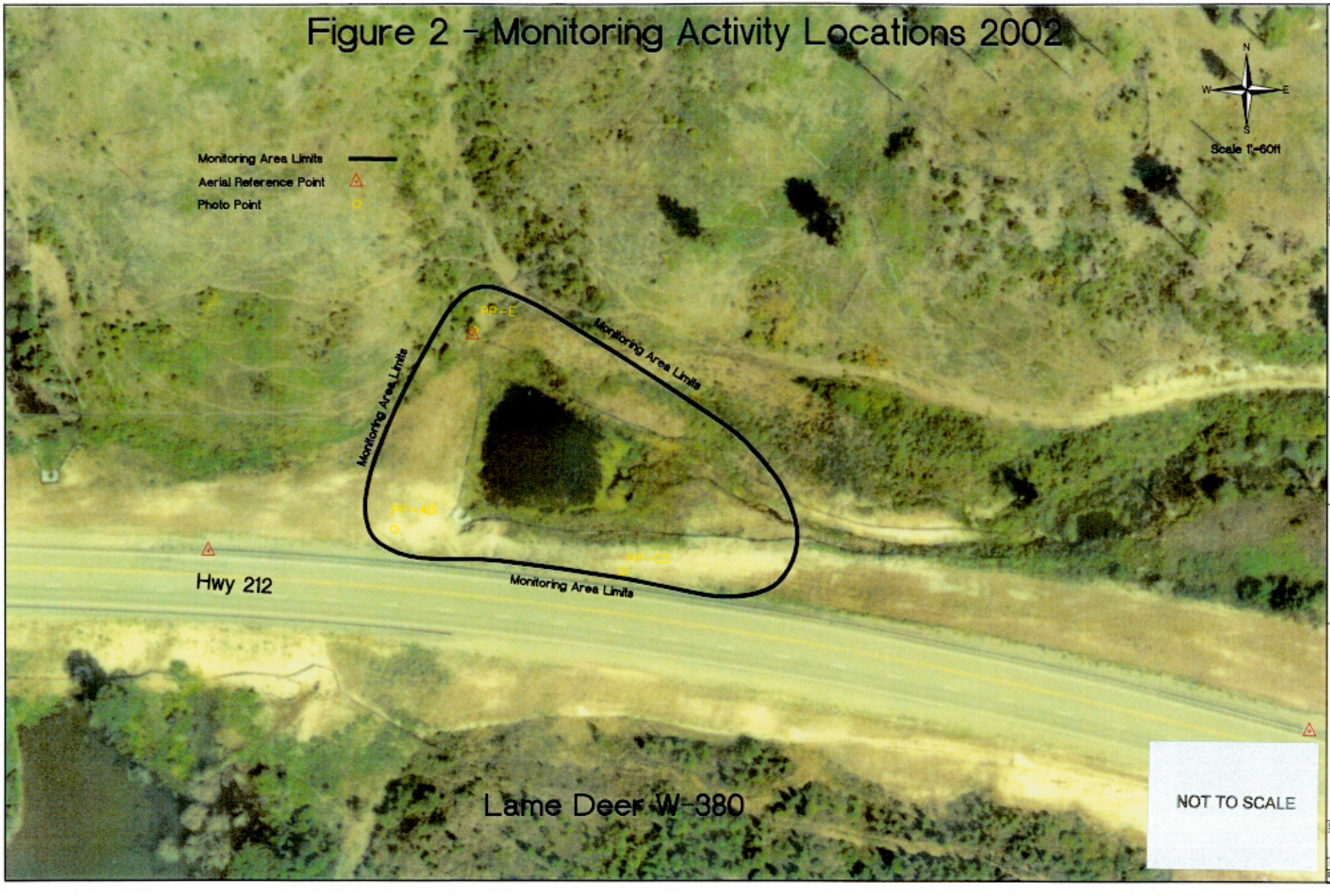


Figure 2 - Monitoring Activity Locations 2002
Monitoring Area Limits
Aerial Reference Point
Photo Point
N
W
E
S
Scale 1"=60ft
PP-E
PP-AB
PP-CD
Monitoring Area Limits
Monitoring Area Limits
Monitoring Area Limits
Hwy 212
Lame Deer W-380
NOT TO SCALE
MDT Lame Deer Wetland W-380 Mitigation
Monitoring Activity Locations 2002
LAND & WATER CONSULTING, INC.
SHEET NUMBER
F2
REV -
DATE: 1-02-03

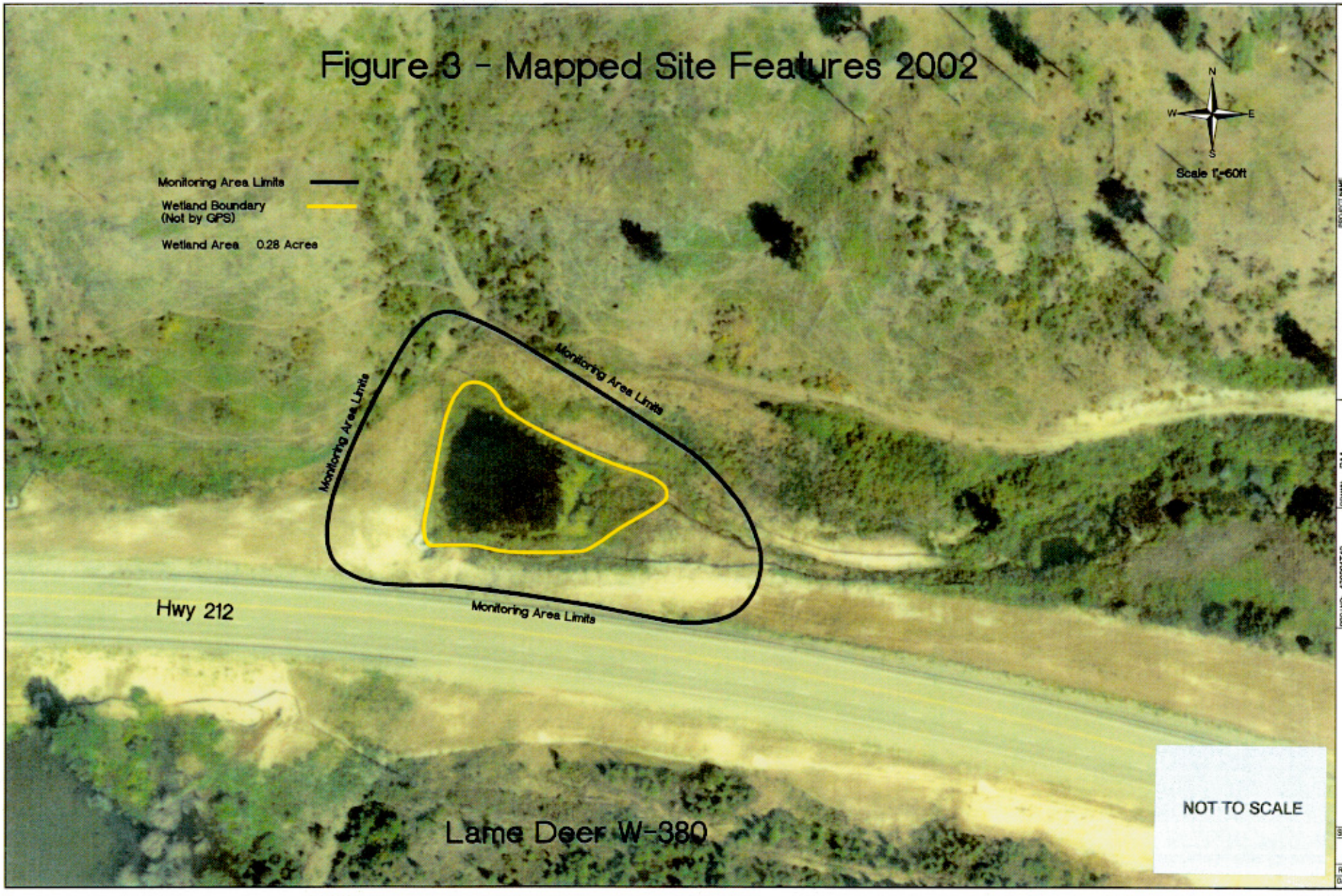


Figure 3 - Mapped Site Features 2002
Monitoring Area Limits
Wetland Boundary
(Not by GPS)
Wetland Area 0.28 Acres
N
W
E
S
Scale 1"=60ft
Monitoring Area Limits
Monitoring Area Limits
Monitoring Area Limits
Hwy 212
Lame Deer W-380
NOT TO SCALE
MDT Lame Deer Wetland W-380 Mitigation
Mapped Site Features 2002
SHEET NUMBER
F3
REV -
DATE 1-02-03

Highway 212 Wetlands
PHOTOGRAPH LOG

Wetland #	Photo Location	Roll/ Frame #	Photograph Description	Compass Reading
369[1]	A	4A	wetland view toward inflow area	78
369	B	5A	wetland view toward road	16
369	C	6A	wetland view toward outflow from below road edge	124
369	D	7A	wetland view toward upstream drainage	110
369	E	9A	west side of wetland	268
369	F	8A	erosion issues below road edge	~110
380	A	5	inlet	86
380	B	6	intermittent drainage from east	48
380	C	7	inlet	10
380	D	8	outflow (left side in photo)	314
380	E	9	from east drainage to road and outlet-side of wetland	152

[1] The wetland number refers to the station number on the plan map (wetland 380 is higher in elevation and a greater distance from Lame Deer than 369 along Hwy. 212).

COMMENTS/PROBLEMS: Note erosion problems in Wetland 369.

(Also, across the road from W-380, sediment entering mountain (?) beaver pond from steep road embankment.)

Location: A **Photo Frame:** 4A **Description:** Wetland view toward inflow area **Compass Reading:** 78°

Location: B **Photo Frame:** 5A **Description:** Wetland view toward road **Compass Reading:** 16°

Location: C **Photo Frame:** 6A **Description:** Wetland view toward outflow fro below road edge **Compass Reading:** 124°

Location: D **Photo Frame:** 7A **Description:** Wetland view toward upstream drainage **Compass Reading:** 110°

Location: E **Photo Frame:** 9A **Description:** West side of wetland **Compass Reading:** 268°

Location: F **Photo Frame:** 8A **Description:** Erosion issues below road edge **Compass Reading:** ~110

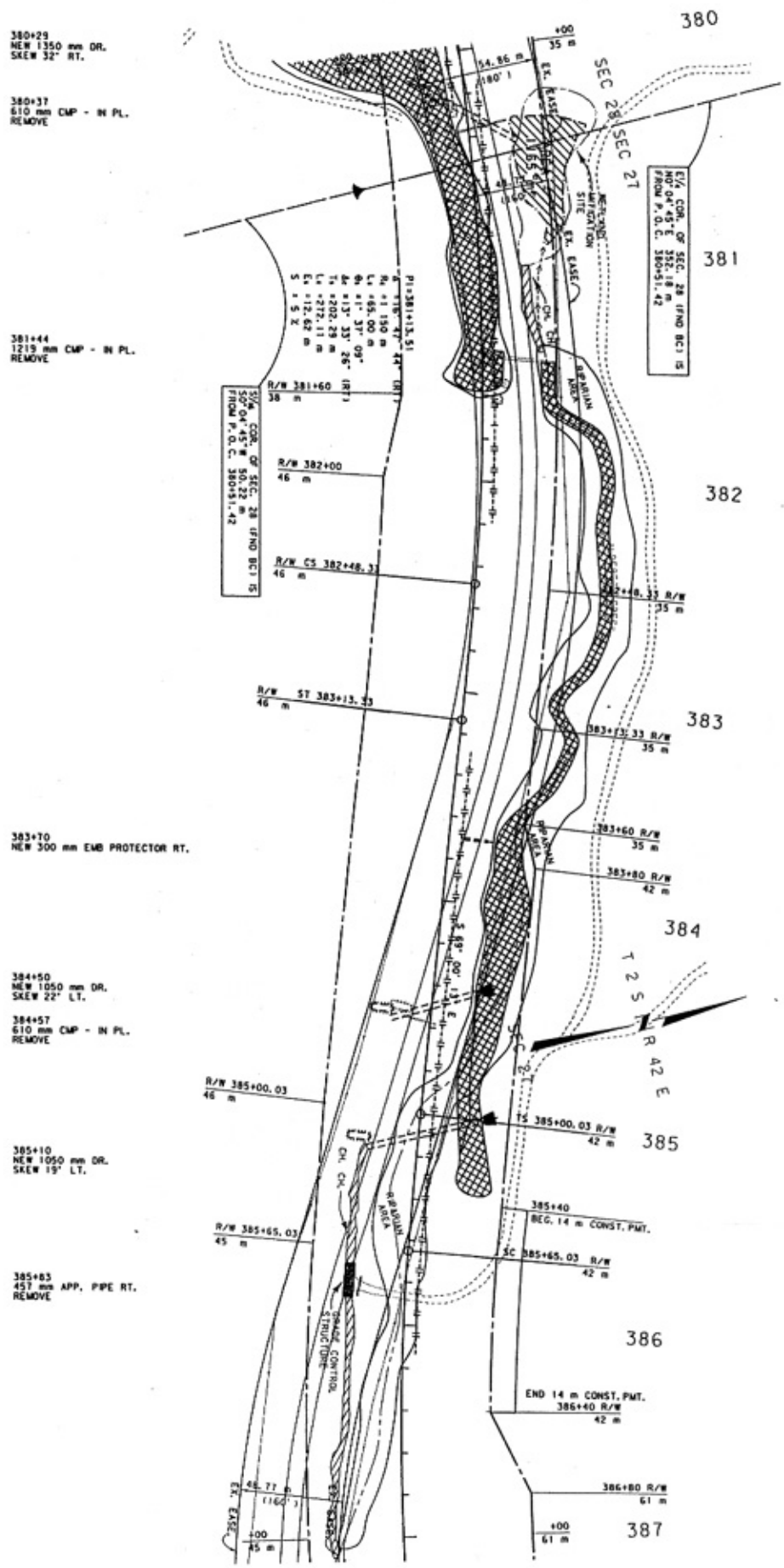
Location: A **Photo Frame:** 5 **Description:** Inlet **Compass Reading:** 86°

Location: B **Photo Frame:** 6 **Description:** Intermittent drainage from east **Compass Reading:** 48°

Location: C **Photo Frame:** 7 **Description:** Inlet **Compass Reading:** 10°

Location: D **Photo Frame:** 8 **Description:** Outflow (left side in photo) **Compass Reading:** 314°

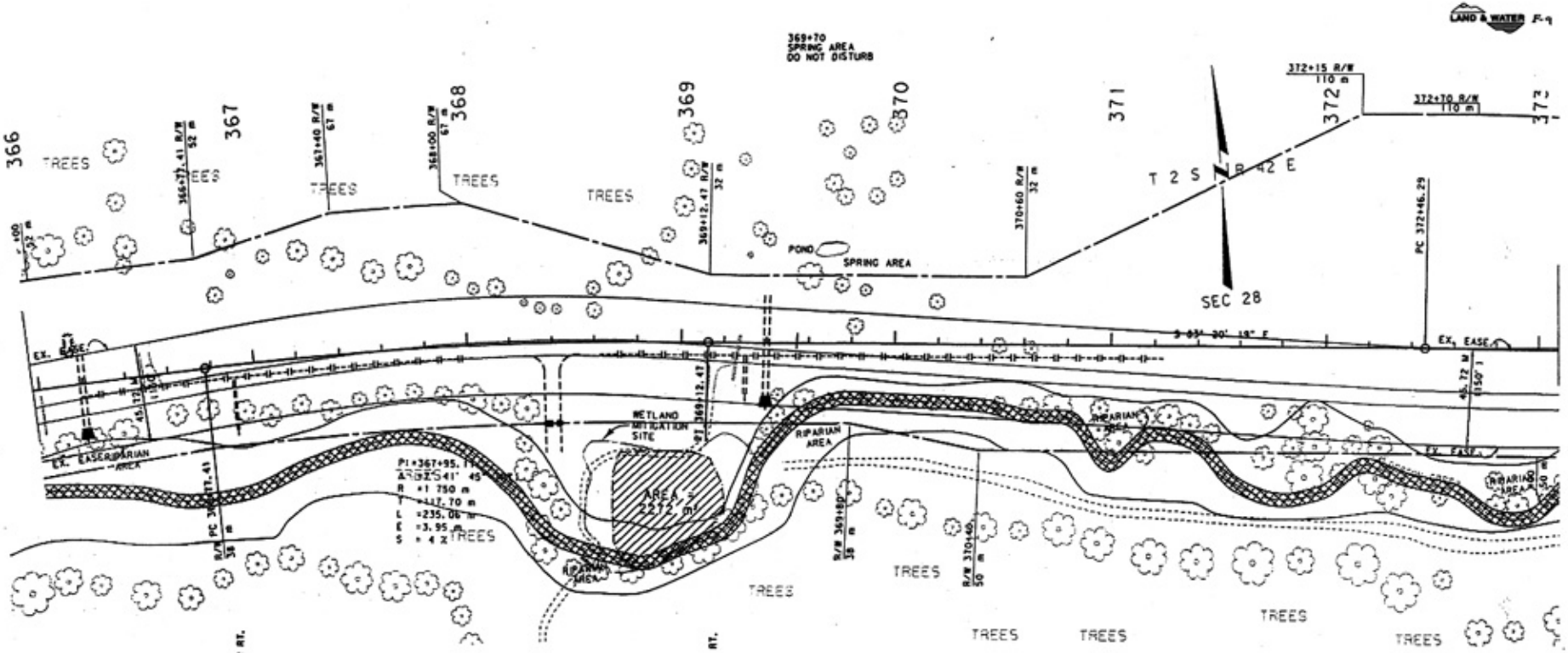
Location: E **Photo Frame:** 9 **Description:** From east drainage to road and outlet-side of wetland **Compass Reading:** 152°



Recreated Hwy. 212 Wetland 380

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 37-2116142 F	

Recreated Hwy. 212 Wetland 369



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Location: C **Photo Frame:** 7 **Description:** Inlet **Compass Reading:** 10°

Location: D **Photo Frame:** 8 **Description:** Outflow (left side in photo) **Compass Reading:** 314°

Location: E **Photo Frame:** 9 **Description:** From east drainage to road and outlet-side of wetland **Compass Reading:** 152°