MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2007

American Colloid Mitigation Site
Alzada, Montana

Prepared for:

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

Prepared by:

POST, BUCKLEY, SCHUH, AND JERNIGAN
801 North Last Chance Gulch, Suite 101
Helena, MT 59601-3360

December 2007

PBS&J Project No: B43088.00 - 0402

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PBS&J

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Cover Photograph: The Colloid Wetland with no water, which is a result of the 2007 dam breach.

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1.0 INTRODUCTION

This annual report summarizes methods and results from the sixth year of monitoring at the Montana Department of Transportation's (MDT) American Colloid mitigation site. The American Colloid wetland mitigation site was constructed in October 2001 to mitigate 4.4 acres of unavoidable wetland impacts associated with the following MDT projects: Alzada-West and Alzada-South (Sickerson 2002), in Watershed # 16 (Little Missouri River basin) in the MDT Glendive District. The wetland site was constructed to encompass 5 acres and includes a 10-acre buffer zone; the entire 15 acres have been fenced (MDT 1999, MDT 2001). The wetland mitigation site is located in Carter County, Montana, near the community of Alzada, Section 36, Township 9 South, Range 58 East **(Figure 1)**. The mitigation wetland was constructed in fall of 2001 in an ephemeral drainage **(Figure 2** in **Appendix A)**. Elevation is approximately 3,518 feet above sea level. The initial monitoring event was conducted in 2002.

2.0 METHODS

2.1 Monitoring Dates and Activities

The American Colloid wetland was monitored on July 16, 2007. All information within the Wetland Mitigation Site Monitoring Form **(Appendix B)** was collected at this time. Activities and information conducted/collected included: wetland delineation; wetland/open water boundary mapping; vegetation community mapping; vegetation transects; soils data; hydrology data; bird and general wildlife use; photograph points; GPS data points; functional assessment; and maintenance assessment of any inflow/outflow structures (non-engineering).

2.2 Hydrology

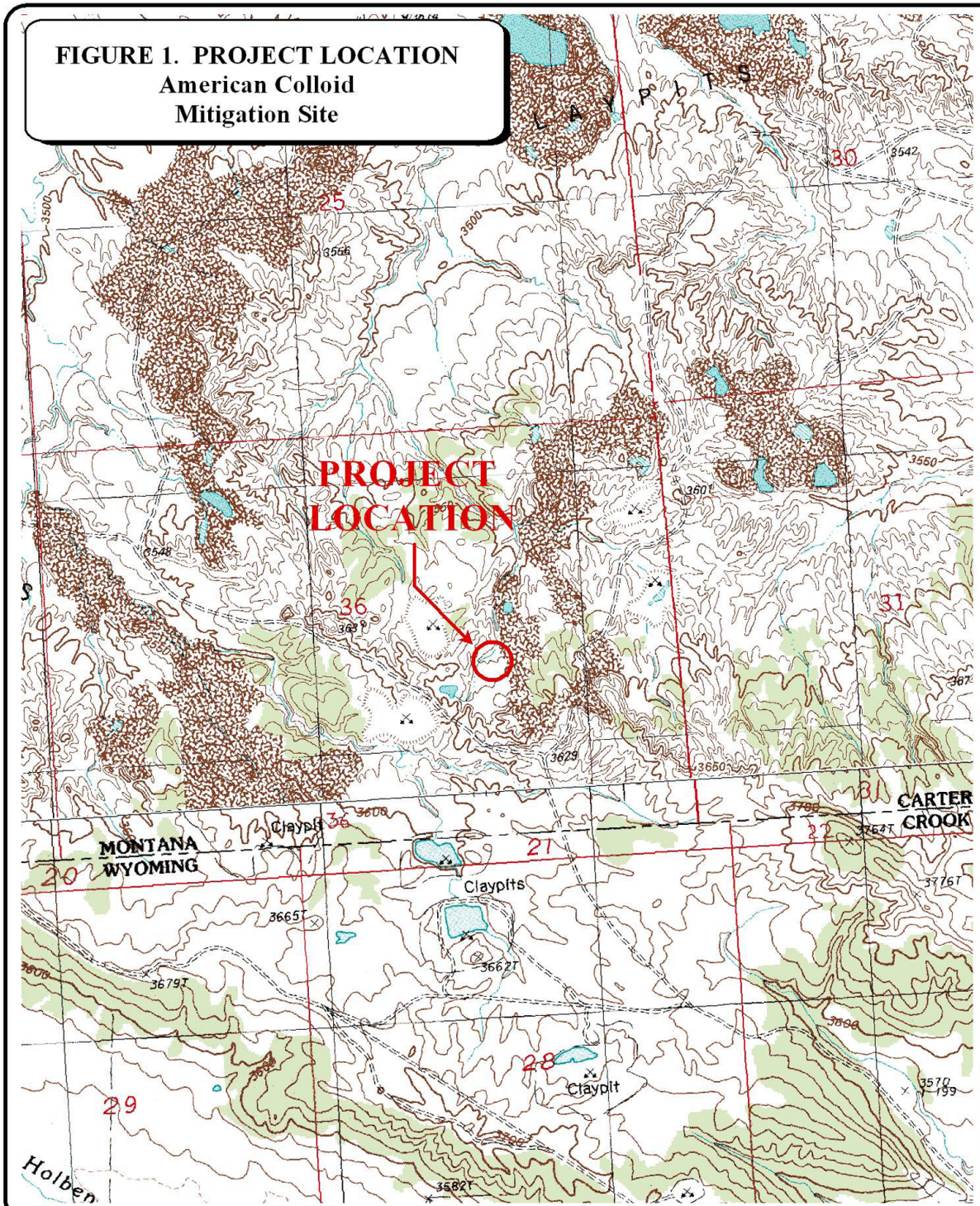
Wetland hydrology indicators were recorded using procedures outlined in the US Army Corps' (COE) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on the Routine Wetland Delineation Data Form **(Appendix B)** at each wetland determination point. Precipitation data for a portion of early 2007 were compared to the January through December 1948 - 2007 average (WRCC 2007).

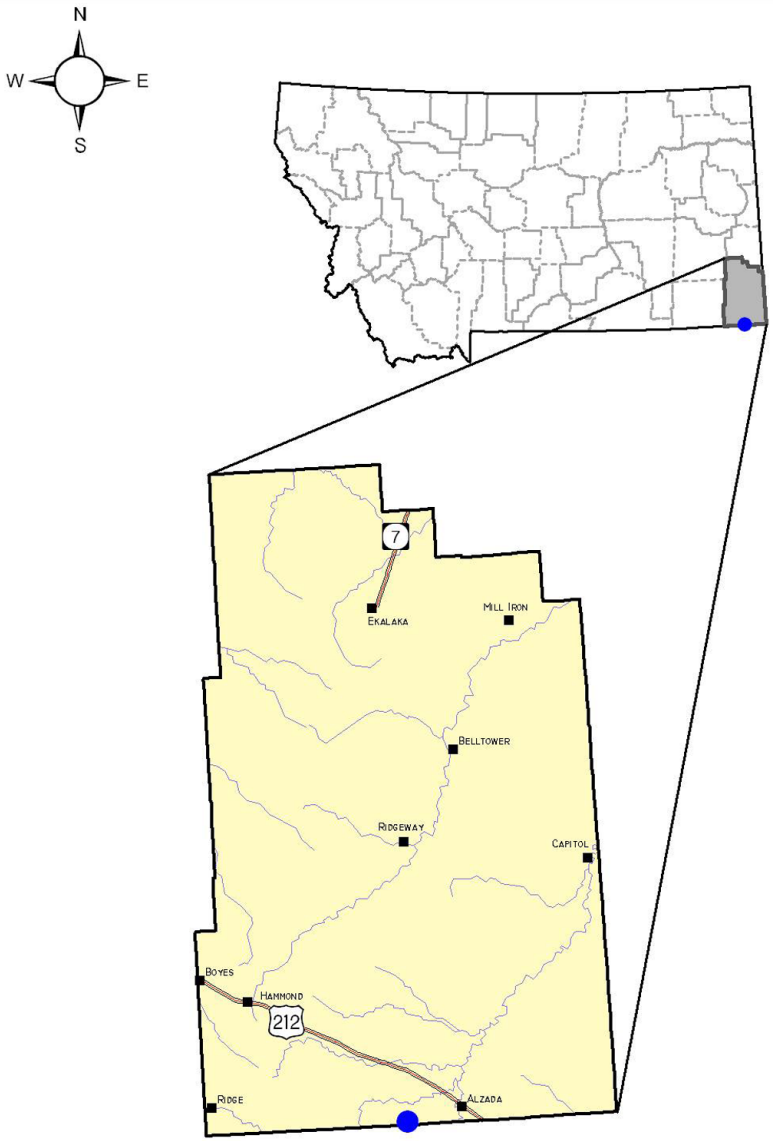
All additional hydrologic data were recorded on the Wetland Mitigation Site Monitoring Form **(Appendix B)**. The boundary between emergent vegetation and open water was mapped on the aerial photograph **(Figure 3** in **Appendix A)**. There are no groundwater monitoring wells at the site.

2.3 Vegetation

General vegetation types were delineated on an aerial photograph during the site visit (**Figure 3** in **Appendix A)**. Coverage of the dominant species in each community type is listed on the Wetland Mitigation Site Monitoring Form **(Appendix B)**. A comprehensive plant species list for the entire site was compiled.

FIGURE 1. PROJECT LOCATION
American Colloid
Mitigation Site





800 0 800 1600 FEET

1: 24,000

PROJECT #: 130091.037
DATE: DEC 2002
LOCATION:
PROJECT MANAGER: J. BERGLUND
DRAWN BY: B. NOECKER

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

The location of the transect is shown on **Figure 2** in **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 monitoring area according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: North Plains Region 4 (Reed 1988). The information was recorded on the COE Routine Wetland Delineation Forms **(Appendix B)**. The wetland/upland and open water boundaries were used to calculate the wetland area.

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations were recorded on the Wetland Mitigation Site Monitoring Form during the site visit **(Appendix B)**. Indirect use indicators were also recorded including tracks, scat and burrows. A comprehensive wildlife species list for the entire site was compiled and will be updated as new species are encountered. Observations from past years will be compared with new data to determine if wildlife use is changing over time.

2.7 Birds

Bird observations were recorded during the site visit according to the established bird survey protocol **(Appendix D).** A general, qualitative bird list has been compiled using these observations.

2.8 Macroinvertebrates

One macroinvertebrate sample is typically collected on the site during the monitoring event. The approximate typical sampling location is indicated on **Figure 2** in **Appendix A**. However, no macroinvertebrate sample was collected in 2007 due to lack of surface water resulting from a dam breach.

2.9 Functional Assessment

A functional assessment form was completed in 2007 for the American Colloid mitigation site using the 1999 MDT Montana Wetland Assessment Method (Berglund 1999). Field data

necessary for this assessment were collected on a condensed data sheet. 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 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** in **Appendix A**. All photographs were taken using a digital camera.

2.11 GPS Data

During the 2002 initial monitoring season, survey points were collected using a resource grade Trimble, Geoexplorer III hand-held GPS unit **(Appendix E)**. Points collected included: the vegetation transect beginning and ending locations; photograph locations; and the delineated wetland boundary. In addition, survey points were collected at several landmarks recognizable on the air photo for purposes of line fitting to the topography. No additional GPS data were collected in 2007.

2.12 Maintenance Needs

No bird boxes were located within this site. The outflow structure was checked for obstructions and other problems.

3.0 RESULTS

3.1 Hydrology

The American Colloid mitigation site was constructed in 2001 to be a 5-acre wetland within a reclaimed bentonite mining site (MDT 1999). The source of hydrology for the wetland mitigation site is stormwater runoff that is retained by an earthen embankment. Stormwater enters the project area from the watershed located on the west, south and east sides of the wetland mitigation site. At full pool, water will exit the site through stand culverts in the earthen embankment. The site had been filling steadily since it was constructed until sometime between the 2006 and 2007 site visits. During the 2007 monitoring event the wetland was dry and a hole on the east side of the center outlet culvert was discovered. The exact date of the dam breach is unknown. Water marks around the entire site were observed during the monitoring event, therefore it is likely that the site did have water at some time during early 2007.

Through the month of June, 2007 the historic average precipitation was 7.57 inches (WRCC 2007). During 2007, precipitation through the month of June was 10.75 inches or 142% of the average, an improvement over the last few years of drought. Of special note, 4.1 inches of precipitation was recorded in May which represented 186% of the May average.

3.2 Vegetation

Vegetation species identified at the site are presented in **Table 1** and in the Wetland Mitigation Site Monitoring Form (**Appendix B**). Transect data trends over time are summarized in tabular format (**Table 2**) and illustrated graphically (**Charts 1** and **2)**. The communities include: Type 1, *Grindelia squarrosa/ Chrysothamnus* spp., Type 2, *Spartina pectinata,* Type 3, *Hordeum jubatum,* Type 4, *Typha angustifolia,* Type 5, *Beckmannia syzygnache/Juncus tenuis*, and Type 6, *Atriplex suckleyi.* Dominant species within each community are listed on the monitoring form **(Appendix B)**.

Table 1: ***2002-2007 American Colloid Wetland Mitigation Site vegetation species list.***

Scientific Name[1]	Region 4 (North Plains) Wetland Indicator Status[2]
Agropyron cristatum	- (UPL)
Agropyron dasystacium	FAC
Alopecurus aequalis	OBL
Andropogon scoparius	- (UPL)
Atriplex argentea	FACU
Atriplex suckleyi	**(FAC+-UPL likely)**
Beckmannia syzignache	OBL
Calamovilfa longifolia	- (UPL)
Chenopodium atrovirens	- (UPL)
Chrysothamnus spp.	- (UPL)
Echinochloa crusgalli	**FACW**
Eleocharis palustris	OBL
Eriogonum pauciflora	- (UPL)
Festuca octiflora	- (UPL)
Grindelia squarrosa	FACU
Hordeum jubatum	FACW
Juncus tenuis	FAC
Panicum capillare	**FAC**
Plantago patagonica	UPL
Poa compressa	**FACU**
Poa urida	- (UPL)
Puccinellia nuttalliana	OBL
Sarcobatus vermiculatus	FACU
Scirpus maritimus (likely)	OBL
Spartina pectinata	FACW
Typha angustiolfia	OBL

[1] **Bolded** species indicate those documented within the analysis area for the first time in 2007.
[2] Species either not included or classified as "non-indicator" in the *National List of Plant Species that Occur in Wetlands: North Plains (Region 4)* (Reed 1988); status in parentheses are probable based on biologist's experience.

Table 2: ***2002-2007 transect data summary.***

Monitoring Year	2002	2003	2004	2005	2006	2007
Transect Length (feet)	228	290	290	290	290	290
# Vegetation Community Transitions along Transect	1	2	1	1	0	0
# Vegetation Communities along Transect	2	3	2	2	0	3
# Hydrophytic Vegetation Communities along Transect	1	1	1	1	0	0
Total Vegetative Species	7	8	4	2	0	5
Total Hydrophytic Species	2	2	1	1	0	3
Total Upland Species	5	6	3	1	0	2
Estimated % Total Vegetative Cover	80	27	0	0	0	4
% Transect Length Comprised of Hydrophytic Vegetation Communities	84	10	0	<1	0	0
% Transect Length Comprised of Upland Vegetation Communities	16	22	0	<1	0	9
% Transect Length Comprised of Unvegetated Open Water	0	73	97	>99	>99	0
% Transect Length Comprised of Bare Substrate	0	0	3	<1	<1	91

Chart 1: ***Length of vegetation communities within Transect 1 during 2002 to 2007.***

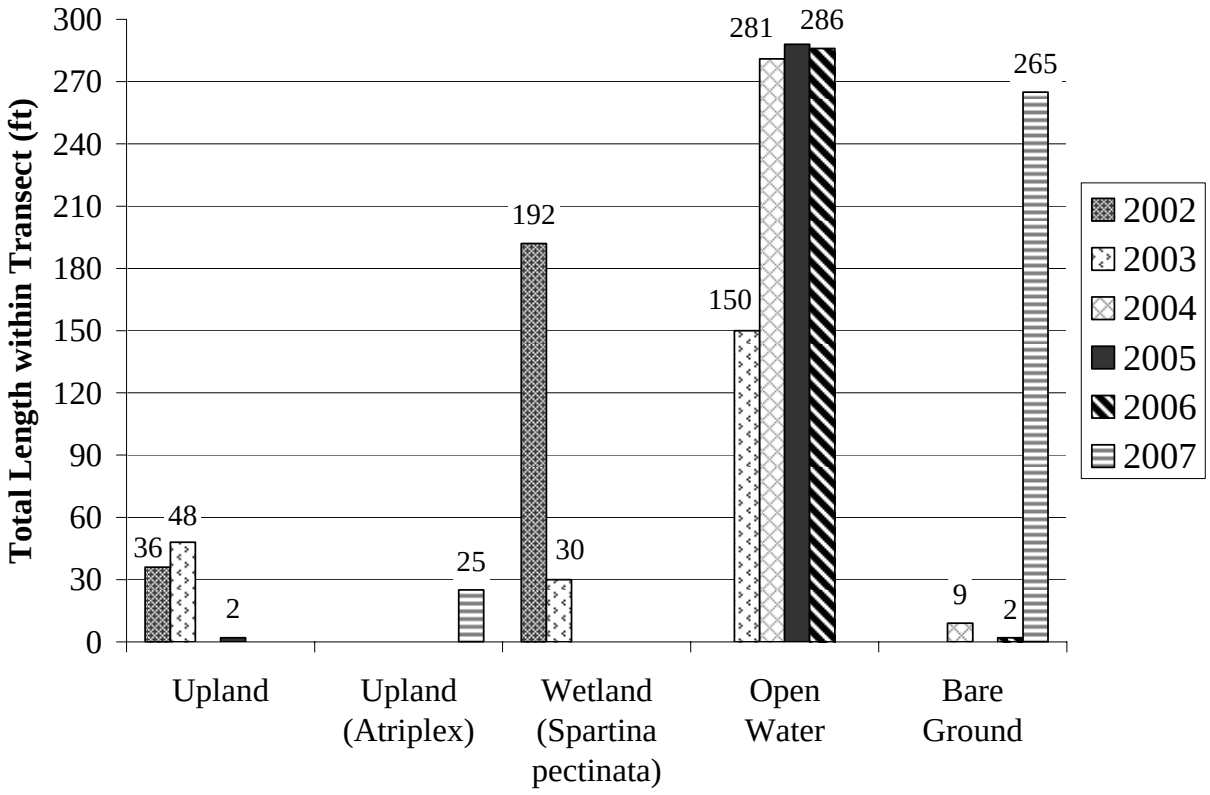
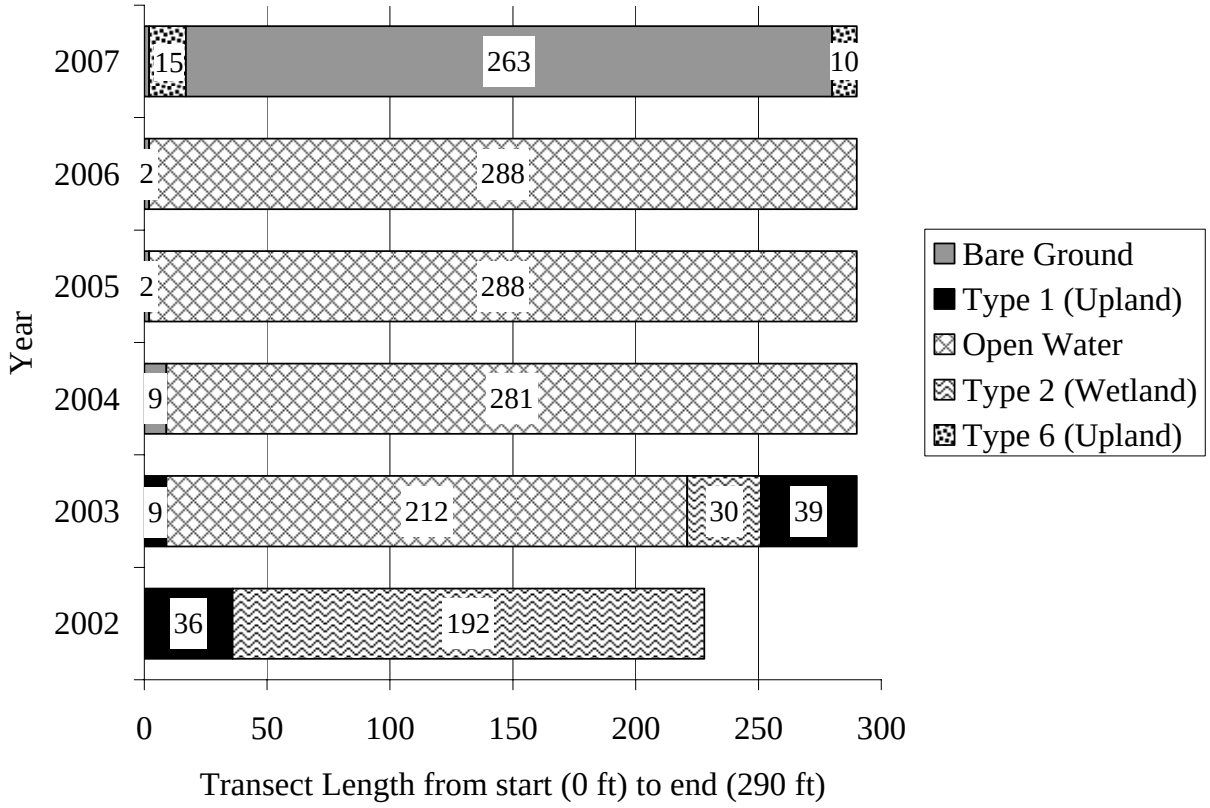


Chart 2: ***Transect maps showing vegetation types from the start (0 feet) to the end of transect (228 ft in 2002; 290 ft in 2003-2007).***



The small wetland vegetation communities scattered around the wetland site did not change appreciably since 2006, except for the development of the new community type 6 around the outer periphery of the area that was inundated prior to the dam breach event (**Figure 3** in **Appendix A**). The dominant vegetation in community type 6 is *Atriplex suckleyi* (formerly *A. dioaca*), which is not listed in the Region 4 wetland indicator manual (Reed 1988). Habitat as listed by several plant identification keys states this species is found in barren, alkaline habitats, with no mention of the plant associating with water habitats (Dorn 1984). Therefore, this plant and community type is assumed to be upland.

3.3 Soils

The site was mapped as part of the Carter County Soil Survey. The soil series mapped by the Natural Resources Conservation Service (NRCS) within the mitigation site is Neldore –Rock Outcrop Complex (Map Unit 58D). The complex is a non-hydric and well drained with clay loam inclusions. The dominant parent material is semi-consolidated shales. Soils were sampled at one wetland (SP-1) and one upland location (SP-2). Soils at both soil pits were a 2.5 Y 2/1 clay. No saturation was noted in either soil pit, however water marks were visible in SP-1.

3.4 Wetland Delineation

The breach event is viewed as an atypical situation resulting from a natural event; the dam was not breached because of human activities, rather a result of water seeping through the clay embankment, which lead to the creation of a hole large enough to allow the site to drain. Though the wetland communities were not saturated at the time of the investigation, there were water marks and an allowance made for the atypical situation resulting from the dam breach. The wetland vegetation communities were delineated and are depicted on **Figure 3** in **Appendix A**. The total vegetated wetland acreage is 0.06 acre. The COE data forms are included in **Appendix B**. Harvesting cattail (if preferred in this wetland) and *Spartina* in late summer from other wetland sites around the mine site and placing around the periphery of the wetland pond after the dam has been repaired may expedite hydrophytic vegetation colonization.

3.5 Wildlife

Wildlife species are listed in **Table 3.** No mammals, amphibians or reptiles were observed during the 2007 monitoring visit. The site was assessed in late afternoon when the temperatures were 100 degrees and the winds were greater than 10 miles per hour. Two avian species were observed and no bird boxes have been installed at this site.

Table 3: ***Wildlife species observed at the American Colloid Wetland Mitigation Site from 2002 to 2007[1].***

AMPHIBIANS, REPTILES, AND FISH
Northern leopard frog (*Rana pipiens*)
Tiger salamander (*Ambystoma tigrinum*)
MAMMALS
Eastern cottontail (*Sylvilagus floridanus*)
Mule deer (*Odocoileus hemionus*)
vole (likely sage or prairie species)
BIRDS
American Robin (*Turdus migratorius*)
Brewer's Blackbird (*Euphagus cyanocephalus*)
Canada Goose* (*Branta canadensis*)
Grasshopper Sparrow (*Ammodramus savannarum*)
Horned Lark (*Eremophilia alpestris*)
Killdeer (*Charadrius vociferous*)
Mourning Dove (*Zenaida macroura*)
Red-wing Blackbird (*Agelaius phoeniceus*)
Spotted Sandpiper (*Actitis macularia*)

* Scat found, likely Canada Goose origin.

[1] **Bolded** species indicate those documented during the 2007 monitoring event.

3.6 Macroinvertebrates

No macroinvertebrate sample was collected in 2007 due to a lack of surface water which resulted from a dam breach.

3.7 Functional Assessment

The completed Functional Assessment Form is included in **Appendix B** and summarized below in **Table 4**. The mitigation site continues to rate as a Category III wetland, even though there was a lack of water in the site at the time of the investigation. Signs of inundation earlier in the year were evident. The breach event is viewed as an atypical situation resulting from a natural event; the dam was not breached because of human activities, rather a result of water seeping through the clay embankment, which lead to the creation of a hole large enough to allow the site to drain. Functional units (FU) decreased from 15.1 in 2006 to 13.4 FU in 2007 because of a decrease in the Recreational/Educational Potential rating. Until an increase in percent cover of hydrophytic vegetation communities occurs, with subsequent increases in General Wildlife Habitat, Sediment/Nutrient/Toxicant Removal, Short and Long Term Water Storage, and Production Export/Food Chain Support, the potential of this site to have moderate to high recreational/educational values is questionable.

3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix C.** Photograph I depicts the breach hole on the east side of the center culvert.

3.9 Maintenance Needs/Recommendations

MDT was notified by the aerial photographer in early July that the site was dry (Urban pers. comm..). At the time of the investigation in mid-July it was confirmed that no water was in the site and the dam had been breached. There are three risers on the south side of the berm and three horizontal culverts attached to these risers which convey overflow water to the north side of the dam. The dam failed due to a horizontal hole on the east side of the center riser on the south side of the berm. A hole was also observed on the north side of the dam beneath a different culvert (there was not a straight line to the culvert hole on the south side). It appeared that the dam was undermined by water flowing beneath a least two of the culverts in a diagonal fashion. MDT was immediately notified of the breach and photographs were sent to assist the staff with diagnosing the situation.

Table 4: ***Summary of 2002-2007 wetland function/value ratings and functional points at the American Colloid Wetland Mitigation Site.***

Function and Value Parameters from the 1999 MDT Montana Wetland Assessment Method	2002	2003	2004	2005	2006	2007
Listed/Proposed T&E Species Habitat	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)
MNHP Species Habitat	Mod (.6)	High (1)	Mod (.7)	Mod (.7)	Mod (.7)	Mod (.7)
General Wildlife Habitat	Mod (.4)	Mod (.4)	High (.9)	High (.9)	Mod (.5)	Mod (.5)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (.4)	Mod (.5)	Low (.2)	Low (.2)	NA	NA
Short and Long Term Surface Water Storage	High (.8)	High (.8)	Mod (.4)	Mod (.4)	Mod (.4)	Mod (.4)
Sediment, Nutrient, Toxicant Removal	Mod (.6)	Mod (.7)	Mod (.7)	Mod (.7)	Low (.3)	Low (.3)
Sediment/Shoreline Stabilization	Mod (.7)	Mod (.7)	Low (.3)	Low (.3)	Low (.3)	Low (.3)
Production Export/Food Chain Support	Mod (.6)	Mod (.6)	Mod (.4)	Mod (.4)	Mod (.4)	Mod (.4)
Groundwater Discharge/Recharge	NA	NA	NA	NA	NA	NA
Uniqueness	Low (.3)	Low (.3)	Mod (.4)	Mod (.4)	Mod (.4)	Mod (.4)
Recreation/Education Potential	Mod (.5)	Mod (.5)	Mod (.7)	Mod (.7)	Mod (.7)	Low (.3)
Actual Points/Possible Points	4.9/10	5.5/10	4.7/10	4.7/10	3.7/9	3.3/9
% of Possible Score Achieved	49%	55%	47%	47%	41%	37%
Overall Category	III	II	II	II	III	III
Total Acreage of Assessed Wetlands within Monitoring Area	**0.69**	**0.69**	**3.82 (max)**	**4.2 (max)**	**4.08 (max)**	**4.08 (max)**
Total Functional Units (acreage x actual points)	**3.38**	**3.79**	**17.95 (max)**	**19.74 (max)**	**15.1 (max)**	**13.4 (max)**
Net Acreage Gain ("new" wetlands)	**0.69**	**0.69**	**3.82 (max)**	**4.2 (max)**	**4.08 (max)**	**4.08 (max)**
Net Functional Unit Gain (new acreage x actual points)	**3.38**	**3.79**	**17.95 (max)**	**19.74 (max)**	**15.1 (max)**	**13.4 (max)**

3.10 Current Credit Summary

The American Colloid wetland mitigation site was constructed in October 2001 to mitigate 4.4 acres of unavoidable wetland impacts associated with MDT projects in Watershed #16. The site was anticipated to be 5 acres with a 10-acre buffer zone and is completely fenced (MDT 1999). The net vegetated wetland area for 2007 totals 0.06 acre. No open water habitat was observed because of the dam breach which had occurred sometime between July 2006 and July 2007. Water lines were visible at the time of the monitoring event suggesting the breach occurred sometime during 2007.

The American Colloid mitigation continues to rate as a Class III wetland; the assessment area remained 4.08 acres which accounts for all of the aquatic habitat assessed in 2006 and assumed present in 2007 prior to the breach. Functional units (FU decreased from 15.1 in 2006 to 13.4 FU in 2007 because of a decrease in the Recreational/Educational Potential rating.

4.0 REFERENCES

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Appendix A

FIGURES 2 & 3

MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana

Figure 2 Monitoring Activity Locations 2007

Monitoring Area Limits
Photograph Point
Vegetation Transect
Soil Sample Point
Aerial Reference Point

Base photograph July 15, 2007

PP DEF
Outlet
PP I
Monitoring Area Limits
PP BCG
PP A
SP1
SP2
PP H

N
W
E
S

80' 40' 0 40' 80'

SCALE: 1" = 80'

PROJECT NAME
MDT AMERICAN COLLOID WETLAND MITIGATION
DRAWING TITLE
MONITORING ACTIVITY LOCATIONS 2007

DRAWN: SH/JR
PROJ MGR: J. BERGLUND
CHECKED: LB
APPVD: JB

PROJ NO: B43054.0402
LOCATION: American Colloid
SCALE: 1" = 80'
FILE NAME: 2007 BASE.dwg

PBSJ
3810 Valley Commons Drive
Suite 4
Bozeman, MT 59718

FIGURE
2 OF
REV -
Nov/12/2007

Figure 3 Mapped Site Features 2007

Monitoring Area Limits
Wetland Boundary
Vegetation Community Limits

Base photograph July 15, 2007

Wetland Area

Gross Wetland Area	0.06 Acres
Open Water	0.00 Acres
Net Wetland Area	0.06 Acres

Vegetation Community Codes

1. Grindelia squarrosa/Chrysothamnus spp.
2. Spartina pectinata
3. Hordeum jubatum
4. Typha angustifolia
5. Beckmannia syzigmache/Juncus tenuis
6. Atriplex suckleyi

Dam Breach
Dry Mud
Dry Mud
Monitoring Area Limits
Monitoring Area Limits

N
W
E
S

80' 40' 0 40' 80'
SCALE: 1" = 80'

PROJECT NAME
MDT AMERICAN COLLOID WETLAND MITIGATION
DRAWING TITLE
MAPPED SITE FEATURES 2007

DRAWN: SH/JR
PROJ MGR: J. BERGLUND
CHECKED: LB
APPVD: JB

PROJ NO: B43054.0402
LOCATION: American Colloid
SCALE: 1" = 80'
FILE NAME: 2007 BASE.dwg

PBSJ
3810 Valley Commons Drive
Suite 4
Bozeman, MT 59718

FIGURE
3 OF -
REV -
Nov/20/2007

Appendix B

2007 WETLAND MITIGATION SITE MONITORING FORM
2007 BIRD SURVEY FORMS
2007 COE WETLAND DELINEATION FORMS
2007 FUNCTIONAL ASSESSMENT FORM

MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana

PBS&J / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **American Colloid** Project Number: **B43054.00-402**
Assessment Date: **July 16, 2007** Person(s) conducting the assessment: **L.Bacon, PBSJ**
Location: **Alzada** MDT District: **Glendive** Milepost: _____
Legal Description: T **9S** R **58E** Section **36**
Weather Conditions: **100 deg, windy** Time of Day: **1600**
Initial Evaluation Date: **July 18, 2002** Monitoring Year: **5** # Visits in Year: **1**
Size of evaluation area: **5 acres** Land use surrounding wetland: **bentonite mine, range**

HYDROLOGY

Surface Water Source: **stormwater**
Inundation : **Absent** Average Depth: Range of Depths:
Percent of assessment area under inundation: **0**
Depth at emergent vegetation-open water boundary: If assessment area is not inundated then are the soils saturated within 12 inches of surface: **No**
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):
sediment line

Groundwater Monitoring Wells: **Absent**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth

Additional Activities Checklist:
☒ Map emergent vegetation-open water boundary on aerial photograph.
☒ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)
☐ Use GPS to survey groundwater monitoring well locations, if present.

COMMENTS / PROBLEMS:
Dam breach, no water in wetland at the time of the investigation.

VEGETATION COMMUNITIES

Community Number: **1** Community Title (main species): **Grindelia squarosa/Chrysothamnus**

Dominant Species	% Cover	Dominant Species	% Cover
FESOCT	3 = 11-20%	ANDSCO	4 = 21-50%
CHRsp.	3 = 11-20%	ERIPAU	2 = 6-10%
BROTEC	3 = 11-20%		
GRISQU	1 = 1-5%		

Comments / Problems: _____

Community Number: **2** Community Title (main species): **Spartina pectinata**

Dominant Species	% Cover	Dominant Species	% Cover
SPAPEC	5 = > 50%		
HORJUB	+ = < 1%		
SCIMAR	+ = < 1%		
BECSYZ	+ = < 1%		

Comments / Problems: _____

Community Number: **3** Community Title (main species): **Hordeum jubatum**

Dominant Species	% Cover	Dominant Species	% Cover
HORJUB	5 = > 50%		

Comments / Problems: _____

Community Number: **4** Community Title (main species): **Typha angustifolia**

Dominant Species	% Cover	Dominant Species	% Cover
TYHANG	5 = > 50%		

Comments / Problems: **isolated pod**

VEGETATION COMMUNITIES (continued)

Community Number: **5** Community Title (main species): **Beckmannia syzigachne/Juncus tenuis**

Dominant Species	% Cover	Dominant Species	% Cover
BECSYZ	3 = 11-20%	HORJUB	3 = 11-20%
JUNTEN	3 = 11-20%		
TYPANG	3 = 11-20%		
ALOAEQ	3 = 11-20%		
SCIMAR	3 = 11-20%		
ELEPAL	3 = 11-20%		

Comments / Problems: **No real dominant species at this time**

Community Number: **6** Community Title (main species): **Atriplex suckleyi**

Dominant Species	% Cover	Dominant Species	% Cover
POACOM	+ = < 1%	HORJUB	1 = 1-5%
ECHCUS	1 = 1-5%		
PANCAP	2 = 6-10%		
ATRSUK	5 = > 50%		
bare ground	3 = 11-20%		
SPAPEC	+ = < 1%		

Comments / Problems: **community has colonized outer edge of what was inundated the last few years and is now dry.**

Community Number: ___ Community Title (main species): _____

Dominant Species	% Cover	Dominant Species	% Cover

Comments / Problems: _____

Community Number: ___ Community Title (main species): _____

Dominant Species	% Cover	Dominant Species	% Cover

Comments / Problems: _____

Additional Activities Checklist:

☐ Record and map vegetative communities on aerial photograph.

COMPREHENSIVE VEGETATION LIST

Plant Species	Vegetation Community Number (s)	Plant Species	Vegetation Community Number (s)
Agropyron cristatum	1		
Agropyron dasystacium	1		
Alopecurus aequalis	5		
Andropogon scoparius	1		
Atriplex argente	1		
Atriplex suckleyi	6		
Beckmania syznache	2,5		
Calamovilfa longifolia	1		
Chenopodium atrovirens	1,6		
Chrysothamnus spp.	1		
Echinochloa crusgalli	6		
Eleocharis palustris	5		
Eriogonum pauciflora	1		
Festuca octiflora	1		
Grindelia squarrosa	1		
Hordeum jubatum	2,3,6		
Juncus tenuis	5		
Panicum capillare	6		
Plantago patagonica	1		
Poa compressa	6		
Poa urida	1		
Puccinellia nuttalliana	2		
Sarcobatus vermiculatus	1		
Scirpus maritimus	2,5		
Spartina pectinata	2		
Typha angustifolia	4,5		

Comments / Problems: _____

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes

Comments / Problems: **No planted woody species.**

WILDLIFE

Birds

Were man-made nesting structures installed? **No**
If yes, type of structure: _____ How many? _____
Are the nesting structures being used? **NA**
Do the nesting structures need repairs? _____

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
jackrabbit or cottontail	1	☐	☒	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
No Macroinvertebrate Sampling (if required)

Comments / Problems: Unable to sample in 2007 because of lack of water in basin.

PHOTOGRAPHS

Using a camera with a 50mm lens and color film take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

- ☒ One photograph for each of the four cardinal directions surrounding the wetland.
- ☒ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.
- ☒ At least one photograph showing the buffer surrounding the wetland.
- ☒ One photograph from each end of the vegetation transect, showing the transect.

Location	Photograph Frame #	Photograph Description	Compass Reading (°)
A		toward outlet	2
B		upland buffer	348
C		across wetland toward H transect end	118
D		downstream of dam	25
E		along dam front (opposite direction of F)	186
F		along dam front (opposite direction of E)	220
G		across wetland toward H end of transect	118
H		across wetland toward G end of transect	302
I		Center culvert wash out	

Comments / Problems: _____

GPS SURVEYING

Using a resource grade GPS survey the items on the checklist below. Collect at least 3 location points set at a 5 second recording rate. Record file numbers for site in designated GPS field notebook.

GPS Checklist:

- ☒ Jurisdictional wetland boundary.
- ☒ 4-6 landmarks that are recognizable on the aerial photograph.
- ☒ Start and End points of vegetation transect(s).
- ☒ Photograph reference points.
- ☒ Groundwater monitoring well locations.

Comments / Problems: **GPSed in 2002**

WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

- ☒ Delineate wetlands according to the 1987 Army COE manual.
- ☒ Delineate wetland – upland boundary onto aerial photograph.

Yes Survey wetland – upland boundary with a resource grade GPS survey.

Comments / Problems: **GPSed in 2002; boundary hand altered thereafter.**

FUNCTIONAL ASSESSMENT

(Complete and attach full MDT Montana Wetland Assessment Method field forms.)
(Also attach any completed abbreviated field forms, if used)

Comments / Problems: _____

MAINTENANCE

Were man-made nesting structure installed at this site? **NA**
If yes, do they need to be repaired? **NA**
If yes, describe the problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? **Yes**
If yes, are the structures working properly and in good working order? **No**
If no, describe the problems below.

Comments / Problems**: The center culvert has a deep hole (4-5ft) on the east side where water flowed through the dam. A hole was also observed on the north side of the dam but not the same culvert.**

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **American Colloid** Date: **July 16, 2007** Examiner: **LBacon, PBSJ**
Transect Number: **1** Approximate Transect Length: **290 feet** Compass Direction from Start: **122˚** Note: _____

Vegetation Type A: **CT-1**	
Length of transect in this type: 2 feet	
Plant Species	**Cover**
bare dirt	5 = > 50%
Total Vegetative Cover:	0%

Vegetation Type B: **CT-6**	
Length of transect in this type: 15 feet	
Plant Species	**Cover**
POACOM	+ = < 1%
ECHCUS	1 = 1-5%
PANCAP	2 = 6-10%
ATRSUK	5 = > 50%
bare ground	3 = 11-20%
SPAPEC	+ = < 1%
Total Vegetative Cover:	80%

Vegetation Type C: **dried mud**	
Length of transect in this type: 263 feet	
Plant Species	**Cover**
Dried pond bottom	5 = > 50%
Total Vegetative Cover:	100%

Vegetation Type D: **CT 6**	
Length of transect in this type: 10 feet	
Plant Species	**Cover**
ATRSUC	4 = 21-50%
Bare ground	5 = > 50%
Total Vegetative Cover:	80%

MDT WETLAND MONITORING – VEGETATION TRANSECT

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

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): **0-1%**

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

Estimate cover within a 10 foot 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.

Comments: ***Spartina* community still observed on east end of transect, no new wetland communities.**

BIRD SURVEY – FIELD DATA SHEET

Site: **American Colloid** Date: **7/16/07**
Survey Time: **3 pm** to **4 pm**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Killdeer	1	F	UP				
Horned Lark	1	F	UP				

BEHAVIOR CODES
BP = One of a breeding pair
BD = Breeding display
F = Foraging
FO = Flyover
L = Loafing
N = Nesting

HABITAT CODES
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 shore

Weather: **extremely hot and windy**

Notes: _____

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

Project / Site: **American Colloid**	Date: **July 16, 2007**
Applicant / Owner: **MDT**	County: **Carter**
Investigator: **LBacon/PBSJ**	State: **MT**

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

VEGETATION

Dominant Species	Stratum	Indicator	Dominant Species	Stratum	Indicator
1. *ANDSCO*	Herb	NI	11.		
2. *FESOCT*	Herb	NI	12.		
3. *POAURI*	Herb	NI	13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): **0** / **3** = **0**%			FAC Neutral: / = %		
Remarks: **SP just above water mark of pond and above/beyond transect post.**					

HYDROLOGY

Yes Recorded Data (Describe in Remarks): **N/A** Stream, Lake, or Tide Gauge **Yes** Aerial Photographs **N/A** Other **No** No Recorded Data	Wetland Hydrology Indicators Primary Indicators: **NO** Inundated **NO** Saturated in Upper 12 Inches **NO** Water Marks **NO** Drift Lines **NO** Sediment Deposits **NO** Drainage Patterns in Wetland
Field Observations: Depth of Surface Water **N/A** ____ (in.) Depth to Free Water in Pit **N/A** ____ (in.) Depth to Saturated Soil **N/A** ____ (in.)	Secondary Indicators (2 or more required): **NO** Oxidized Root Channels in Upper 12 inches **NO** Water-Stained Leaves **NO** Local Soil Survey Data **NO** FAC-Neutral Test **NO** Other (Explain in Remarks)
Remarks: **Soil is dry; no water pattern.**	

SOILS

Map Unit Name (Series and Phase): **Nelodre-rock outcrop complex**
Map Symbol: **58D** Drainage Class: **well** Mapped Hydric Inclusion? _
Taxonomy (Subgroup): **Aridic Ustorthents** Field Observations confirm Mapped Type? **Yes**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color(s) (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
6"	A	2.5 Y 2/1	/ /	N/A N/A	 silt clay
		/	/ /	N/A N/A	
		/	/ /	N/A N/A	
		/	/ /	N/A N/A	
		/	/ /	N/A N/A	

Hydric Soil Indicators:

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

Remarks: **Same soil in wetland and upland areas, the form is a "chip", very dry flakes of bentonite.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **NO**
Wetland Hydrology Present? **NO**
Hydric Soils Present? **YES**

Is this Sampling Point within a Wetland? **NO**

Remarks: **Soil dark at this microlocation, otherwise, no wetland indicators above water mark around entire pond.**

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

Project / Site: **American Colloid** Applicant / Owner: **MDT** Investigator: **LBacon/PBSJ**	Date: **July 16, 2007** County: **Carter** State: **MT**

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

VEGETATION

Dominant Species	Stratum	Indicator	Dominant Species	Stratum	Indicator
1. *SPAPEC*	Herb	FACW	11.		
2.			12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): **1** / **1** = **100**%			FAC Neutral: / = %		
Remarks: This species has colonized an adjacent to the transect.					

HYDROLOGY

Yes Recorded Data (Describe in Remarks): **N/A** Stream, Lake, or Tide Gauge **Yes** Aerial Photographs **N/A** Other **No** No Recorded Data	Wetland Hydrology Indicators Primary Indicators: **NO** Inundated **NO** Saturated in Upper 12 Inches **YES** Water Marks **NO** Drift Lines **YES** Sediment Deposits **YES** Drainage Patterns in Wetland
Field Observations: Depth of Surface Water **N/A** ____ (in.) Depth to Free Water in Pit **N/A** ____ (in.) Depth to Saturated Soil **N/A** ____ (in.)	Secondary Indicators (2 or more required): **NO** Oxidized Root Channels in Upper 12 inches **NO** Water-Stained Leaves **NO** Local Soil Survey Data **NO** FAC-Neutral Test **NO** Other (Explain in Remarks)
Remarks: Breach in dam, no water at all and no saturation at edges and did not walk into middle to check saturation level of dried mud, did not seem appropriate if indeed wet soil was present.	

SOILS

Map Unit Name (Series and Phase): **Nelodre-rock outcrop complex**
Map Symbol: **58D** Drainage Class: **well** Mapped Hydric Inclusion? _
Taxonomy (Subgroup): **Aridic Ustorthents** Field Observations confirm Mapped Type? **Yes**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color(s) (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10	A	2.5 Y 2/1	/ /	N/A N/A	Dry clay chips
		/	/ /	N/A N/A	
		/	/ /	N/A N/A	
		/	/ /	N/A N/A	
		/	/ /	N/A N/A	

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **YES**
Wetland Hydrology Present? **YES**
Hydric Soils Present? **YES**

Is this Sampling Point within a Wetland? **YES**

Remarks: Breach in dam, no water, MDT notified. Will still classify the hydrophytic vegetation communities as wetland given the water marks that were still evident, indicating water was likely present for part of 2007. The site in general is classified as atypical for 2007, the dry condition resulting from a natural event (dam breach).

MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: American Colloid **2. Project #:** B43088.0402 **Control #:** _____

3. Evaluation Date: 7/17/2007 **4. Evaluator(s):** LB/PBSJ **5. Wetland / Site #(s):** _____

6. Wetland Location(s) i. T: 9 S **R:** 58 E **S:** 36 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 10110201 **GPS Reference No. (if applies):** _____

Other Location Information: _____

7. A. Evaluating Agency PBSJ **8. Wetland Size (total acres):** _____ (visually estimated)
4.08 (measured, e.g. GPS) NOTE: Though no water was observed within the wetland during the monitoring event as a result of the dam breach, the wetland size will continue to be considered as the entire area that was flooded in 2006 because the dam breach is being considered as an "atypical situation". The area of encroachment of an upland vegetation community into the area that was formally flooded, though recognized as an upland community type within the monitoring form and vegetation transect, is counted within the 'wetland size' acreage also because of the atypical situation classification.

B. Purpose of Evaluation:
- ☐ Wetlands potentially affected by MDT project
- ☐ Mitigation wetlands; pre-construction
- ☒ Mitigation wetlands; post-construction
- ☐ Other

9. Assessment Area (total acres): _____ (visually estimated)
4.08 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Depression	Palustrine	None	Emergent Wetland	Permanently Flooded-*	---	1
Depression	Palustrine	---	Unconsolidated Bottom	Permanently Flooded	---	99
---	---	---	---	---	---	
---	---	---	---	---	---	

[1] = Smith et al. 1995. [2] = Cowardin et al. 1979.

Comment: *Will continue to include the permanently flooded classification (Table 10) throughout the FA because the dam breach is classified as an atypical situation.

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)
Common **Comments:** There are several ponds and wetlands throughout the Colloid property.

12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

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

Comments: (types of disturbance, intensity, season, etc.) no disturbance, well fenced

ii. Prominent weedy, alien, & introduced species: Some *Chenopodium* weedy species and 2007-identified *Atriplex sucklei* which has no indicator status in this region, however references state that the species is found in barren alkaline habitats and there is no mention of water or seep preference; therefore considered an upland species.

iii. Briefly describe AA and surrounding land use / habitat: BLM bentonite mine; wetland protected by a fence

13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	≤ 1 Vegetated Class
Select Rating	---	---	Low

Comments: Because the area is fenced shrubs may grow well here; however willow sprigs would likely not survive the tight clays. Containerized woody species may have a higher survival rate in this type of soil.

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS

i. AA is Documented (D) or Suspected (S) to contain (check box):

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** (Based on the strongest habitat chosen in 14A(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	---	---	---	---	---	---	0 (L)

If documented, list the source (e.g., observations, records, etc.)**:** _____

14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.
Do not include species listed in 14A(i).

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☒ D	☐ S	*Rana pipiens*
Incidental habitat **(list species)**	☐ D	☐ S	_____
No usable habitat	☐ D	☐ S	_____

iii. **Rating** (Based on the strongest habitat chosen in 14B(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level:	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	---	---	.7 (M)	---	---	---	---

If documented, list the source (e.g., observations, records, etc.)**:** LB/photograph; young frogs not observed to date.

14C. General Wildlife Habitat Rating

i. **Evidence of overall wildlife use in the AA:** (Check either substantial, moderate, or low)

☐ **Substantial** (based on any of the following)
- ☐ 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)
- ☐ 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 AA

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

ii. **Wildlife Habitat Features** (Working from top to bottom, select appropriate AA attributes to determine the 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 in the AA (see #10). Duration of Surface Water: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; A= absent.

Structural Diversity (from #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 #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. **Rating** (Using 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.)

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☒ Exceptional	☐ High	☒ Moderate	☐ Low
Substantial	--	--	--	--
Moderate	--	--	.5 (M)	--
Low	--	--	--	--

Comments: ii decreased from E to M given the current potential wildlife use given the perpetual habitat features at the Colloid wetland when at full pond with the very low vegetation cover of ~1%, no aquatic vegetation, no woody vegetation. Once the circumference of the pond begins to show an increase in hydrophytic vegetation around a majority of the circumference, the 'potential' of Excellent wildlife habitat will be acknowledged**.**

14D. GENERAL FISH/AQUATIC HABITAT RATING ☒ **NA** (proceed to 14E)

If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, then check the NA box above.

Assess if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [*e.g.* fish use is precluded by perched culvert or other barrier, etc.]. If fish use occurs in the AA but is not desired from a resource management perspective (*e.g.* fish use within an irrigation canal], then Habitat Quality [14D(i)] below should be marked as "Low", applied accordingly in 14D(ii) below, and noted in the comments.

i. **Habitat Quality** (Pick the appropriate AA attributes in matrix to pick the 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 (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity **or** is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support**?**
☐ **Y** ☐ **N** If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. **Rating** (Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to pick the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).)

Types of Fish Known or Suspected Within AA	**Modified Habitat Quality** from 14D(ii)			
	☐ Exceptional	☐ High	☐ Moderate	☐ Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: _____

14E. FLOOD ATTENUATION ☒ **NA** (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow.
If wetlands in AA do not flood from in-channel or overbank flow, check NA above.

i. **Rating** (Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) 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**	--	--	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)
☐**Y** ☐**N** **Comments:** _____

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

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, check NA above.

i. Rating (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)
Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

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**	--	--	--	--	--	--	.4 (M)	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: _____

14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

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, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.)

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has 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 has 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**	--	--	--	--	--	--	.3 (L)	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: Sediment from clay substrate on pond bottom and surrounding topography has not cleared with resultant lack of aquatic veg and macroinvertebrate development, and subsequent lack of bird use.

14H. SEDIMENT/SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, check NA above.

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) 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 %	--	--	--
35-64 %	--	--	--
< 35 %	.3 (L)	--	--

Comments: WL vegetation beginning to colonize small areas on west edge and NE corner; <1% of total aquatic area.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. **Rating** (Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.
A = acreage of vegetated component in the AA. **B** = structural diversity rating from #13. **C** = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet; **P/P** = permanent/perennial; **S/I** = seasonal/intermittent; **T/E/A**= temporary/ephemeral/absent.

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	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☒Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.4M	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: see above for water P/P status

14J. GROUNDWATER DISCHARGE/RECHARGE (D/R) (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 slopes.
- ☐ 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 presents without underlying impeding layer.
- ☐ Wetland contains inlet but not outlet.
- ☐ Other

iii. **Rating:** Use the information from 14J(i) and 14j(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	--
No Discharge/Recharge indicators present	--
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 the functional point and rating of high (H), moderate (M), or low (L) 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 MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

14L. RECREATION / EDUCATION POTENTIAL

i. Is the AA a known recreational or educational site? ☐ **Yes (Rate** ☐ **High (1.0)**, then proceed to 14L(ii) only] ☒ **No** [Proceed to 14L(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 a strong potential for recreational or educational use?
☐ **Yes** [Proceed to 14L (ii) and then 14L(iv).] ☒ **No** [Rate as low in 14L(iv)]

iv. Rating (Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from #12(i)		
	☒ Low	☐ Moderate	☐ High
Public ownership	--	--	--
Private ownership	.7(M)	--	--

Comments: NOTE: This value has been dcreased because the rate of hydrophytic vegetation colonization has been very slow, and because of this fact the "potential" of this site is questionable. The 0.7 rating will be decreaased to 0.3, to indicate some potential in the event the hydrophytic vegetation acreage increases, however water clarity, aquatic vegetation and wildlife usage would also subsequently need to increase.

FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0.00	1	
B. MT Natural Heritage Program Species Habitat	M	0.70	1	
C. General Wildlife Habitat	M	0.50	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	NA		--	
F. Short and Long Term Surface Water Storage	M	0.40	1	
G. Sediment/Nutrient/Toxicant Removal	L	0.30	1	
H. Sediment/Shoreline Stabilization	L	0.30	1	
I. Production Export/Food Chain Support	M	0.40	1	
J. Groundwater Discharge/Recharge	NA		--	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	L	0.30	1	
	Totals:	3.30	9.00	13.4
	Percent of Total Possible Points:		**37%** (Actual / Possible) x 100 [rd to nearest whole #]	

Category I Wetland: (Must satisfy **one** of the following criteria. If not proceed 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**
- ☐ Percent of total Possible Points is > 80%.

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed 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**
- ☐ Percent of total possible points is > 65%.

☒ **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 not satisfied, proceed to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

OVERALL ANALYSIS AREA (AA) RATING: (Check appropriate category based on the criteria outlined above.)

☐ **I** ☐ **II** ☒ **III** ☐ **IV**

Appendix C

2007 REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana

2007 AMERICAN COLLOID WETLAND MITIGATION SITE

Location: A **Description:** Toward outlet **Compass Reading:** 2°

Location: B **Description:** Upland buffer **Compass Reading:** 348°

Location: C **Description:** Across wetland and beginning of transect **Compass Reading:** 118°

Location: D **Photo Frame:** 16 **Description:** Downstream of dam **Compass Reading:** 25°

Location: E **Description:** SE from dam across wetland **Compass Reading:** 186°

Location: F **Description:** SW from dam across wetland **Compass Reading:** 220

Location: G **Description:** Across wetland and beginning of transect **Compass Reading:** 118°

Location: H **Description:** End of transect **Compass Reading:** 302°

Location: I **Description:** Middle culvert washout on south side of berm resulting in draining of site; hole was more than 4 feet deep.

Appendix D

MDT Revised Preliminary Field Review Report
MDT Addendum Attachments (Plan Sheets)

MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana

LAND & WATER D-1

Montana Department of Transportation
Helena, Montana 59620-1001

Memorandum

To: Carl S. Peil , P.E.
Preconstruction Engineer

From: Gordon J. Stockstad
Resources Bureau Chief

Date: December 23, 1998

Subject: NH STPS BR 6(10)
Watershed 16
American Colloid
Control No. 1396

We request that you approve the Revised Preliminary Field Review Report for the subject project.

Approved D. John Blacker Date 1/4/99
Carl S. Peil, P.E.
Preconstruction Engineer

We are requesting comments from the following individuals, who have also received a copy of the report. We will assume their concurrence if no comments are received by two weeks from the above date.

Distribution:
C. S. Peil
J. M. Marshik
D. R. McIntyre
R. E. Williams
B. F. Juvan
M. P. Johnson
J. D. Blacker
FHWA
Precon File
P. Saindon
B. A. Larsen
D. P. Dusek
K. H. Neumiller
T. E. Martin
R. D. Tholt
S. Prestipino
Mark A. Wissinger

Revised Preliminary Field Review Report

A field review of the subject project was held in September 18, 1997, with the following people in attendance:

R. E. Mengel	Engineering Services Supr.	Glendive
J. S. Michel	Hydraulics Section	Helena
Larry Sickerson	Environmental Services	Helena
Tim Olson	Environmental Services	Helena
Tom Atkins	Road Design	Helena
John Moran	Geotech	Helena

Introduction

A preliminary field review was previously conducted for this project. The original Preliminary Field Review Report that went out did not request approval from Carl Peil nor did it request comments. The purpose of this Revised Preliminary Field Review Report is to follow the proper procedures for the purpose of activating activities from the Project Management System flow chart for Wetland Mitigation and to include comments that were received after the document had been circulated. The intent of this Report is also to bring everyone up to date on where this project is at and where it is going. Some of the activities on the PMS Wetland Mitigation flow chart have already been completed and will need to be carded out when this project comes around for overrides.

Purpose

As a result of wetland impacts associated with the Alzada - East & West (STPP 23-3(6)130, Control No. 2150), and Alzada South (STPS 326-1(1)0, Control No. 2299) highway projects, MDT is proposing mitigation efforts on Montana School Trust Land. **It is intended to tie the construction of this mitigation project to Alzada - East and West for letting purposes. The proposed ready date for the Alzada-East and West project is December, 1999.**

To mitigate impacts on the projects mentioned above, MDT is working with American Colloid, the Department of Natural Resources and Conservation (Eastern Land Office), and the Department of Environmental Quality (Reclamation Division) to create wetland habitat. MDT and American Colloid will work together to amend American Colloids reclamation plan to reflect this project. Department of Environmental Quality - Reclamation Division must approve the plan.

MDT is anticipating a mitigation site of approximately 5 acres in size for the wetland impacts associated with the previously mentioned projects. The 5 acres of wetlands will

also be surrounded by a 10 acre buffer zone of upland vegetation. The entire 15 acres will be fenced as an exclosure to livestock grazing. This exclosure will need to be sheep-proof.

Project Location and Limits

The wetland mitigation site is located in Carter County approximately 2 miles south and 7 miles west of Alzada, MT. This site is located on Montana School Trust Land in the Lot 7, Lot 10, Lot 11 of Section 36, Township 9 South, Range 58 East, M.P.M., as shown on the attached project location map.

Site Description

The wetland mitigation site is located on land owned by the Montana Department of Natural Resources and Conservation which is leased to the American Colloid Mining Company of Belle Fourche, SD. The 15 acre site was mined for bentonite clay prior to the 1971 Open Cut Mining Act and is in need of reclamation. The topography of the site is typical of open cut mining activities.

Design

The design for this proposed mitigation site will be provided by MDT's Road Design Section. It is anticipated that no excavation will be necessary. A dike approximately 58 meters in length will need to be constructed to impound the water for this site. Other design criteria will be based on the water budget analysis provided by the Hydraulics Section. Environmental Services will be the lead unit for this project.

Construction

MDT will be responsible for the project letting, construction, and project manager. This project will be tied to the Alzada - East & West project for letting and construction and has an anticipated ready date of December, 1999.

Hydraulics

The drainage patterns as shown on existing topographic maps for the watershed associated with this site have been altered due to mining activities. American Colloid provided

MDT with a drainage area of 167 acres of surrounding watershed. Jerry Michaels is working on a water budget for the proposed site.

Water Rights
The Department of Natural Resources and Conservation will be responsible for acquiring the water rights for this site.

Geotechnical Considerations
The Geotechnical Section has completed their field investigation. This consisted of five borings at the mitigation site which revealed clay soils underlain by shale. This material is suitable for the creation of a wetland. These soils are highly erodible therefore the design should avoid an earthen spillway for the emergency outlet.

Right-of Way
The mitigation site lies within the boundaries of Montana School Trust Land and will be managed and maintained by the DNRC. A wetland conservation agreement between DNRC and MDT will be drafted by MDT for perpetuity. It needs to be addressed in this document whom the responsible party will be for removal of the sheep proof fence once the wetland is functional. It is anticipated the R/W Plans Section will review documents prepared by the DNRC. If the easement or legal description is to be provided by MDT, R/W should be notified so they can request the appropriate survey.

Environmental Considerations
No significant environmental effects or issues were identified. An appropriate environmental evaluation and document will be prepared by MDT through Environmental Services for this project. The project should have minimal effect on the habitat of any threatened or endangered species. A hazardous waste analysis and a Cultural Resource site assessment will be needed for the environmental documentation.

Field Survey
A topographic survey of the area has been performed. Additional survey for the legal description for the easement

may be required. Right-of-Way Plans Section will be notified so they can request the appropriate survey.

Legal

Legal Services will need to review all agreements with American Colloid and DNRC.

Estimated Cost

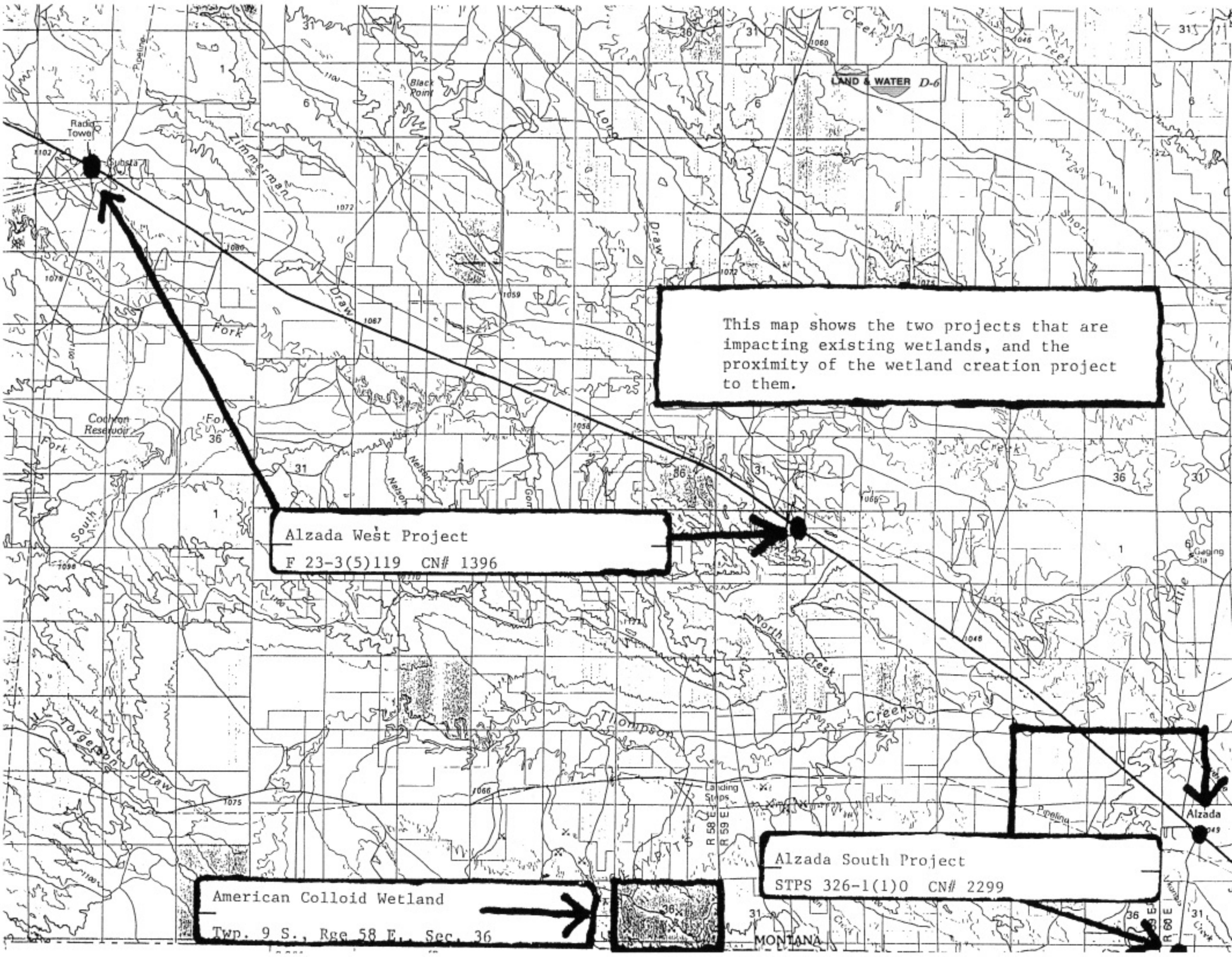
The estimated cost to construct this project is $15,500. This estimate includes Preliminary Engineering, Acquisition of Right-of-Way, and Construction costs. As soon as more information is available a modification to the programming will be made.

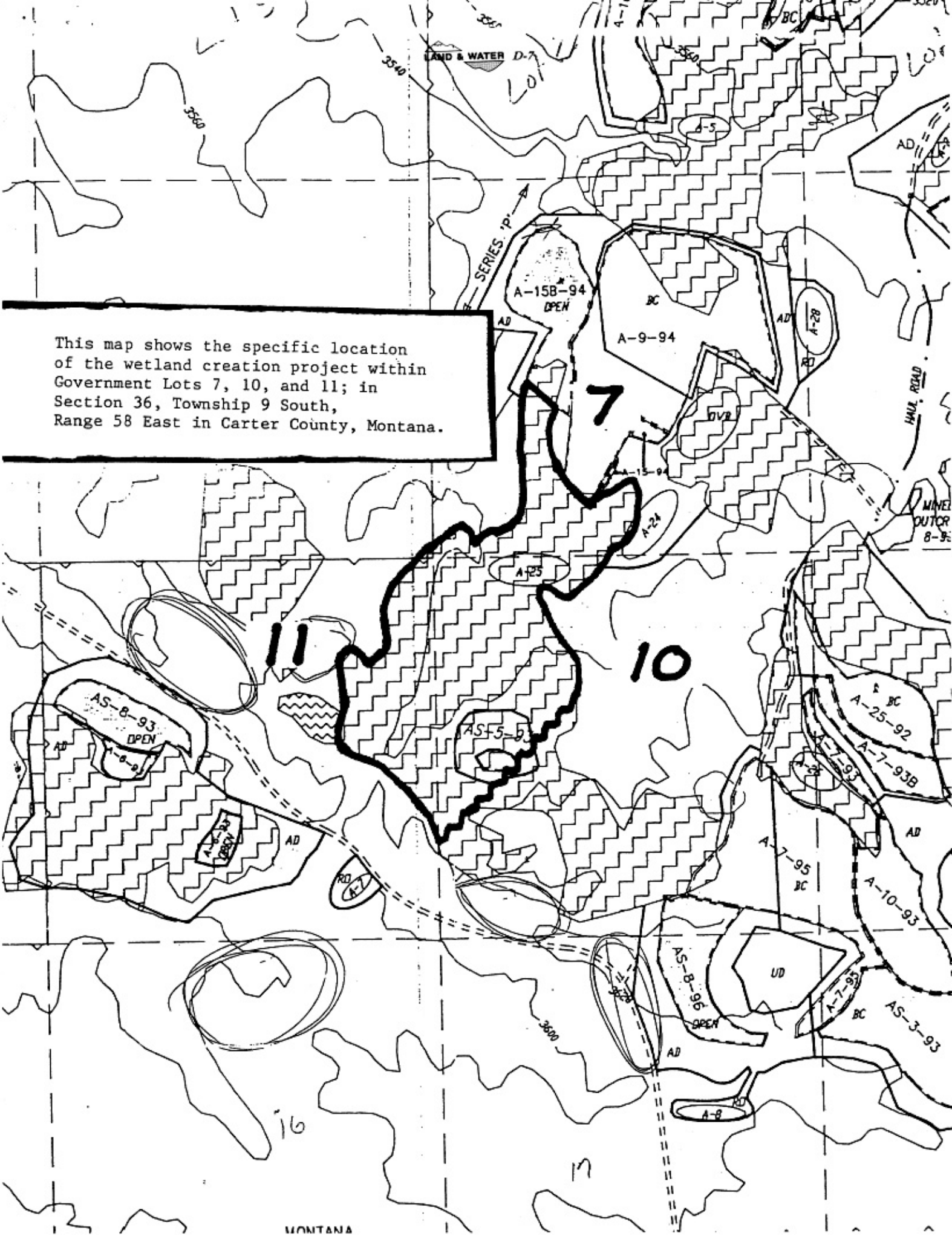
Attachment

GJS:DSA

Distribution:

C.S. Piel - Preconstruction
M. Johnson - Glendive District
K.H. Neumiller - Materials
T.E. Martin - Right of Way
J.M. Marshik - Environmental
K.M. Helvik - Environmental
R.E. Williams - Road Design
B.F. Juvan - Project Management
P. Saindon - Planning
D.W. Jensen - Planning
J.J. Moran - Geotechnical
D. Paulson - FHWA
Environmental File
Mark A. Wissinger - Contract Plans Supervisor


This map shows the two projects that are impacting existing wetlands, and the proximity of the wetland creation project to them.
Alzada West Project
F 23-3(5)119 CN# 1396
Alzada South Project
STPS 326-1(1)0 CN# 2299
American Colloid Wetland
Twp. 9 S., Rge 58 E., Sec. 36
LAND & WATER D-6
Radio Tower
Black Point
Zimmerman
Fork
Draw
Long
Cochron Reservoir
Nelson
North Creek
Thompson
Torgerson Draw
South
Landing Strips
Pipeline
Alzada
Gaging Sta
Little
R 58 E
R 59 E
MONTANA


This map shows the specific location of the wetland creation project within Government Lots 7, 10, and 11; in Section 36, Township 9 South, Range 58 East in Carter County, Montana.
LAND & WATER D-7
SERIES 'P'
A-15B-94 OPEN
A-9-94
7
10
11
A-24
A-25
AS-5-93
AS-8-93 OPEN
A-25-92
A-7-93
A-7-93B
A-7-95
A-10-93
AS-8-96 OPEN
AS-3-93
A-8
HAUL ROAD
MONTANA

LAND & WATER D-8

MONTANA DEPARTMENT OF TRANSPORTATION
HELENA, MONTANA 59620-1001

DATE ISSUED: July 18, 2001

A D D E N D U M

For the Following Project
To Be Let On

July 26, 2001

6. NH-STPS-BR 6(10)
Watershed 16 – Wetland Mitigation

~~ADDENDUM NO. 1~~

ATTACHMENT NO. 1- Revised Schedule of Items, deleting item 203 100 000 Unclassified Excavation, and adding new item 203 300 000 Embankment In Place 2,115.0 M3.

ATTACHMENT NO. 2- Revised Special Provision 6, Dike Embankment.

ATTACHMENT NO. 3- Revised Plan Sheet 3, revision of Grading Frame.

INSTRUCTIONS – READ CAREFULLY

Load the electronic amendment file while in the opened project file to apply the addendum. In order to be responsive, the Schedule of Items printout on projects with addendums must show the addendum(s) applied at the bottom of each page.

Revised documents supersede and replace the documents you now have. New documents supplement the documents you now have. Make the necessary changes in your bidding documents.

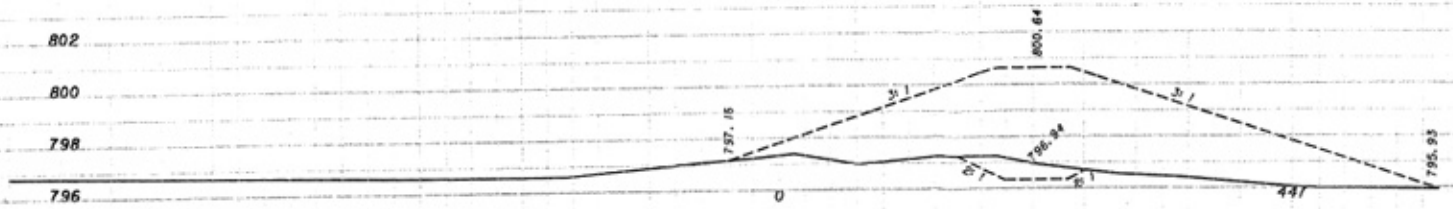
Mark A. Wissinger, P.E.
Contract Plans Supervisor

STATE	PROJECT NO.	SHEET NO.
MONTANA	NH-STPS-BR 6(10)	1

CPS - U6564 01:14:08 05/30/01

EXCAVATION
cubic meters

EMBANKMENT
cubic meters



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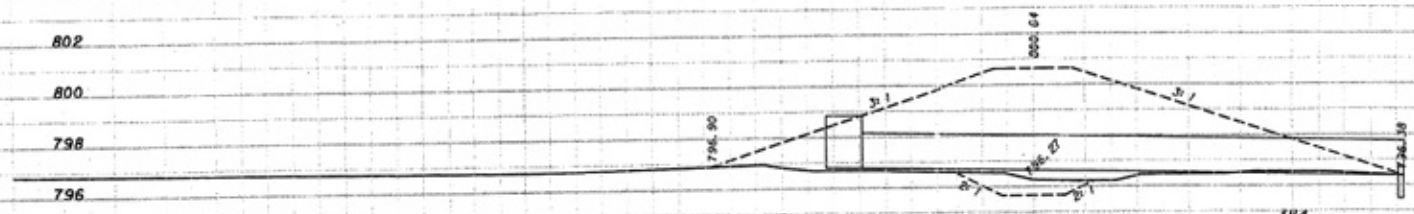

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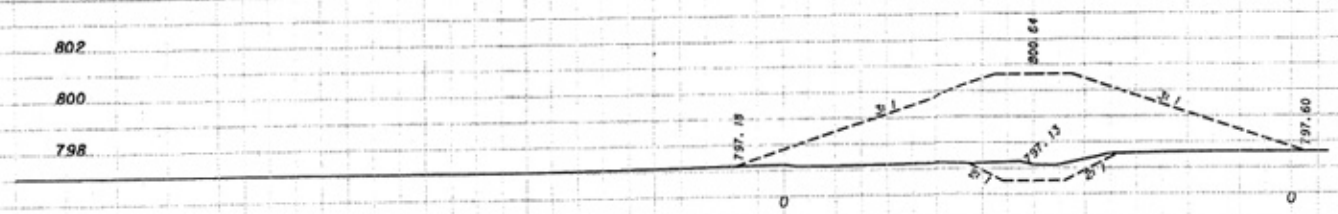
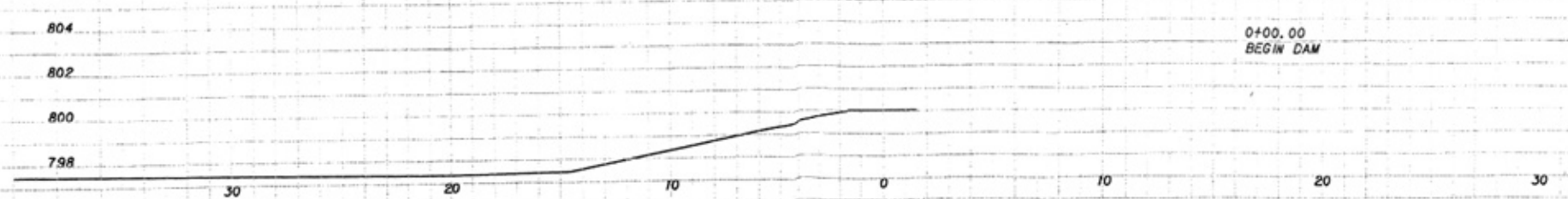
0+20
TRIPLE 1350 mm x 63.0 m CSP
TRIPLE 1350 mm x 5.5 m CSP RISER LT
2.6 m³ CL DD CONC CUTOFF WALL
0.7 m³ CL DD CONC BASE
2.9 m COVER



0+10.00

0+10.00 TO 0+50.00
KEY
106 m³ ADD EXC.



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BEGIN DAM

LAND & WATER D-10

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH-STPS-BR 6(10)	2

TABLE OF CONTENTS

NOTES

PROPERTY CORNER

THE PROPERTY CORNER LOCATED WITHIN THE EASEMENT WILL BE REMOVED AND RESET BY STATE FORCES.

BACKSLOPE

GRADE AND SHAPE BACKSLOPES OF THE WETLAND SITE TO 4:1 AS DIRECTED BY THE ENGINEER. THE COST OF THE BACKSLOPE WORK IS INCLUDED IN THE OTHER GRADING ON THE PROJECT.

CLEARING AND GRUBBING

CLEAR AND GRUB TO CONSTRUCTION LIMITS. INCLUDE THE COST OF CLEARING AND GRUBBING IN OTHER ITEMS.

MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

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...\1396wsum2.dgn	DESIGNED BY	L. ZEIGLER	5-08-2001
05/30/01	DRAWN BY	L. ZEIGLER	5-08-2001
0:11:13:52	APPROVED BY	P. FERRY	5-08-2001
1 2 3 EPS - U6564	REVISED BY		

SUMMARY

ADDENDUM NO. 1
ATTACHMENT NO. 3

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH-STPS-BR 6(10)	3

LAND & WATER D-II

GRADING

STATION	cubic meters EXCAVATION		cubic meters EMB. IN PLACE	REMARKS
0+10.00				
	106			KEY
0+50.00				
0+00.00				
0+57.50			2006	DAM
			109	TOPSOIL REPLACEMENT
TOTAL	# 106		2115	

FOR INFORMATION ONLY

FENCING

STATION* FROM	STATION* TO	meters TYPE FSM			EACH SINGLE PANEL	EACH DOUBLE PANEL		meters GATES G2		REMARKS
		1 043			4	4		9.6		
TOTAL		1 043			4	4		9.6		

* REFERENCE TO SURVEYED EASEMENT

TOPSOIL & SEEDING*

STATION FROM	STATION TO	cubic meters TOPSOIL SALVAGING & PLACING	hectares SEED NO. 1	SEED NO. 2	SEED NO. 3	FERTILIZER NO. 1	FERTILIZER NO. 2	FERTILIZER NO. 3	CONDITION SEEDBED		REMARKS
0+00.00	0+57.50	109	1			1			1		DAM
TOTAL		109	1			1			1		

* SEEDING WILL BE HAND BROADCAST

CULVERTS

STATION	meters CSP 1350 mm	END SECTIONS LEFT	END SECTIONS RIGHT	cubic meters CULVERT EXCAVATION	BEDDING MATERIAL	CLASS "DD" CONCRETE	CULVERT RIPRAP CLASS	meters REMOVE	meters RELAY	HEIGHT OF COVER IN meters	EACH CLEAN CULVERT	IN PLACE mm X m	REMARKS
0+20	68.5		SQ.	100		3.3				2.9			TRIPLE 1350 mm x 5.5 m CSP RISER LT
TOTAL	68.5	~	~	100		3.3		~		~			

MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

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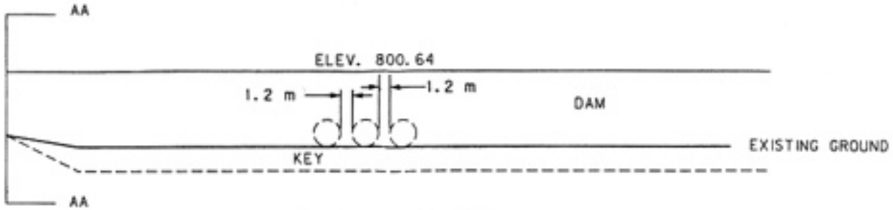
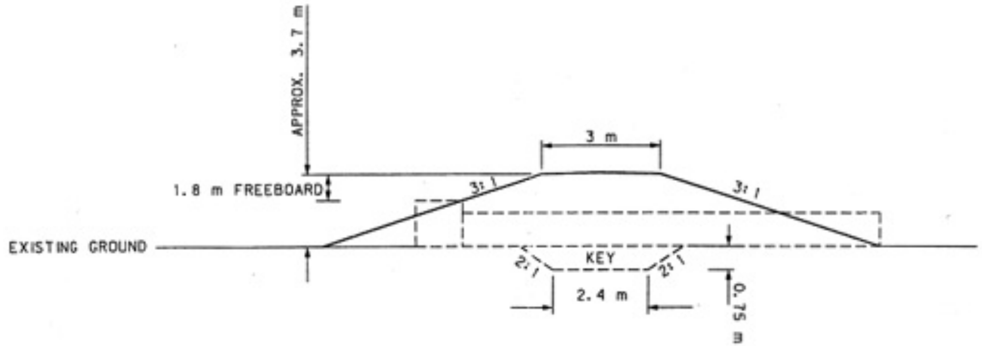
07/16/01	DRAWN BY	L ZEIGLER	5-08-2001
09:07:00	APPROVED BY	P FERRY	5-08-2001
1	3	CPS - U6564	REVISED BY

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH-STPS-BR 6(10)	4

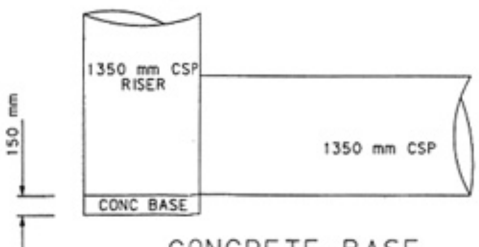
DETAILS



SIDE VIEW DAM
NOT TO SCALE



END VIEW DAM
NOT TO SCALE
SECTION AA



CONCRETE BASE
NOT TO SCALE

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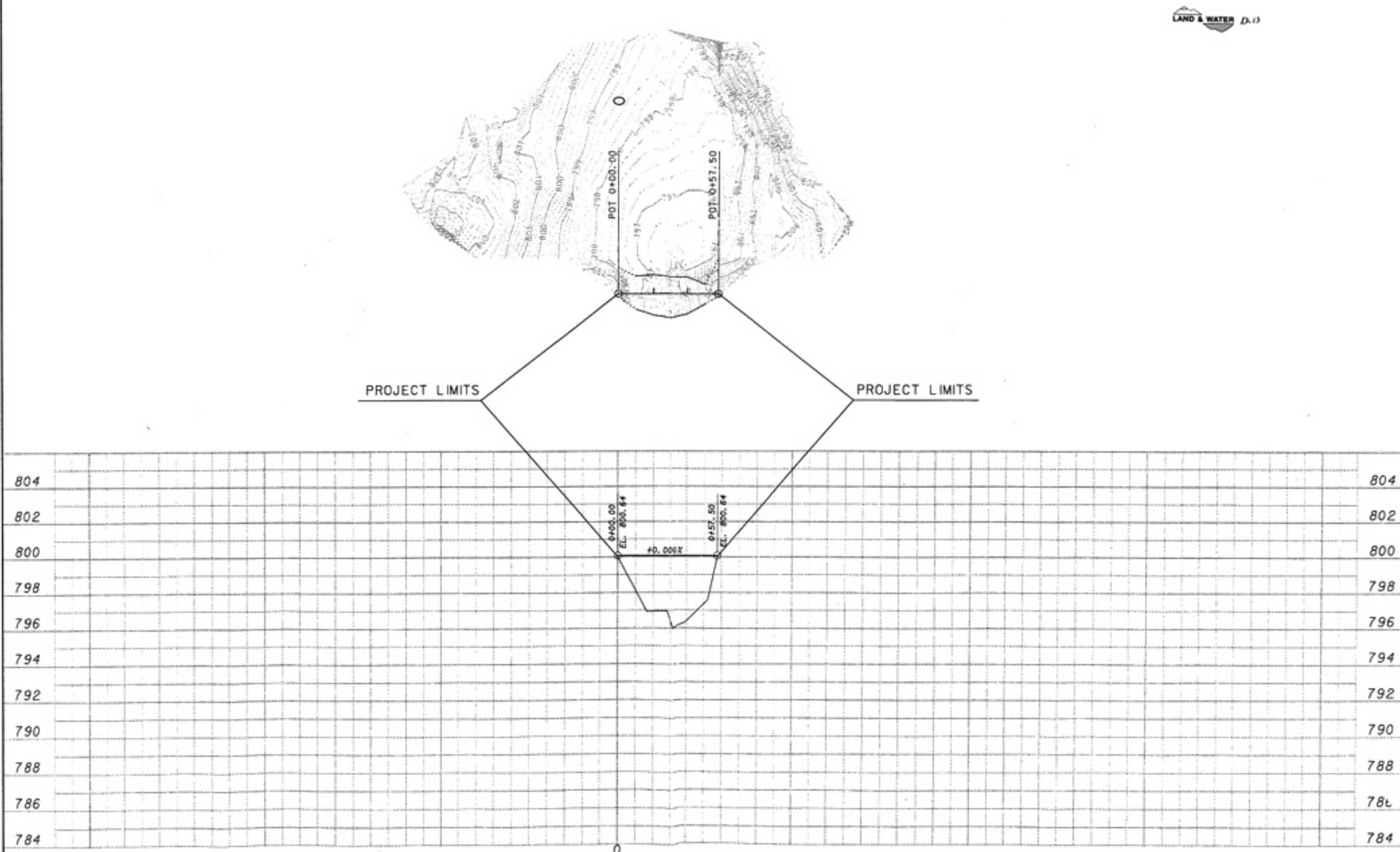
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH-STPS-BR 6(10)	5

LAND & WATER D.13



MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

DESIGNED BY	L. ZEIGLER	5-08-2001
DRAWN BY	L. ZEIGLER	5-08-2001
APPROVED BY	P. PENNY	5-08-2001
REVISED BY		

05/30/01
CPS - 06564

Appendix E

BIRD SURVEY PROTOCOL
GPS PROTOCOL

MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana

BIRD SURVEY PROTOCOL

This protocol was developed by the Montana Department of Transportation (MDT) to monitor bird use within their Wetland Mitigation Sites. Though each wetland mitigation site is vastly different, the bird survey data collection methods were standardized to order to increase repeatability. The protocol uses an "area search within a restricted time frame" to collect data on bird species, density, behavior, and habitat-type use.

Survey Area

Sites that can be entirely walked: Sites where the entire perimeter or area can be walked include, but are not limited to: small ponds, enhanced historic river channels, and wet meadows. If the wetland is not uncomfortably inundated, walk several meandering transects to sufficiently cover the wetland. Meandering transects can be used, even if a small portion of the area is inaccessible (e.g. cannot cross due to inundation). Use binoculars to identify the bird species, to count the number of individuals, and to identify their behavior and habitat type. Data can be recorded directly onto the bird survey form or into a field notebook. The number of meandering transects and their direction (or location) should be recorded in the field notebook and/or drawn onto the aerial photograph or topographic map. Meandering transects are not formal and should not be staked. Each site should be walked and surveyed to the fullest extent within the set time limit.

Sites than cannot be entirely walked: Sites where the entire perimeter or area cannot be walked include, but are not limited to: very large sites (i.e. perimeter of 2-3 miles), and large-bodied waters (i.e. reservoirs), where deep water habitat (> 6 feet) is close to shore. For large-bodied waters where only one area was graded to create or enhance the development of wetland, bird surveys should be walked along meandering transects within or around the graded area (see above.). For sites that cannot be walked, bird surveys should be conducted from many lookout posts, established at key vantage points. The general location of lookout posts should be recorded in the field notebook or drawn onto the aerial photograph or topographic map. Lookout post locations do not need to be staked. Both binoculars and spotting scopes may be used in order to accurately identify and count the birds. Depending upon the size of the open water, more time may be spent viewing the mitigation area from lookout posts than is spent traveling between posts.

Survey Time

Ideally, bird surveys should be conducted in the morning hours when bird activity is often greatest (i.e. sunrise to no later than 11:00 am). Surveys can be completed before 11am if all transects have been walked or all lookout posts have been viewed with no new bird activity observed. For some sites bird surveys may need to be performed in the late afternoon or evening due to traveling constraints or weather. The overall limiting time factor will be the number of budgeted hours for the project.

Data Recording

Bird Species List: Record each bird species observed onto the Bird Survey-Field Data Sheet (or field notebook). Record the bird's common name using the appropriate 4-letter code. The 4-letter code uses the first two letters of the first two word's of the bird's common name or if one name, the first four letters. For example, Mourning Dove is coded as MODO while Mallard is coded as MALL. If an unknown individual is observed, use the 4-letter protocol, but define your

abbreviation at the bottom of the field data sheet. For example, unknown shorebird is UNSB; unknown brown bird is UNBR; unknown warbler is UNWA; and unknown waterfowl is 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 parenthesis; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded as UNBB / FO (25).

Bird Density: For each observation record the actual or estimated number of individuals observed per species and per behavior. Totals can be tallied in the office and entered onto the Bird Survey-Field Data Sheet.

Bird Behavior: Bird behavior must be identified by what is known. When a species is observed, the behavior that is immediately exhibited is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair (BP); foraging (F); flyover (FO); loafing (L), which is defined as sleeping, roosting, or floating with head tucked under wing; and nesting (N). If other behaviors that have a specific descriptive word are observed then it can be used and should later be added to the protocol. Descriptive words or phrases such as "migrating" or "living on site" are unknown behaviors.

Bird Species Habitat Use: When a species is observed, the habitat is also recorded. The following broad habitat categories are used:

- aquatic bed (AB), defined as rooted-floating, floating-leaved, or submergent vegetation.
- marsh (MA), defined as emergent (e.g. cattail, bulrush) vegetation with surface water.
- wet meadow (WM), defined as grasses, sedges, or rushes with little to no surface water.
- scrub-shrub (SS), defined as shrub covered wetland.
- forested (FO), defined as tree covered wetland.
- open water (OW), defined as unvegetated surface water.
- upland (UP), defined as the upland buffer.

Other categories can be used and defined on the data sheet and should later be added to the protocol.

Other Fields

Bird Visit: Each bird survey (i.e. spring, fall, and mid-season) should be completed on separate Bird Survey-Field Data Sheets.

Time: Record the start time and end time on the Bird Survey-Field Data Sheet.

Date: Record the date of the bird survey.

Weather: Record the weather conditions (i.e. temperature, wind, condition).

Notes: Note if a particular individual bird is using a constructed nest box and note the condition of constructed nest box(es). Also record any comments about the site, wildlife, wetland conditions, etc.

GPS MAPPING AND AERIAL PHOTO REFERENCING PROCEDURE

From 2001 through 2006, PBS&J mapped the vegetation community boundaries, photograph points, and other sampling locations in the field using the resource-grade Trimble GEO III GPS (Global Positioning System) unit. The data were collected with a minimum of three positions per feature using Course/Acquisition code. The collected data were then transferred to a personal computer (PC) and differentially corrected to the nearest operating Community Base Station. The corrected data were then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

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

In 2007, some sites continued to be mapped using the Trimble GEO III GPS unit while most sites were mapped using the resource-grade Magellan MobileMapper Office GPS unit. The Magellan GPS unit has a comparable accuracy level to the Trimble Geo III unit.

Each year, MDT photographs each mitigation site from the air. These aerial photographs are not geo-referenced, but serve as a visual aid to map wetland development and vegetation communities, and to show approximate locations for various monitoring activities (i.e. photograph points, transects, or macroinvertebrate sampling). Reference points that are observable on the aerial photo (i.e. road, stream channel, or fence) were also marked with the GPS unit in order to better position the aerial photograph. This positioning did not remove any of the distortion inherent to all photos. All mapped features and community boundaries were reviewed by the wetland biologist, to increase the figure's accuracy.

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.