
MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2003

*American Colloid Mitigation Site
Alzada, 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 2004

Project No: 130091.037



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1.0 INTRODUCTION

This annual report summarizes methods and results from the second year of monitoring for 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 MDT Watershed # 16 - Little Missouri River basin in the 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 July and August of 2001 in an ephemeral drainage (**Figure 2, Appendix A**). Elevation is approximately 3,518 feet above sea level.

2.0 METHODS

2.1 Monitoring Dates and Activities

The American Colloid wetland was monitored on June 24, 2003. 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

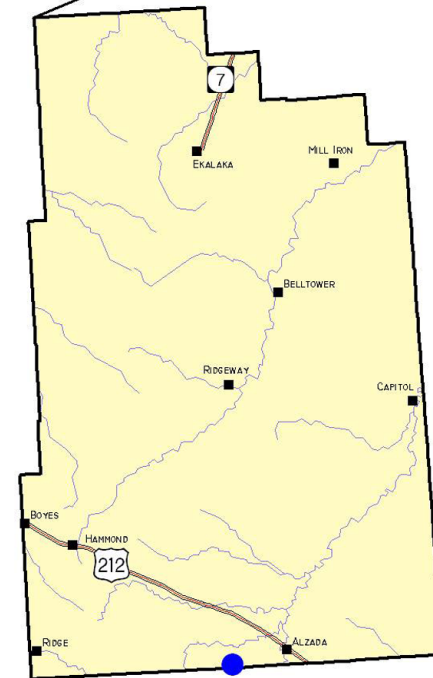
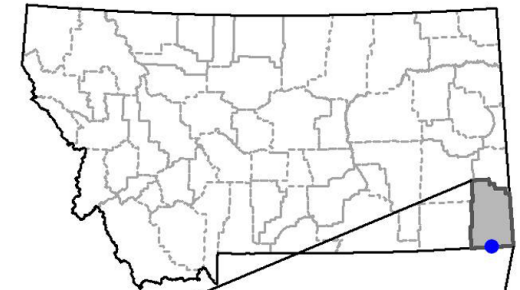
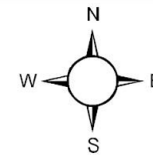
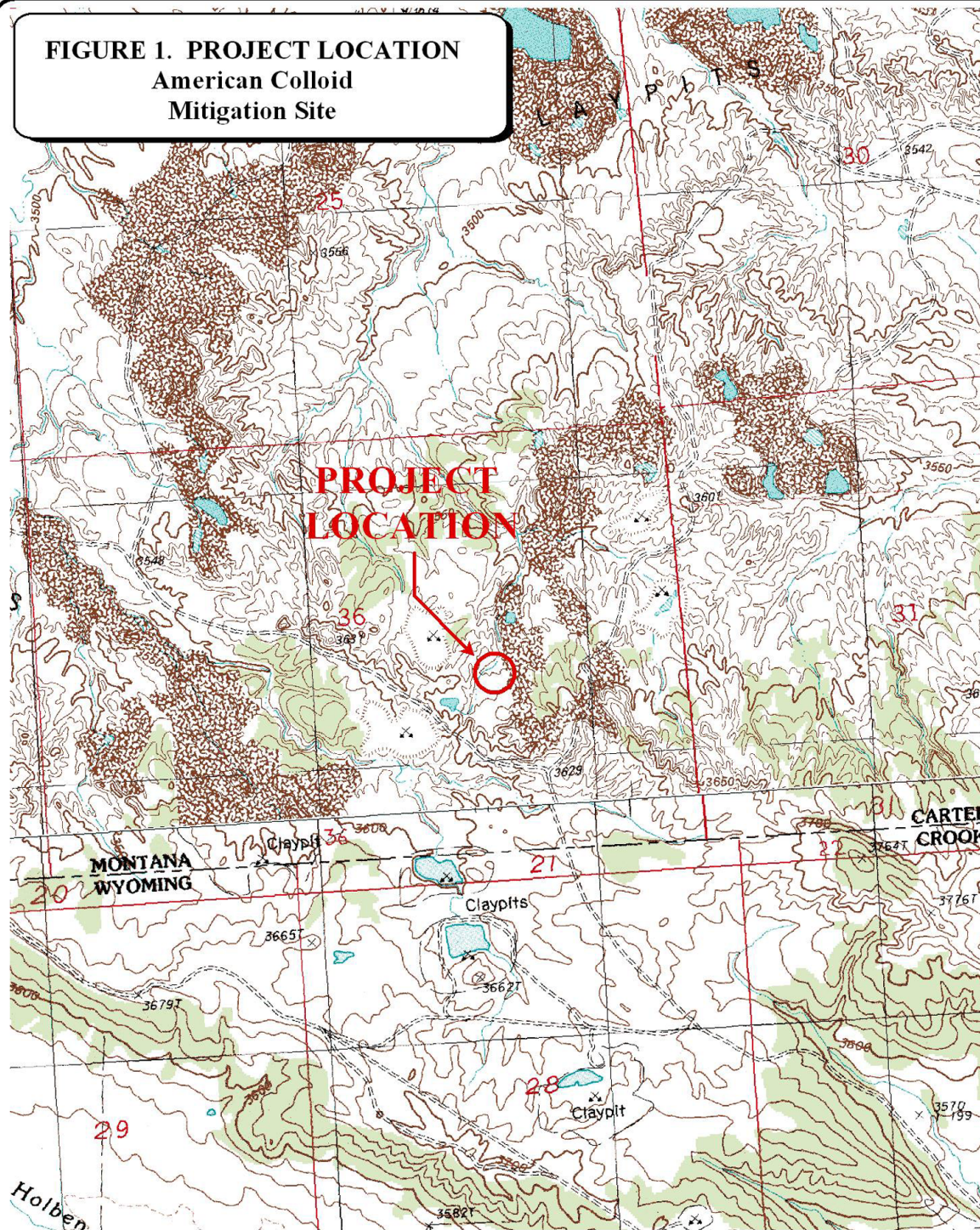
Wetland hydrology indicators were recorded using procedures outlined in the US Army Corps' (COE) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on the Routine Wetland Delineation Data Form (**Appendix B**) at each wetland determination point. Precipitation data for the year 2003 were compared to the 1948-2003 average (WRCC 2003).

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

2.3 Vegetation

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

FIGURE 1. PROJECT LOCATION
American Colloid
Mitigation Site



800 0 800 1600 FEET
I: 24,000

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



1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

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

2.7 Birds

Bird observations were recorded during the site visit according to the established bird survey protocol (**Appendix D**). A general, qualitative bird list has been compiled using these observations. Observations will be compared between years in future studies.

2.8 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

2.9 Functional Assessment

A functional assessment form was completed in 2003 for the American Colloid mitigation site using the 1999 MDT Montana Wetland Assessment Method. Field data necessary for this assessment were collected on a condensed data sheet included in the mitigation site monitoring form. The remainder of the assessment was completed in the office (**Appendix B**).

2.10 Photographs

Photographs were taken showing the current land use surrounding the 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 2003 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**. All photographs were taken using a digital camera.

2.11 GPS Data

During the 2003 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.

2.12 Maintenance Needs

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

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 primarily to the east of the wetland mitigation site, and to a lesser extent from the southwest. Water exits the site through culverts in the earthen embankment. During the June 24, 2003 visit, the site was inundated beyond the hydrophytic vegetation area on the east end of the designed wetland. However, as wetland vegetation was only temporarily inundated by recent precipitation events, the “normal” extent of open water was estimated at approximately 57% of the 0.69-acre gross wetland area (see **Figure 3 in Appendix A**). Given the substrate of the site is clay, there is the potential that the shallow open water area will expand over time. The site will be visited later in the summer in 2004 to more accurately assess changes in the ordinary water levels.

Precipitation data for the Albion 1N station indicate that the yearly average (1971-2000) is 14.97 inches (WRCC 2004); through the month of June the average precipitation was 8.28 inches. During 2003, precipitation through the month of June was 6.94 inches or 83% of the average. Montana, particularly the eastern portion of the state, has been in a drought cycle for five consecutive years.

3.2 Vegetation

Vegetation species identified within the wetland are presented in **Table 1** and in the monitoring form (**Appendix B**); **Table 2**, **Chart 1**, and the transect maps illustrate transect data trends over time.

Table 1: 2002-2003 American Colloid Wetland Mitigation Vegetation Species List

Scientific Name	Region 4 (North Plains) Wetland Indicator Status
<i>Agropyron cristatum</i>	-(UPL)
<i>Atriplex argentea</i>	FACU
<i>Chrysothamnus spp.</i>	-(UPL)
<i>Grindelia squarrosa</i>	FACU
<i>Plantago patagonica</i>	UPL
<i>Puccinellia nuttalliana</i>	OBL
<i>Sarcobatus vermiculatus</i>	FACU
<i>Spartina pectinata</i>	FACW

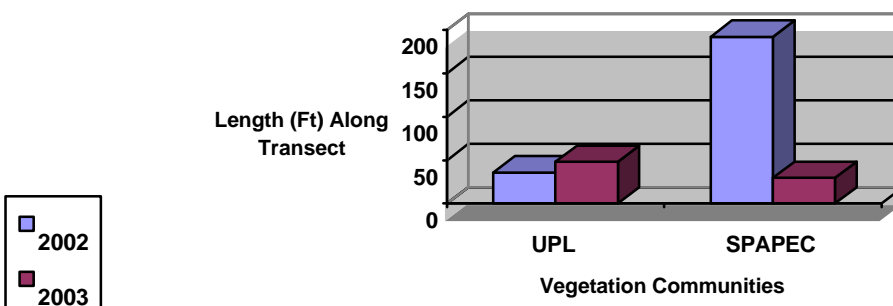
¹ **Bolded** species indicate those documented within the analysis area for the first time in 2003.

-Species not included on the National List of Plant Species that Occur in Wetlands (Reed 1988); status in parentheses are probable.

Table 2: 2002-2003 Transect Data Summary

Monitoring Year	2002	2003
Transect Length	228 feet	228 feet
# Vegetation Community Transitions along Transect	1	2
# Vegetation Communities along Transect	2	3
# Hydrophytic Vegetation Communities along Transect	1	1
Total Vegetative Species	7	8
Total Hydrophytic Species	2	2
Total Upland Species	5	6
Estimated % Total Vegetative Cover	80%	19%
% Transect Length Comprised of Hydrophytic Vegetation Communities	84%	13%
% Transect Length Comprised of Upland Vegetation Communities	16%	21%
% Transect Length Comprised of Unvegetated Open Water	0%	66%
% Transect Length Comprised of Bare Substrate	0%	0%

Chart 1: Length of Vegetation Communities along Transect 1



2002 Transect Map

Transect 1 Start	Upland Type 1 (36')	Wetland Type 2 (192')	Total 228'	End Transect 1
------------------	---------------------	-----------------------	------------	----------------

2003 Transect Map

Transect 1 Start	Upland Type 1 (9')	Open Water (150')	Wetland Type 2 (30')	Upland Type 1 (39')	Total 228'	End Transect 1
------------------	--------------------	-------------------	----------------------	---------------------	------------	----------------

Two (2) vegetation communities are mapped on the mitigation area map (**Figure 3, Appendix A**). The communities include: Type 1, *Grindelia squarrosa/ Chrysothamnus* spp. and Type 2, *Spartina pectinata*. Dominant species within each community are listed on the monitoring form (**Appendix B**).

The site was flooded beyond the ordinary vegetation line in 2003 as a result of substantial recent precipitation events. The bar graph illustrates that percent cover of *Spartina* was lower in 2003 than 2002; these data are likely misleading (80% cover in 2002 to 19% cover in 2003) because recent flooding appeared to completely inundate vegetation within the wetland boundary at the time of the survey.

3.3 Soils

The site was mapped as part of the Carter County Soil Survey. The soil series mapped by the 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 semiconsolidated shales.

Soils were sampled at one wetland location (SP-1) and one upland (SP-2). Soils at SP-1 were a very dark gray (10YR 3/1) clay loam with coarse fragments from 0-18 inches. Saturation was noted throughout the profile. Soils at SP-2 were a black (10YR 2/1) silty clay loam with coarse fragments from 0-8 inches and a loamy coarse fragment layer from 8-18 inches. Saturation was noted at 6" in SP-2; the edge of the ponded area was approximately 30' from SP-2. Soils within both pits qualify as hydric as a result of the low-chroma colors.

3.4 Wetland Delineation

The delineated wetland boundary is depicted on **Figure 3, Appendix A**. The gross wetland area (wetlands plus open water) was estimated at 0.69 acre (the same as 2002), despite the temporary high water level that had resulted from recent precipitation; no evidence that the line of *Spartina* had expanded since 2002 was found. The "normal" open water area was also presumed to be similar to that observed in 2002 (0.38 acre, <4', estimated). The COE data forms are included in **Appendix B**.

3.5 Wildlife

Wildlife species are listed in **Table 3**; no signs of mammals were observed during the site visit. It had rained the day of the 6/24 visit and dark clouds and lightening were threatening more storms. Wildlife observations are typically scarce during these heavy or impending storm events. Leopard frogs were observed at the site approximately one week later when the site was visited to transplant hydrophytic vegetation. No bird boxes have been installed at this site.

Table 3. Wildlife Species Observed¹ at the American Colloid Mitigation Site – 2002-2003

AMPHIBIANS AND REPTILES
northern leopard frog (<i>Rana pipiens</i>)
BIRDS
Spotted Sandpiper (<i>Actitis macularia</i>)²
Mourning Dove (<i>Zenaida macroura</i>)²
American Robin (<i>Turdus migratorius</i>)²
Brewer's Blackbird (<i>Euphagus cyanocephalus</i>)²
Red-wing Blackbird (<i>Agelaius phoeniceus</i>)²
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)²
Killdeer (<i>Charadrius vociferous</i>)
MAMMALS
None

¹**Bolded** species indicate those documented within the analysis area for the first time in 2003.

²MDT sightings June, 2003.

3.6 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

3.7 Functional Assessment

Completed functional assessment forms are included in **Appendix B** and summarized below in **Table 4**. The mitigation site has been rated a Category II wetland as a result of the presence of an S1 species, the northern leopard frog.

3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix C**. Extra photos were included from a site visit on 6/30/03 because of the difference in water levels from the initial site visit on 6/24 when the area was flooded to a greater extent.

3.9 Maintenance Needs/Recommendations

Water was not flowing from the outlet culverts during the 6/24 visit; lower levels on 6/30 were the result of seepage through the base of the ponded area. The culvert inlets were at least 2 feet from the water surface level on 6/24.

Table 4: Summary of 2002-2003 Wetland Function/Value Ratings and Functional Points at the American Colloid Wetland Mitigation Project

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

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 the following MDT projects: Alzada-West and Alzada-South (Sickerson 2002), in MDT Watershed #16. The site was anticipated to be 5 acres with a 10-acre buffer zone and is completely fenced (MDT 1999). The mitigation site was constructed in October 2001. The gross wetland area (wetlands plus open water) was estimated at 0.69 acre (the same as 2002), despite the temporary high water level that had resulted from recent precipitation; no evidence that the line of *Spartina* had expanded since 2002 was found. It is also unknown if the line of saturation is expanding because of the heavy rains around the time of the investigation. The "normal" open water area was also presumed to be similar to that observed in 2002 (0.38 acre, <4', estimated). The American Colloid mitigation wetland is rated as a Category II wetland primarily as a result of the assumed breeding occurrence of an S3 species, the northern leopard frog.

4.0 REFERENCES

Berglund, J. 1999. *MDT Montana Wetland Assessment Method*. Prepared for Montana Department of Transportation. May 1999.

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

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

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

Western Regional Climate Center, 2004. Albion 1N, MT Station: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?mtalbi>.

Appendix A

FIGURES 2 - 3

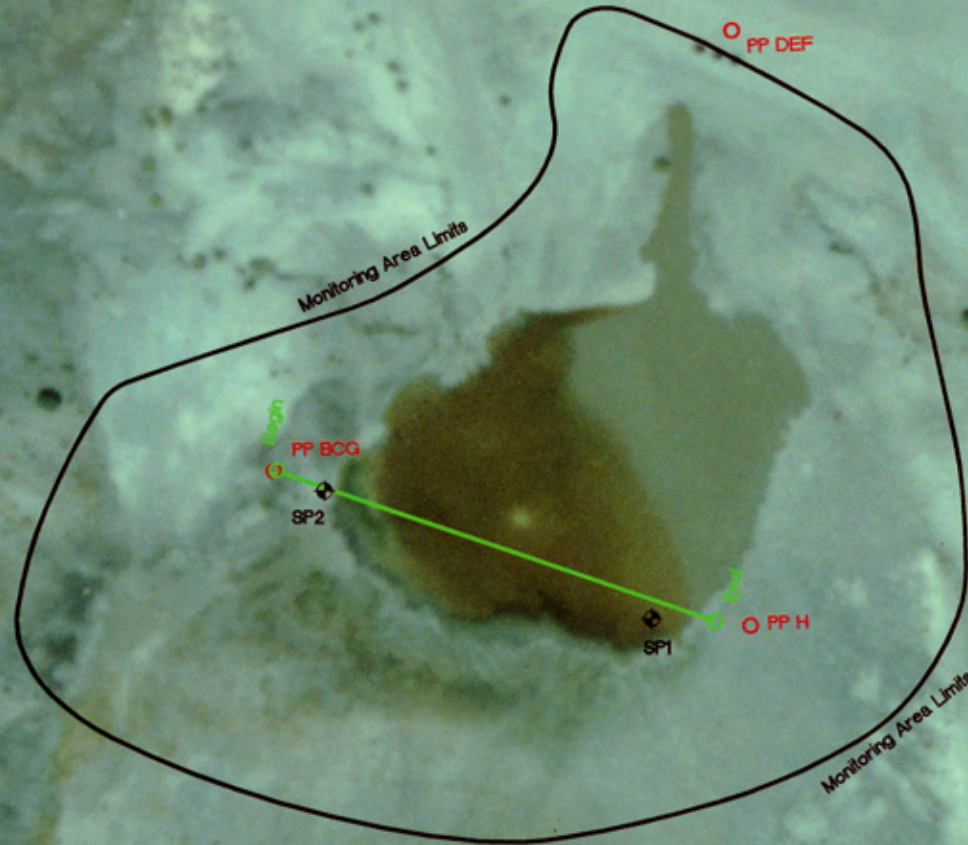
*MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana*

Figure 2 Monitoring Activity Locations 2003

Monitoring Area Limits
 Photograph Point
 Vegetation Transect
 Soil Sample Point



Scale 1" = 60ft



NOT TO SCALE

PROJECT NAME
 MDT American Colloid Wetland Mitigation

DRAWING TITLE
 Monitoring Activity Locations 2003

PROJ. NO.: 130091.037

FILE NAME: TASKBASE.dwg

SCALE: 1" = 60 ft

LOCATION: American Colloid

DRAWN: RA

CHECKED: LB

APP'D: JB

PROJ. MGR: JB

DATE: 3-17-04

SHEET NUMBER
 F2 of

REV

DATE: 3-17-04

LAND & WATER CONSULTING, INC.
 P.O. BOX 884
 Methuen, MA 01847

Figure 3 Mapped Site Features 2003

Monitoring Area Limits
Wetland Boundary
Open Water Boundary

Wetland Area

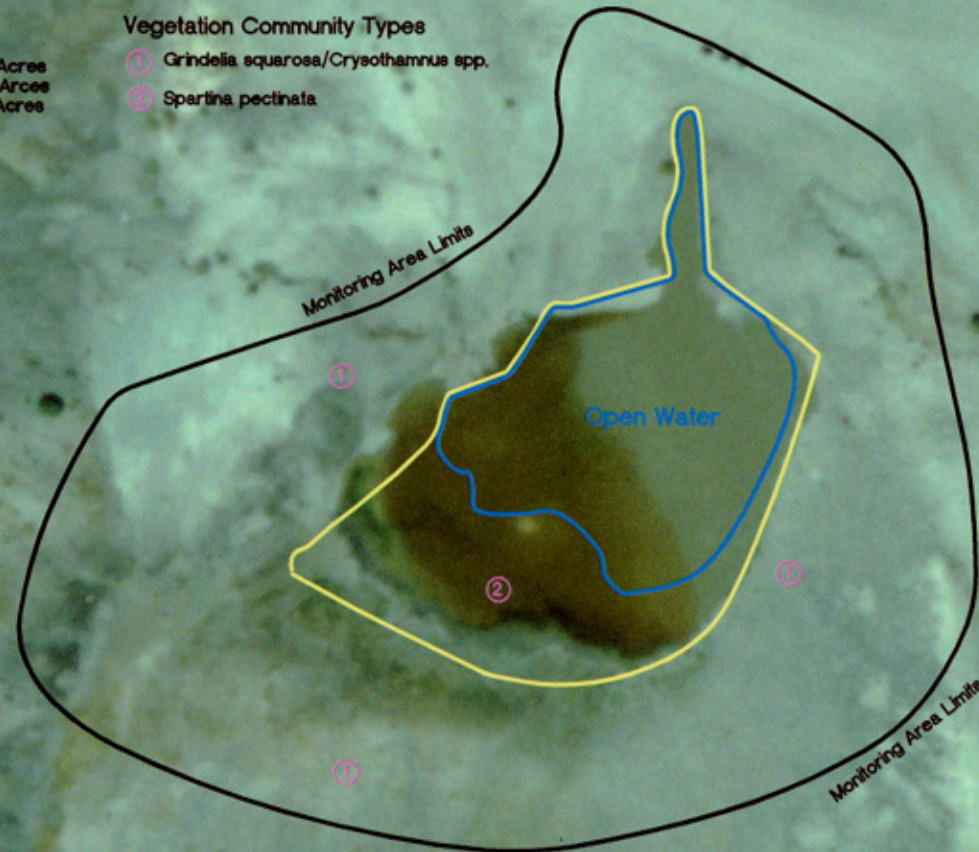
Gross Wetland Area 0.69 Acres
Open Water -0.38 Acres
Net Wetland Area 0.31 Acres

Vegetation Community Types

- ① *Grindelia squarrosa*/*Crysothamnus* spp.
- ② *Spartina pectinata*



Scale 1" = 60ft



NOT TO SCALE

Appendix B

2003 WETLAND MITIGATION SITE MONITORING FORM

2003 BIRD SURVEY FORMS

2003 WETLAND DELINEATION FORMS

2003 FIELD AND FULL FUNCTIONAL ASSESSMENT FORMS

*MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana*

LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: American Colloid Project Number: 130091-037 Assessment
Date: 6 / 24 / 03

Location: Alzada MDT District: #16 – Glendive District - Little Missouri River basin Milepost:

Legal description: T__9 S_ R_58 E___ Section_36___ Time of Day: 8AM-11AM

Weather Conditions: heavy overcast, lightening Person(s) conducting the assessment: LB/LWC

Initial Evaluation Date: 7 / 18 / 02 Visit #: 2 Monitoring Year: 2003

Size of evaluation area: 0.69 acres Land use surrounding wetland: bentonite mine

HYDROLOGY

Surface Water Source: stormwater

Inundation: Present ☒ Absent ☐ Average depths: 2 ft Range of depths: 0-5 ft

Assessment area under inundation: 57 %

Depth at emergent vegetation-open water boundary: 0 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, stained veg.;
wetland area ponded during 2003 investigation

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: _____ WL vegetation inundated; recent rain and during investigation. _____



VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): Grindelia squarosa/Chrysothamnus spp.

Dominant Species	% Cover	Dominant Species	% Cover
BROTEC	20	AGRDAS	5
FESOCT	10	ERIPAU (likely)	20
(bare dirt)	15	GRISQU	<1
POAURI	10	PLAPAT	20
STICOM	1		

COMMENTS/PROBLEMS: Much less bare dirt in upland area along transect.

Community No.: 2 Community Title (main species): *Spartina pectinata*

Dominant Species	% Cover	Dominant Species	% Cover
SPAPEC	30		
Open water	70		

COMMENTS/PROBLEMS: _plugged with SCIPUN and other collected hydrophytic veg collected at Lame Deer; placed near east end of transect.

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

Dominant Species	% Cover	Dominant Species	% Cover

COMMENTS/PROBLEMS:

Additional Activities Checklist:

X Record and map vegetative communities on air photo

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Agropyron cristatum</i>	1		
<i>Agropyron dasystacium</i>	1		
<i>Atriplex argentea</i>	1		
<i>Chenopodium atrovirens</i>	1		
<i>Chrysothamnus spp.</i>	1		
<i>Eiogonum pauciflora</i>	1		
<i>Festuca octiflora</i>	1		
<i>Grindelia squarrosa</i>	1		
<i>Poa urida</i>	1		
<i>Puccinellia nuttalliana</i>	2		
<i>Sarcobatus vermiculatus</i>	1		
<i>Spartina pectinata</i>	2		
Species transplanted from Lame Deer Mitigation site on 6/30/03 in shallow water near H-end of transect by Lynn Bacon (LWC):			
<i>Scirpus pungens</i>			
<i>Scirpus acutus</i>			
<i>Juncus bufonius</i>			
<i>Carex lanuginosa</i> (?)			

COMMENTS/PROBLEMS:

PLANTED WOODY VEGETATION SURVIVAL

[illegible]

COMMENTS/PROBLEMS:

[illegible]

BIRDS

Were man made nesting structures installed? Yes____ No_X_Type:____ How many?____ Are the nesting structures being utilized? Yes____ No____ Do the nesting structures need repairs? Yes____ No____

[illegible]

NA Macroinvertebrate sampling (if required)

[illegible]

PHOTOGRAPHS

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

Checklist:

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

Location	Photograph Description	Compass Reading
A	outlet	2
B	upland buffer	348
C	across wetland and beginning of transect	118
D	downstream of dam	25
E	from dam across wetland	186
F	from dam across wetland	220
G	across wetland and beginning of transect	118
H	end of transect	302

COMMENTS/PROBLEMS: ____ Several extra photos were taken in 2003 to illustrate different water levels on different days. Photo also taken of *Rana pipiens*.

GPS SURVEYING

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

Checklist:

- ☒ Jurisdictional wetland boundary
- ☒ (3) Landmarks recognizable on the air photo
- ☒ Start and end points of vegetation transect(s)
- ☒ Photo reference points
- ☐ NA Groundwater monitoring well locations

COMMENTS/PROBLEMS:

____ Visited site on 2 occasions, 6/24 and 6/30 and water levels were different on both occasions. Difficult to assess actual WL boundary. Will visit later in season in 2004 and GPS boundary again.

WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:

- ☒ Delineate wetlands according to the 1987 Army Corps manual.
☒ Delineate wetland-upland boundary on the air photo
☒ Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS:

FUNCTIONAL ASSESSMENT

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

COMMENTS/PROBLEMS:

MAINTENANCE

Were man-made nesting structures installed at this site? YES____ NO ☒

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 ☒ NO____

If yes, are the structures working properly and in good working order? YES ☒ NO____

If no, describe the problems below.

COMMENTS/PROBLEMS:

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: American Colloid Date: 8/8/02 Examiner: LB/LWC Transect # 1

Approx. transect length: 122 deg Compass Direction from Start **G**: 228 ft

Vegetation type A:	CT 1	
Length of transect in this type:	9'	feet
Species:		Cover:
CHRYSOTHAMNUS spp.		10
GRISQU		10
(bare dirt)		(90%)
Total Vegetative Cover:		10%

Vegetation type C:	CT 2	
Length of transect in this type:	30'	feet
Species:		Cover:
SPAPEC		30
Open water		70
Total Vegetative Cover:		30%

Vegetation type B:	Open water	
Length of transect in this type:	150'	feet
Species:		Cover:
open water		100
(could be veg under flood waters; unknown)		
Total Vegetative Cover:	0%	

Vegetation type D:	CT 1	
Length of transect in this type:	39'	feet
Species:		Cover:
BROTEC		20
FESOCT		10
(bare dirt)		15
POAURI		10
AGRDAS		5
ERIPAU (likely)		20
PLAPAT		20
Total Vegetative Cover:		85%

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

Cover Estimate

+= <1%	3 = 11-20%
1 = 1-5%	4 = 21-50%
2 = 6-10%	5 = >50%

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

Percent of perimeter 21-50 (4) % developing wetland vegetation – excluding dam/berm structures.

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

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

Notes:

Difficult to assess actual veg line because of recent rain on 6/24 and again on 7/02. Could see likely areas on 6/30 and they appear similar to 2003. Water may be building up in area as a result of clay soils; will GPS again in 2004.

[illegible]

SITE: American Colloid

[illegible]

Notes:

Rain the night before investigation and during is discouraging wildlife use and observation.

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

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

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

Project/Site: <u>American Colloid</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>6/24/03</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>X</u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u>X</u> No Is the area a potential Problem Area?: <u> </u> Yes <u>X</u> No (If needed, explain on reverse.)	Community ID: <u>CT-2</u> Transect ID: <u>1</u> Plot ID: <u>SP-1</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	SPAPEC	H	FACW	9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

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

Hydrophytic plant community developing is well-developed though not diverse (first year of wetland).

HYDROLOGY

<u>X</u> Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u>X</u> Aerial Photographs <u> </u> Other <u> </u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u> </u> Inundated <u>X</u> Saturated in Upper 12 Inches <u>X</u> Water Marks <u>X</u> Drift Lines <u>X</u> Sediment Deposits <u>X</u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u> </u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u> </u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> - </u> (in.) Depth to Free Water in Pit: <u>0"likely</u> (in.) Depth to Saturated Soil: <u>0 (surface)</u> (in.)	
Remarks: Pit in saturated zone where likely would fill to surface; evidence of stormwater entering ponded area of WL via several ephemeral drainages.	

SOILS



Map Unit Name		Neldore-rock outcrop complex (58D)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Aridic Ustorthents</u>		Confirm Mapped Type? <u>X</u> Yes <u> </u> No	

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/1			clay loam w/ coarse frags

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

Positive hydric soil indicators.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No Wetland Hydrology Present? <u> X </u> Yes <u> </u> No Hydric Soils Present? <u> X </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> X </u> Yes <u> </u> No
--	--

Remarks:

 Wetland vegetation is mostly inundated as a result of recent and current rain events. Placed several species of wetland plants collected at Lame Deer in the fringe area of open water and close to this pit. Will check survival in 2004.

Approved by HQUSACE 2/92



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

Project/Site: <u>American Colloid</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>8/8/02</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>X</u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u>X</u> No Is the area a potential Problem Area?: <u> </u> Yes <u>X</u> No (If needed, explain on reverse.)	Community ID: <u>CT-1</u> Transect ID: <u>1</u> Plot ID: <u>SP-2</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	BROTEC	H	no listing	9			
2	AGRDAS	H	FAC	10			
3	ERIPAU (likely)	H	no listing	11			
4	FESOCK	H	no listing	12			
5	POAURI	H	no listing	13			
6	STICOM	H	no listing	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/6

upland community

HYDROLOGY

<p><u>X</u> Recorded Data (Describe in Remarks):</p> <p style="padding-left: 40px;"><u> </u> Stream, Lake, or Tide Gauge</p> <p style="padding-left: 40px;"><u>X</u> Aerial Photographs</p> <p style="padding-left: 40px;"><u> </u> Other</p> <p><u> </u> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u> - </u> (in.)</p> <p>Depth to Free Water in Pit: <u> Likely to </u> (in.)</p> <p style="padding-left: 100px;"><u> 6" </u></p> <p>Depth to Saturated Soil: <u> 6 </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> </u> Inundated</p> <p><u>X</u> Saturated in Upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p> <p>Pit in vegetation upland however very wet perhaps as a result of recent and current rainfall.</p>	

Map Unit Name		Neldore-rock outcrop complex (58D)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Aridic Ustorthents</u>		Confirm Mapped Type? <u>X</u> Yes <u> </u> No	

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 2/1			Coarse frag, silty loam
8-18	C	10YR 2/1			Loamy Coarse frags.

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

low-chroma layer present, therefore an indication of hydric conditions.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> </u> Yes <u>X</u> No Wetland Hydrology Present? <u>X</u> Yes <u> </u> No Hydric Soils Present? <u>X</u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> </u> Yes <u>X</u> No
--	--

Remarks:

 Upland area with low-chroma soils and evidence of hydrology; wetland may be expanding but will depend on length of dry period and if wetland vegetation can expand into this area. Will investigate later in summer season in 2004.

Approved by HQUSACE 2/92



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

1. Project Name: American Colloid 2. Project #: -130091037 Control #: _____
 3. Evaluation Date: 6/24/2003 4. Evaluator(s): LB/LWC 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 LWC 8. Wetland Size (total acres): _____ (visually estimated)
 .69 (measured, e.g. GPS)
 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)
 .69 (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	Intermittently Flooded	---	45
Depression	Palustrine	---	Unconsolidated Bottom	Permanently Flooded	---	55
---	---	---	---	---	---	---
---	---	---	---	---	---	---

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

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)
 Common Comments: _____

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.	---	---	---
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.	---	moderate disturbance	---
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

iii. Briefly describe AA and surrounding land use / habitat: BLM bentonite mine; pond protected from site and use by fence and distance from road

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: since area is fenced shrubs may grow well here



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 Rana pipiens
 Secondary habitat (list species) ☐ D ☐ S _____
 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	1 (H)	---	---	---	---	---	---

IF DOCUMENTED, LIST THE SOURCE (E.G., OBSERVATIONS, RECORDS, ETC.): LB/PHOTOGRAPH

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)	<input type="checkbox"/> High								<input type="checkbox"/> Moderate								<input checked="" type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> 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)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	H	--	--	--
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)			
	<input type="checkbox"/> Exceptional	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	--	--	--	--
Low	--	.4 (M)	--	--

Comments: potential is certainly here for avian use



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	<input type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> 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)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> 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 flooded 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	<input type="checkbox"/> ≥ 10 acres			<input checked="" type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤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	--	--	--	--	--	.5 (M)	--	--	--
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.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤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	--	--	--	.8 (H)	--	--	--	--	--
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	<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains no or restricted outlet	--	--	.7 (M)	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	--	--	--

Comments: _____



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

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 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		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	.7 (M)	--	--
< 35 %	--	--	--

Comments: _____

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	<input type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.6M	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: _____

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	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	.3L	--
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)	
	<input type="checkbox"/> Low	<input checked="" type="checkbox"/> Moderate <input type="checkbox"/> High
Public ownership	--	.5(M)
Private ownership	--	--

Comments: _____



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	H	1.00	1	
C. General Wildlife Habitat	M	0.40	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	M	0.00	1	
F. Short and Long Term Surface Water Storage	H	0.80	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.70	1	
H. Sediment/Shoreline Stabilization	M	0.70	1	
I. Production Export/Food Chain Support	M	0.60	1	
J. Groundwater Discharge/Recharge	NA		--	
K. Uniqueness	L	0.30	1	
L. Recreation/Education Potential	M	0.50	1	
Totals:		5.50	10.00	3
Percent of Total Possible Points:			55% (Actual / Possible) x 100 [rd to nearest whole #]	

<p>Category I Wetland: (Must satisfy one of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or</p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation and answer to Question 14E(ii) is "yes"; or</p> <p><input type="checkbox"/> Percent of total Possible Points is > 80%.</p>
<p>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.)</p> <p><input checked="" type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or</p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; or</p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or</p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish / Aquatic Habitat; or</p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Percent of total possible points is > 65%.</p>
<p><input type="checkbox"/> Category III Wetland: (Criteria for Categories I, II, or IV not satisfied.)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input type="checkbox"/> "Low" rating for Uniqueness; and</p> <p><input type="checkbox"/> "Low" rating for Production Export / Food Chain Support; and</p> <p><input type="checkbox"/> Percent of total possible points is < 30%.</p>

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

☐ **I**

☒ **II**

☐ **III**

☐ **IV**



Appendix C

REPRESENTATIVE PHOTOGRAPHS **2003 AERIAL PHOTOGRAPH**

MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana



Location: A **Description:** 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: Extra Photo: SW of G Transect End
Description: Overview to NE **Compass Reading:** NNE°



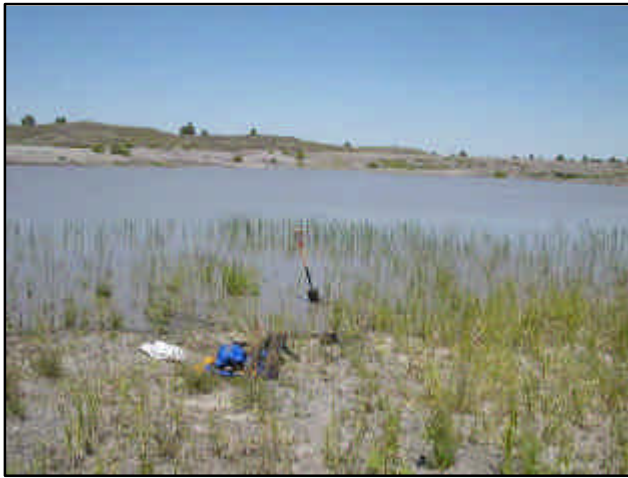
Location: Extra Photo SW of G Transect End
Description: Overview to NE **Compass Reading:** ENE°



Location: Extra Photo: from SW of G Transect End
Description: SE end of wetland **Compass Reading:** ESE°



Location: Extra H photo **Description:** Taken on sunny day **Compass Reading:** ~302°



Location: On H transect end **Description:** Wetland vegetation plugging **Compass Reading:** ~302°



Location: WSW area of wetland (to south of G transect end) **Description:** *Rana pipiens*

-03 13:47:19 P=-3.4 R=0.0 Y=-1.0

7-23-03 American Colloid
1:6000 Horizons, Inc.

Wetland

C13-001



American Colloid 2003

Appendix D

MDT REVISED PRELIMINARY FIELD REVIEW REPORT MDT ADDENDUM ATTACHMENTS (PLAN SHEETS)

*MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana*

RECEIVED

JAN 06 1999

ENVIRONMENTAL



Montana Department of Transportation
Helena, Montana 59620-1001

MASTER FILE
COPY

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
Carl S. Peil, P.E.
Preconstruction Engineer

Date 1/4/99

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

Carl S. Peil
Page 3
December 23, 1998

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

Carl S. Peil
Page 4
December 23, 1998

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

Carl S. Peil
Page 5
December 23, 1998

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

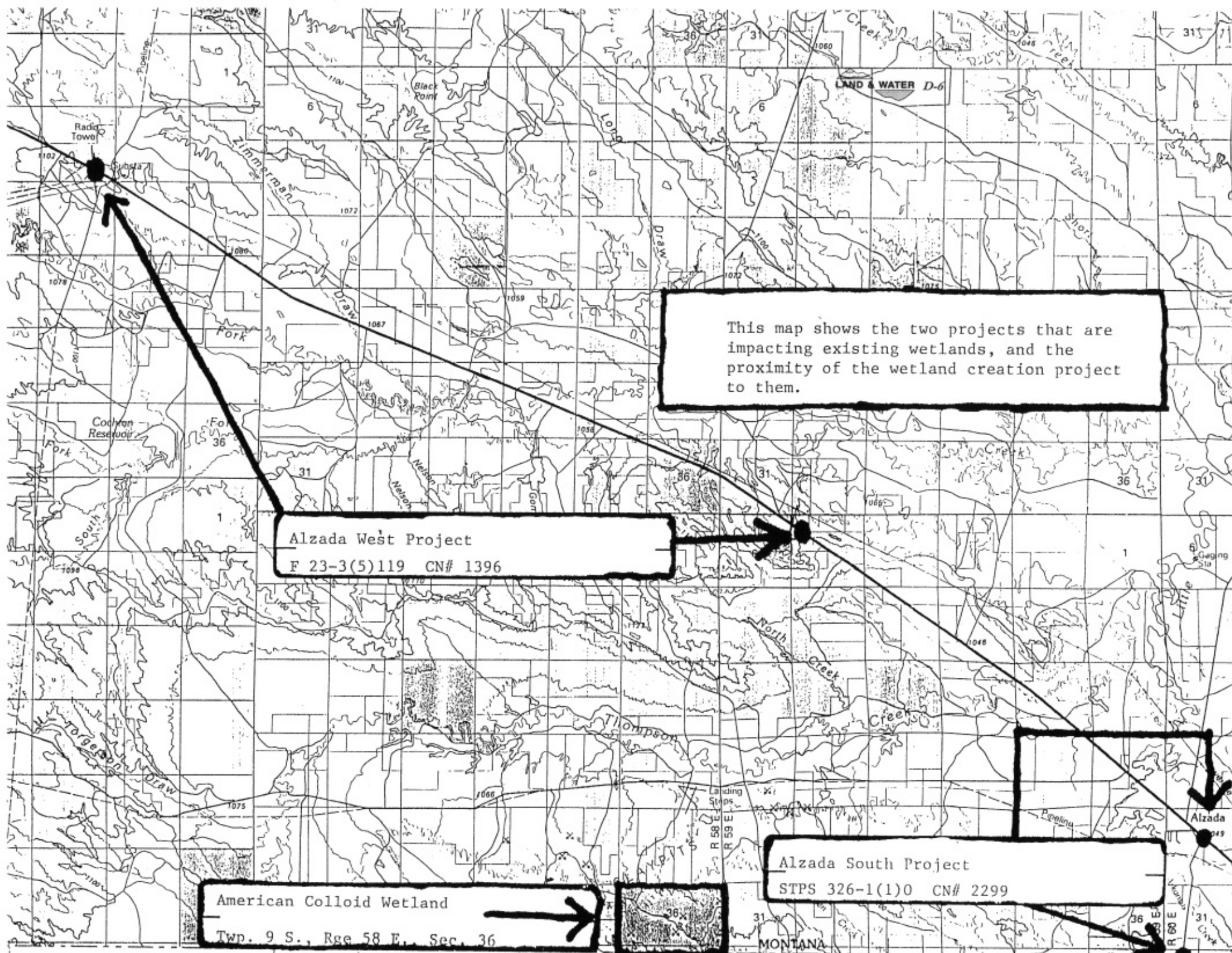
The estimated cost to construct this project is \$15,500. This estimate includes Preliminary Engineering, Acquisition of Right-of-Way, and Construction costs. As soon as more information is available a modification to the programming will be made.

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 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.



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.

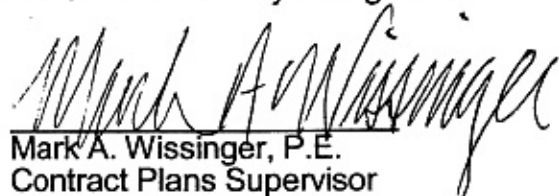
ATTACHMENT NO. 2- Revised Special Provision 6, Dike Embankment.

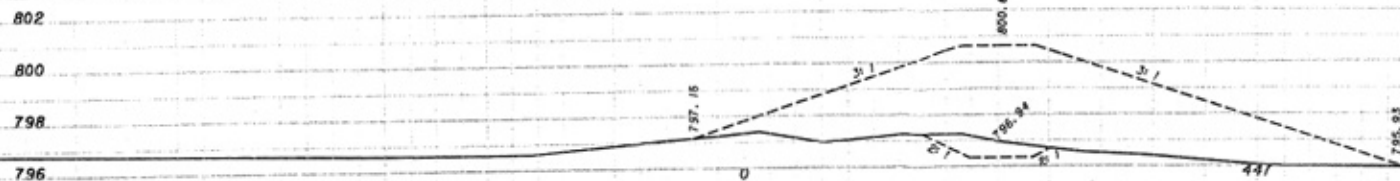
ATTACHMENT NO. 3- Revised Plan Sheet 3, revision of Grading Frame.

INSTRUCTIONS – READ CAREFULLY

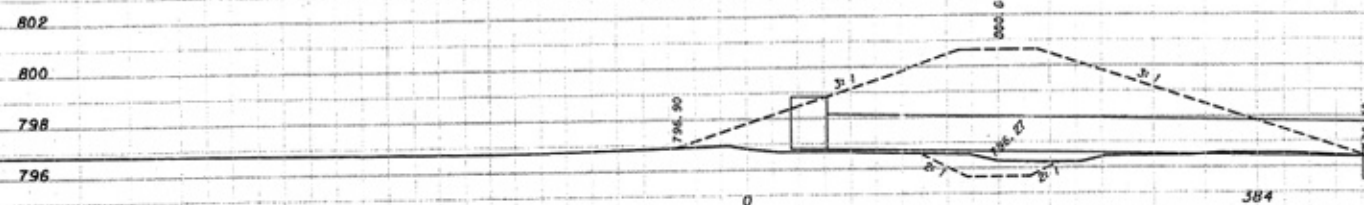
Load the electronic amendment file while in the opened project file to apply the addendum. In order to be responsive, the Schedule of Items printout on projects with addendums must show the addendum(s) applied at the bottom of each page.

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

EXCAVATION
cubic metersEMBANKMENT
cubic meters

0+30.00



0+20.00

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



0+10.00

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



0+00.00
BEGIN DAM

30

20

10

0

10

20

30

TABLE OF CONTENTS

NOTES

ROAD PLANS

SHEET NO.

TITLE SHEET	1
TABLE OF CONTENTS	2
NOTES	2
SUMMARIES	3
GRADING	3
FENCING	3
TOPSOIL & SEEDING	3
CUVERTS	3

DETAILS	4
DAM SIDE VIEW	4
DAM END VIEW	4
CONCRETE BASE	4

PLAN & PROFILE	5
----------------	---

CROSS SECTIONS	1-2
----------------	-----

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.

SUMMARY

ADDENDUM NO.1
ATTACHMENT NO.3

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



GRADING			
STATION	cubic meters		REMARKS
	EXCAVATION	EMB. IN PLACE	
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*		meters			EACH			meters		REMARKS
		TYPE FSM			SINGLE PANEL	DOUBLE PANEL		GATES		
								G2		
FROM	TO									
		1 043			4	4		9.6		
TOTAL		1 043			4	4		9.6		

* REFERENCE TO SURVEYED EASEMENT

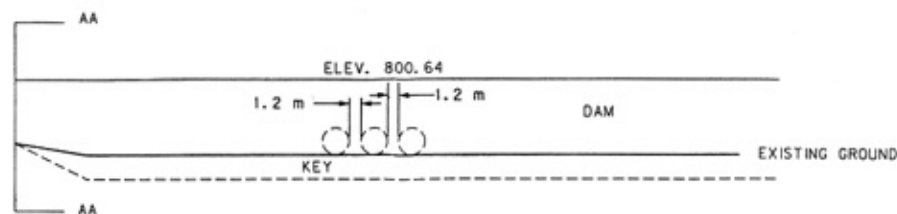
TOPSOIL & SEEDING*										
STATION		cubic meters	hectares							REMARKS
			SEED			FERTILIZER			CONDITION SEEDBED	
FROM	TO	TOPSOIL SALVAGING & PLACING	NO. 1	NO. 2	NO. 3	NO. 1	NO. 2	NO. 3		
0+00.00	0+57.50	109	1			1			1	DAM
TOTAL		109	1			1			1	

* SEEDING WILL BE HAND BROADCAST

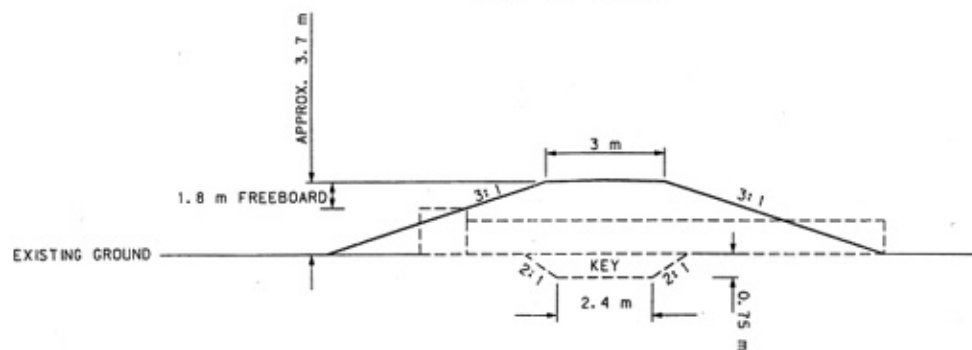
CULVERTS											
STATION	meters	END SECTIONS		cubic meters				meters		HEIGHT OF COVER IN meters	EACH CLEAN CULVERT
	CSP			CULVERT EXCAVATION	BEDDING MATERIAL	CLASS "DD" CONCRETE	CULVERT RIPRAP CLASS	REMOVE	RELAY		
	1350 mm	LEFT	RIGHT								IN PLACE mm X m
0+20	68.5		SD.	100		3.3				2.9	
TOTAL	68.5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

TRIPLE 1350 mm x 5.5 m CSP RISER LT

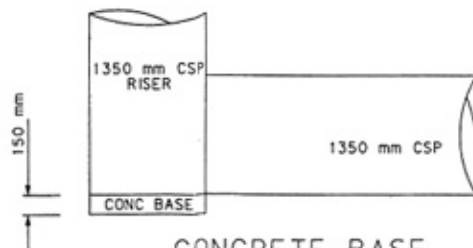
DETAILS



SIDE VIEW DAM
NOT TO SCALE



END VIEW DAM
NOT TO SCALE
SECTION AA



CONCRETE BASE
NOT TO SCALE

Appendix E

BIRD SURVEY PROTOCOL GPS PROTOCOL

*MDT Wetland Mitigation Monitoring
American Colloid Mitigation Site
Alzada, Montana*

BIRD SURVEY PROTOCOL

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

Species Use within the Mitigation Wetland: Survey Method

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

Sites that can be circumambulated or walked throughout.

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

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

Sites that cannot be circumambulated.

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

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

Species Use within the Mitigation Wetland: Data Recording

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

1. Bird Species List

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

2. Bird Density

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

3. Bird Behavior

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

4. Bird Species Habitat Use

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

GPS Mapping and Aerial Photo Referencing Procedure

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