MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2011

American Colloid Mitigation Site
Alzada, Carter County, Montana



Prepared for:

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

Prepared by:

CONFLUENCE
PO Box 1133
Bozeman, MT 59771-1133

December 2011

MONTANA DEPARTMENT OF TRANSPORTATION

WETLAND MITIGATION MONITORING REPORT:

YEAR 2011

American Colloid
Carter County, Montana

Initial Construction:
MDT Project Number NH STPS BR 6(10)
Control Number 1396

Watershed 16 Repair:
MDT Project Number STPX 6(15)
Control Number 6714

Prepared for:

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

Prepared by:

Confluence Consulting, Inc.
P.O. Box 1133
Bozeman, MT 59771

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CCI Project No: MDT.004

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Cover: View from NE corner of AC wetland looking west near constructed berm.

1. INTRODUCTION

The 2011 American Colloid Wetland Mitigation Monitoring Report presents the results of the first year of monitoring at the American Colloid mitigation site since the berm/outlet structure was reconstructed. The reconstruction repaired damages sustained from a pipe installation that resulted in a subsequent dike failure in 2007. The American Colloid wetland mitigation project is situated approximately 2 miles south and 7 miles west of Alzada, Montana, on Montana School Trust Land in Lot 7, Lot 10, and Lot 11 of Section 36, Township 9 South, Range 58 East. (Figure 1). Figures 2 and 3 in Appendix A show the Monitoring Activity Locations and Mapped Site Features, respectively. The MDT (Montana Department of Transportation) Wetland Mitigation Site Monitoring Form, the US Army Corps of Engineers (USACE) Wetland Determination Data Forms (USACE 2010), and the MDT Montana Wetland Assessment Form are included in Appendix B. Appendix C shows representative photographs of the site and Appendix D presents the project plan sheet.

The mitigation site is located in Watershed 16-Little Missouri River Basin, in the Glendive District on land owned by the Montana Department of Natural Resources and Conservation (DNRC) and formerly leased to the American Colloid Mining Company. The site is currently under an MDT conservation easement. The elevation is approximately 3,518 feet above mean sea level (amsl). The site was mined for bentonite clay prior to the 1971 Open Cut Mining Act and is surrounded by topography typical of open cut mining activities. A dike approximately 190 feet in length was constructed along a topographic depression to impound precipitation runoff from an approximate 167-acre ephemeral drainage. Soil borings at the site revealed highly erodible clay soils underlain by shale, suitable for impounding and storing surface water. The property is managed for perpetuity in a conservation easement between DNRC and MDT. A fenced enclosure surrounds the 15-acre site, which includes the proposed 5-acre wetland and a 10-acre buffer zone of upland vegetation. The mitigation monitoring limits, for purposes of this report, encompass only 6.44 acres of created wetland and upland buffer within the fenced enclosure.

The MDT designed and constructed the American Colloid wetland restoration project. The site was constructed in October 2001 to mitigate for 4.4 acres of wetland impacts associated within the Alzada-West and Alzada-South projects in Watershed 16, Little Missouri Basin. The initial monitoring event was conducted in 2002. Monitoring ceased in 2007 following the dike failure. The 2011 monitoring event represented the first since the dike repair.

No goals or success criteria were defined for this project, which was constructed prior to the 2008 USACE mitigation requirements. In general, wetland success will be based on the following performance standards.

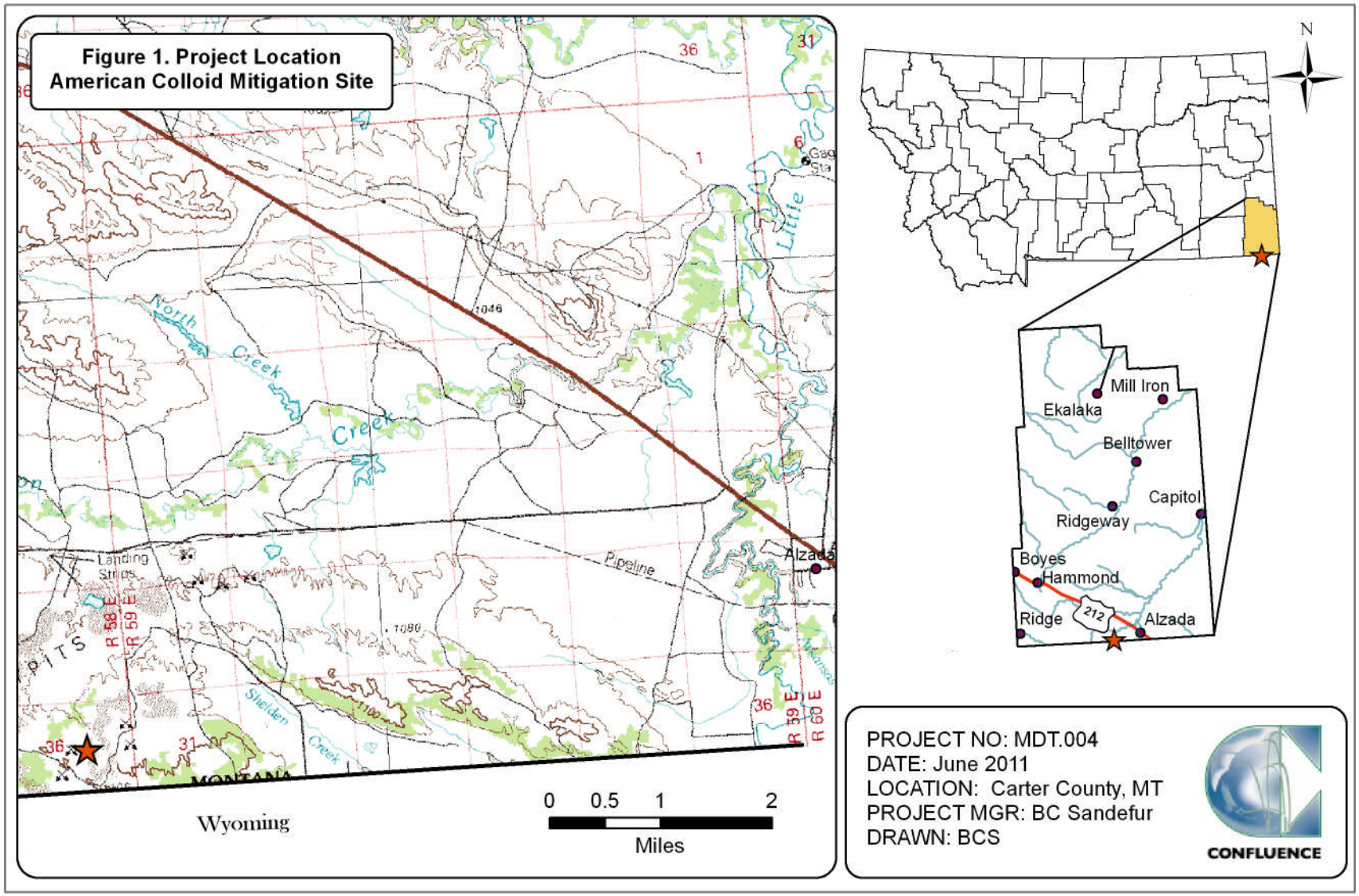


Figure 1. Project location of American Colloid Mitigation Site.

1. **Wetland Characteristics**: All restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *2010 Regional Supplement to the Corps of Engineers Manual: Great Plains Region (Version 2.0)* (USACE 2010).
    a) **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Wetland Manual and the 2010 Regional Supplement.
        (i) Soil saturation will be present for at least 12.5 percent of the growing season.
        (ii) Depressional wetlands excavated into the upland areas will be monitored to determine if groundwater hydrology is filling sites and establishing vegetation communities.
        (iii) Hydrologic success will also require that the constructed stream channel be stable in the wetlands.
    b) **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service (NRCS) definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Wetland Manual and 2010 Regional Supplement. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success is achieved.
    c) **Hydrophytic Vegetation Success** will be achieved through the delineation of developing wetlands utilizing the technical guidelines established in the 1987 Wetland Manual and the 2010 Regional Supplement. The following concept of "dominance", as defined in the 1987 Manual, will be applied during future routine wetland determinations in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines).*"

2. **Upland Buffer Success** will be achieved when the noxious weeds do not exceed 10 percent of cover within the buffer areas on site. Any area within the creditable buffer zone disturbed by project construction must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.

3. **Weed Control** will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site, and control measures based upon the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of State Listed Noxious weed species within the site. MDT will manage the wetland conservation easement area to meet a goal of having less than 10 percent absolute cover of state listed noxious weed species across the site.

4. **Fencing** of the proposed mitigation site has been installed along the boundaries to protect the integrity of the wetland and upland buffer from disturbance that may be detrimental to the site. Fencing installed along the perimeter of the site has been designed to be "wildlife friendly" to allow for wildlife movement into and out of the wetland complex.

5. **Monitoring** of this MDT mitigation site will be based upon the MDT standard monitoring protocols utilized for all MDT wetland mitigation sites for a minimum period of five years or longer as determined by the US Army Corps, Montana Regulatory Office's review of annual monitoring reports for the site and whether or not the site has met the wetland success criteria.

2. METHODS

The 2011 monitoring event was completed on August 9, 2011. Information for the Mitigation Monitoring Form and Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity sites were located with a global positioning system (GPS) and illustrated in Figure 2 (Appendix A). Information collected included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird and wildlife use documentation, photographic documentation, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

The presence of hydrological indicators as outlined on the Wetland Data Form was documented at two data points established within the project area. The hydrologic indicators were evaluated according to features observed *in situ* during the site visit. The data were recorded on electronic field data sheets (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

Technical criteria for wetland hydrology guidelines have been established as "permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (12.5 percent of the growing season) during the growing season" (USACE 2010). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered jurisdictional wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum

daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). The growing season recorded for the predominant soil map unit, Neldore-rock outcrop complex (58D), averages 120 days (USDA 2011). Areas defined as wetlands would require 15 days of continuous inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded on the Wetland Data Form (Appendix B). No monitoring wells were installed at the site.

2.2. Vegetation

The boundaries of dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2011 aerial photograph. Percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B). Community types were named based on the predominant vegetation species that characterized each mapped polygon (Figure 3, Appendix). No woody species were planted at the American Colloid Mitigation Site.

Temporal changes in vegetation are evaluated through annual assessments of a single static belt transect, which was originally established in July 2002 and reestablished in 2011 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along the 10-foot wide and 300-foot long belt transect (T-1) (Figure 2, Appendix A). The transect location was recorded with a resource-grade GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated using the same values and cover ranges used for the polygon data on the 2011 aerial photograph (Figure 3, Appendix B). Photographs were taken at transect endpoints during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol “x”, “▲”, or “■” representing 0 to 0.1 acre, 0.1 to 1 acre, or greater than 1 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively.

2.3. Soil

Soil information was obtained from the *Soil Survey for Carter County Area* (USDA 2011) and *in situ* soil descriptions. Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the 1987 Manual and 2010 Regional Supplement. A description of the soil profile, including hydric

soil indicators when present, was recorded on the electronic Wetland Data Form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the U.S. including special aquatic sites and jurisdictional wetlands were delineated throughout the project area in accordance with criteria established in the 1987 Manual and the 2010 Regional Supplement. The technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology described in the 2010 Regional Supplement must be satisfied to delineate a representative area as jurisdictional. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northern Plains Region 4 (Reed 1988). A Routine Level-2 on-site Determination Method (Environmental Laboratory 1987) was used to delineate jurisdictional areas within the project boundaries. The information was recorded electronically on the Wetland Data Form (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area for vegetation, soil or hydrology, or special aquatic site, i.e., mudflat. The wetland boundary was delineated on the 2011 aerial imagery and digitized into Geographic Information System (GIS) format. Wetland areas reported were estimated using GIS methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the Mitigation Monitoring Form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list of animals observed in 2011 was compiled for this report.

2.6. Functional Assessment

The 2008 MDT Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008) was used to evaluate functions and values on the site in 2011. This method provides an objective means of assigning wetlands an overall rating and provides regulators a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008). Field data for this assessment were collected during the site

visit. One Wetland Assessment Form was completed for the project area (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provided supplemental information documenting wetland, upland, and transect conditions; site trends; and current land uses surrounding the site. Photographs were taken at established photo points throughout the mitigation site during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2011 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The GPS data were subsequently exported into GIS and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph, then digitized. Site features and survey points that were mapped included fence boundaries, photographic points, transect beginnings and endings, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

Engineered structures including the dike and outlet structure, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination and did not constitute an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

Climate data from the meteorological station at Albion 1 N, Montana (240088), recorded an average annual precipitation rate of 14.23 inches from 1945 to 2010 (WRCC 2011). The annual precipitation rate recorded in 2010 was 23.6 inches, 9.37 inches above the 65 year average. Cumulative precipitation from January to April 2011 was 4.42 inches (NCDC 2011), 1.83 inches above average for January to April. Precipitation data for the Albion 1 N station was unavailable beyond April 2011. Data for a meteorological station in Broadus has been included to supplement precipitation rates near the American Colloid site. The Broadus station recorded 4.23 inches between January and April (NCDC 2011), comparable to the total reported at the Albion 1 N station. The cumulative precipitation at Broadus between January and August was 10.90 inches, 15.35 inches, and 16.48 inches for the long-term (66 years) average, 2010, and 2011, respectively.

The wetland basin was constructed in an ephemeral drainage in an approximate 167-acre watershed. Wetland hydrology is provided solely through direct precipitation and surface runoff. During the site inspection, the constructed dike was functioning as designed and impounding surface water. There were

approximately three acres of surface water at depths ranging from zero to three feet. Surface water elevations were eight inches below the vertical stand-pipes that control the maximum water depth. Field conditions indicated that water levels had been at the maximum elevation during spring runoff and the beginning of the growing season. Surface soil cracks, drift deposits, light algal crust, stunted and water-stained vegetation, and morphological adaptations (inflated stems) were observed along the water's edge. Rills and other drainage patterns were observed throughout the uplands surrounding the inundated basin. Surface water from the wetland depression discharges to the ephemeral drainage through a series of down gradient wetlands into an unnamed tributary of Thompson Creek, and eventually into the Little Missouri River, approximately 15 miles downstream of the mitigation site. Precipitation and evaporation rates are likely the dominant factors influencing seasonal water elevations within the wetland, based on the low hydraulic conductivity rates of the soil forming the unconsolidated bottom of the basin.

No groundwater monitoring wells were installed within this site. Hydrological data were collected at two data points, AC-1 and AC-2. No hydrologic indicators were observed at data point AC-1, positioned approximately twenty feet from the edge of water. Saturated soils at eight inches below ground surface (bgs) and a water table elevation at ten inches bgs were hydrologic indicators present at wetland data point AC-2, located approximately ten feet from the water's edge. Salt deposits within the soil profile at AC-2 at a depth below 12 inches suggest areas surrounding open water may be seasonally saturated.

3.2. Vegetation

Twenty-eight plant species were identified onsite in 2011 (Table 1). Vegetation community types were mapped based on topography, hydrology, and plant composition. The 2011 vegetation communities were Type 1 – *Chrysothamnus nauseousus/Atriplex argentea* Upland; Type 2 – *Schizachyrium scoparium/Grindelia squarrosa* Upland.; and Type 3 – *Spartina pectinata* Wetland. The impounded depression encompassed approximately 3 acres of open water defined by polygon 4 (Figure 3, Appendix A and Monitoring Form, Appendix B). The dominant species for each community are presented in descending order of abundance.

Table 1. Vegetation species observed in 2011 at the American Colloid Wetland Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 4 INDICATOR STATUS*
Achillea millefolium	yarrow,common	FACU
Agropyron repens	quackgrass	FAC
Agropyron smithii	wheatgrass,western	FACU
Artemisia tridentata	big sagebrush	NL

*Region 4: Northern Plains (Reed 1988).

Table 1 (continued). Vegetation species observed in 2011 at the American Colloid Wetland Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 4 INDICATOR STATUS*
Atriplex argentea	saltbush,silver-scale	FACU
Avena fatua		NL
Beckmannia syzigachne	sloughgrass,American	OBL
Bromus japonicus	brome, Japanese	FACU
Bromus tectorum	cheatgrass	NL
Calamovilfa longifolia	sandreed, prairie	NI
Chenopodium sp.	goosefoot	NI
Chrysothamnus nauseousus	rubber rabbitbrush	NL
Cirsium arvense	thistle,Canada	FACU
Echinochloa crusgalli	grass,barnyard	FACW
Grindelia squarrosa	gumweed,curly-cup	UPL
Gutierrezia sarothrae	broom snakeweed	NL
Hordeum jubatum	barley,fox-tail	FACW
Juncus tenuis	rush,slender	FAC
Panicum capillare	witchgrass	FAC
Poa sp.		NL
Puccinellia nuttalliana	grass, Nuttall's alkali	OBL
Sarcobatus vermiculatus	greasewood,black	FACU
Schizachyrium scoparium	bluestem,little	FACU
Scirpus maritimus	bulrush,saltmarsh	NI
Sitanion hystrix	squirrel-tail,bottlebrush	FACU
Spartina pectinata	cordgrass,prairie	FACW
Typha latifolia	cattail,broad-leaf	OBL
Xanthium strumarium	cockle-bur,rough	FAC

*Region 4: Northern Plains (Reed 1988).

Upland community Type 1 – *Chrysothamnus nauseousus/Atriplex argentea* developed within the site perimeter. Rubber rabbitbrush (*Chrysothamnus nauseousus*), silver-scale saltbush (*Atriplex argentea*), foxtail barley (*Hordeum jubatum*), curly cup gumweed (*Grindelia squarrosa*), and a bluegrass species (*Poa* sp.) dominated the vegetation cover. Bare ground contributed greater than 50 percent to total cover.

Upland Type 2 – *Schizachyrium scoparium/Grindelia squarrosa* characterized the community that abuts the wetland fringe surrounding the open water. The vegetation was dominated by little bluestem (*Schizachyrium scoparium*), curly cup gumweed, prairie sandreed (*Calamovilfa longifolia*) and eleven other species. Eleven to twenty percent of the total cover was bare ground.

Wetland Type 3 – *Spartina pectinata* (prairie cordgrass) dominated the wetland community that characterized the wetland fringe adjacent to the open water. Silver-scale saltbush, saltmarsh bulrush (*Scirpus maritimus*), broad-leaf cattail, goosefoot species (*Chenopodium* sp.), and broom snakeweed (*Gutierrezia sarothrae*) were also identified within the community. Bare ground contributed 21 to 50 percent to total cover.

Approximately three acres of open water (Polygon 4) were delineated for a majority of the area associated with the constructed wetland cell. The wetland cell has been flooded only since the dike repair in 2010, likely resulting in low productivity levels within the open water depression. The open water contained low cover levels of saltmarsh bulrush, prairie cordgrass, and Canada thistle (*Cirsium arvense*). The percent cover of aquatic macrophytes in the open water is expected to increase in subsequent growing seasons depending on the long-term water chemistry.

Data collected on Transect 1 (Monitoring Form, Appendix B) were summarized in tabular and graphic formats (Table 2, Charts 1 and 2, respectively). The start and finish of Transect 1 were photographed as shown on Page C-2 of Appendix C. The transect intersected Type 2 *Schizachyrium scoparium* upland, Type 3 *Spartina pectinata* wetland, and open water. Hydrophytic vegetation covered 7.3 percent of the transect and open water intersected 88.3 percent of the transect.

Less than 0.1 acre of Canada thistle, a Priority 2B weed, was noted near the northwest mitigation boundary. The cover was less than 1 percent. The MDT has an ongoing weed control program that annually assesses the location and size of State noxious weed infestations on each mitigation site.

Table 2. Data summary for Transect 1 in 2011 at the American Colloid Wetland Mitigation Site.

Monitoring Year	**2011**
Transect Length (feet)	300
Vegetation Community Transitions along Transect	3
Vegetation Communities along Transect	2
Hydrophytic Vegetation Communities along Transect	1
Total Vegetative Species	7
Total Hydrophytic Species	4
Total Upland Species	3
Estimated % Total Vegetative Cover	12
% Transect Length Comprising Hydrophytic Vegetation	7.3
% Transect Length Comprising Upland Vegetation Communities	4.3
% Transect Length Comprising Unvegetated Open Water	88.3
% Transect Length Comprising Bare Substrate	0.0

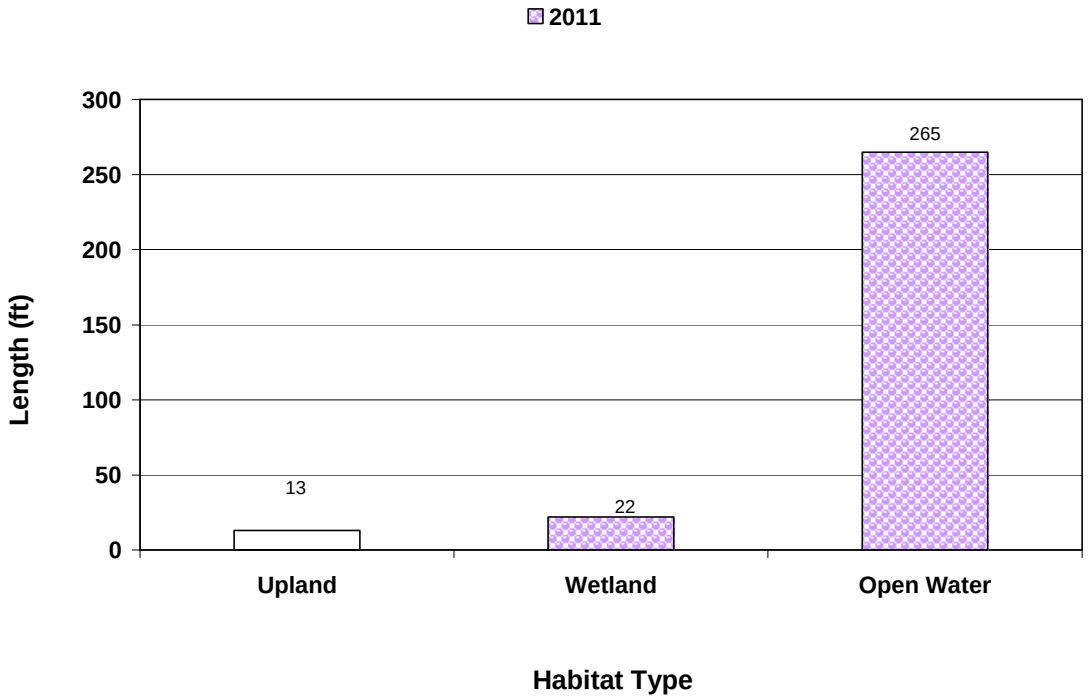


Chart 1. Transect map showing community types on Transect 1 in 2011 from start (0 feet) to finish (300 feet) at American Colloid.

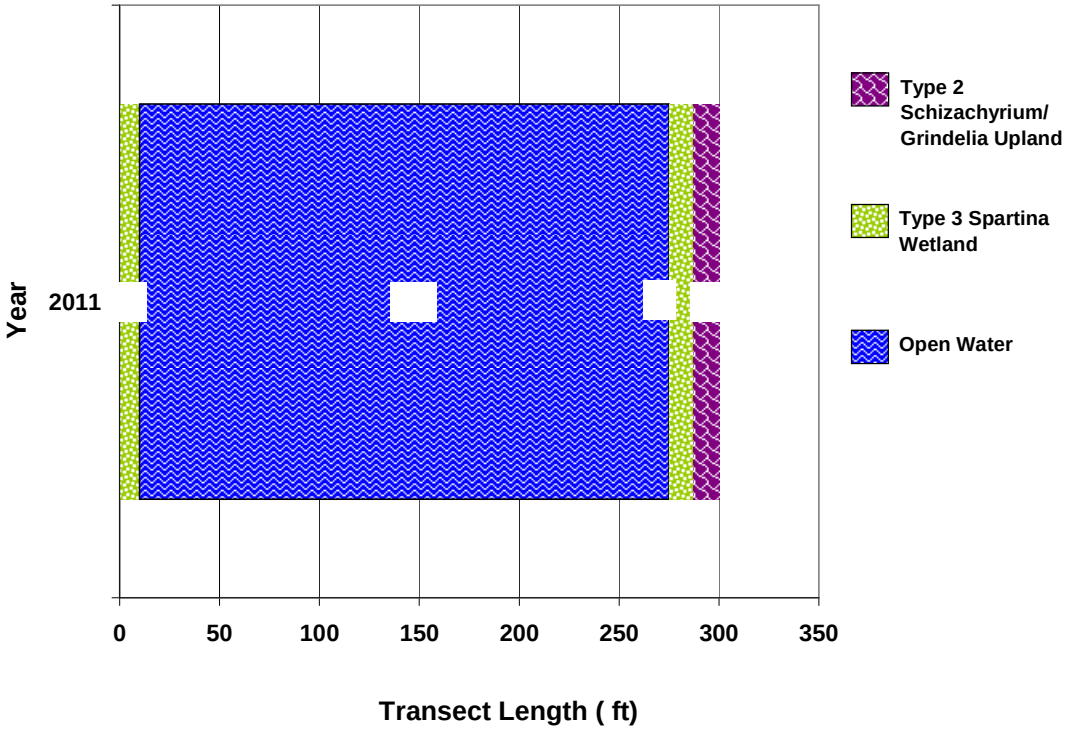


Chart 2. Length of habitat types within Transect 1 in 2011 at American Colloid.

3.3. Soil

The project site was mapped by the *Carter County Soil Survey* (USDA 2011) within the Neldor-Rock outcrop complex at 4 to 15 percent slopes on hill slopes. The parent material of this complex is clay residuum over semi-consolidated shale. These are well drained, non hydric soils with clay loam inclusions.

Soil pit AC-1 was located in upland community 2. The soil profile revealed a gray (10 YR 5/1) clay with dark yellowish brown redoximorphic concentrations (10 YR 4/4) in the matrix. The depleted matrix provided a positive indication of a hydric soil. The data point did not meet the wetland criteria for vegetation and hydrology. The soil profile at AC-2 was a dark gray (10 YR 4/1) clay with dark yellowish brown (10 YR 4/6) redox features in the matrix. The depleted matrix was a positive indicator of hydric soil.

3.4. Wetland Delineation

Two data points, AC-1 and AC-2, were evaluated to determine the wetland and upland boundary. A total of 3.27 acres of wetland and aquatic habitat was delineated in 2011 (Table 3). A majority of the acreage (3.01 acres) within the constructed wetland cell was open water.

Table 3. Total wetland acres delineated in 2011 at American Colloid.

WETLAND AND AQUATIC HABITAT ACREAGES	2011
Wetlands	0.26
Open Water	3.01
Total	3.27

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly during the 2011 monitoring visit is presented in Table 4 (Appendix B)**.** Three bird species were observed during the first monitoring event including Canada goose (*Branta canadensis*), grasshopper sparrow (*Ammodramus savannarum*), and mallard (*Anas platyrhynchos*). Muskrat (*Ondatra zibethicus*), northern leopard frog (*Rana pipiens*), and pronghorn antelope (*Antilocapra americana*) were observed onsite in 2011. An unidentified species of turtle was seen swimming near the middle of the open water.

3.6. Functional Assessment

The first year of monitoring provided a baseline for subsequent functional assessments. The initial wetland assessment using the 2008 MWAM encompassed one 3.27-acre assessment area (AA) that included the open water depression and adjacent wetland fringe (Appendix B). Table 5 summarizes the function and value ratings of the AA.

Table 4. Wildlife species observed within the American Colloid Mitigation Site in 2011.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Northern Leopard Frog	*Rana pipiens*
BIRD	
Canada Goose	*Branta canadensis*
Grasshopper Sparrow	*Ammodramus savannarum*
Mallard	*Anas platyrhynchos*
MAMMAL	
Muskrat	*Ondatra zibethicus*
Pronghorn	*Antilocapra americana*
REPTILE	
Turtle sp.	

Table 5. Wetland assessment results for the American Colloid Mitigation Site in 2011.

Function and Value Parameters from the 2008 Montana Wetland Assessment Method	2011
Listed/Proposed T&E Species Habitat	Low (0.0)
MTNHP Species Habitat	Low (0.1)
General Wildlife Habitat	Mod (0.4)
General Fish/Aquatic Habitat	NA
Flood Attenuation	NA
Short and Long Term Surface Water Storage	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.6)
Sediment/Shoreline Stabilization	Low (0.3)
Production Export/Food Chain Support	Mod (0.7)
Groundwater Discharge/Recharge	Low (0.1)
Uniqueness	Low (0.3)
Recreation/Education Potential (bonus points)	NA
Actual Points/Possible Points	**3.5 / 9**
% of Possible Score Achieved	**39%**
Overall Category	**III**
Total Acreage of Assessed Wetlands within Site Boundaries	**3.27**
Functional Units (acreage x actual points)	**11.45**

[1] Berglund 1999

The AA was rated as a Category III wetland with 38.89 percent of the total possible points. The ratings were high for short and long term surface water storage and moderate for general wildlife habitat, sediment/nutrient/toxicant removal, and production export/food chain support. The site is moderately disturbed with one vegetation class. Wildlife use was minimal during the site visit. A total of 11.45 functional units were achieved at the American Colloid mitigation site in 2011. Overall ratings are expected to improve as the site develops wetland characteristics.

3.7. Photo Documentation

Photographs taken from five photo points, PP1 to PP5, are shown on page C-1 of Appendix C. Photos of the transect end points and data points are presented on page C-2 (Appendix C).

3.8. Maintenance Needs

There were no nesting structures currently installed on the site. The outlet control structure was repaired in 2010 and was in good working condition when inspected in August 2011. A wildlife friendly fence that surrounds the 15 acre site was in good condition and did not require maintenance. Less than 0.1 acre of Canada thistle, a Priority 2B weed, was noted near the northwest mitigation boundary. The cover was less than 1.0 percent. The MDT administers an ongoing weed control program that annually assesses the location and size of State noxious weed infestations on each mitigation site.

3.9. Current Credit Summary

No goals or success criteria were defined for this project, which was constructed prior to the 2008 USACE mitigation requirements. The calculation of estimated credit acres shown in Table 6 assumed a mitigation ratio of 1:1 for the created wetland and aquatic bed habitat within the wetland depression and a 5:1 ratio for preservation and maintenance of the upland buffer. The estimated credit acres for 2011 totaled 5.62 (Table 6).

Table 6. Estimated credit summary for the American Colloid Mitigation Site in 2011.

COMPENSATORY MITIGATION TYPE	USACE MITIGATION RATIO	USACE PROPOSED ACRES	2011 DELINEATED WETLAND ACRES	2011 ESTIMATED CREDIT ACRES
Creation: Establishment (wetland)	1:1	5	0.26	0.26
Creation: Establishment (aquatic bed)	1:1		3.01	3.01
Upland Buffer (Preservation and Maintenance)	5:1	10	11.73*	2.35
Total			3.27	5.62

*Value includes all uplands within 15-acre site

The areas delineated as wetland and aquatic habitat met the wetland criteria for vegetation, soil, and hydrology. The wetland depression was inundated for at least 12.5 percent of the growing season. The vegetation cover of the wetland and upland within the mitigation boundary is less than 50 percent, the first year since the dam was repaired. The noxious weed cover sitewide is no greater than 10 percent. The mitigation site was fenced to protect the wetland.

4. REFERENCES

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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
American Colloid
Carter County, Montana

Figure 2: 2011 Monitoring Activity Locations

PP3

T1-Start

AC-1

AC-2

T1-Finish

PP1

PP4

PP5

PP2

Mitigation Monitoring Limits

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Carter Co., MT

PROJECT NO: MDT.004

FILE: AmericanColloid/Monitor2011.mxd

Project Name
American Colloid Mitigation Site

Drawing Title
2011 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 13, 2011

PROJ MGR: B Sandefur

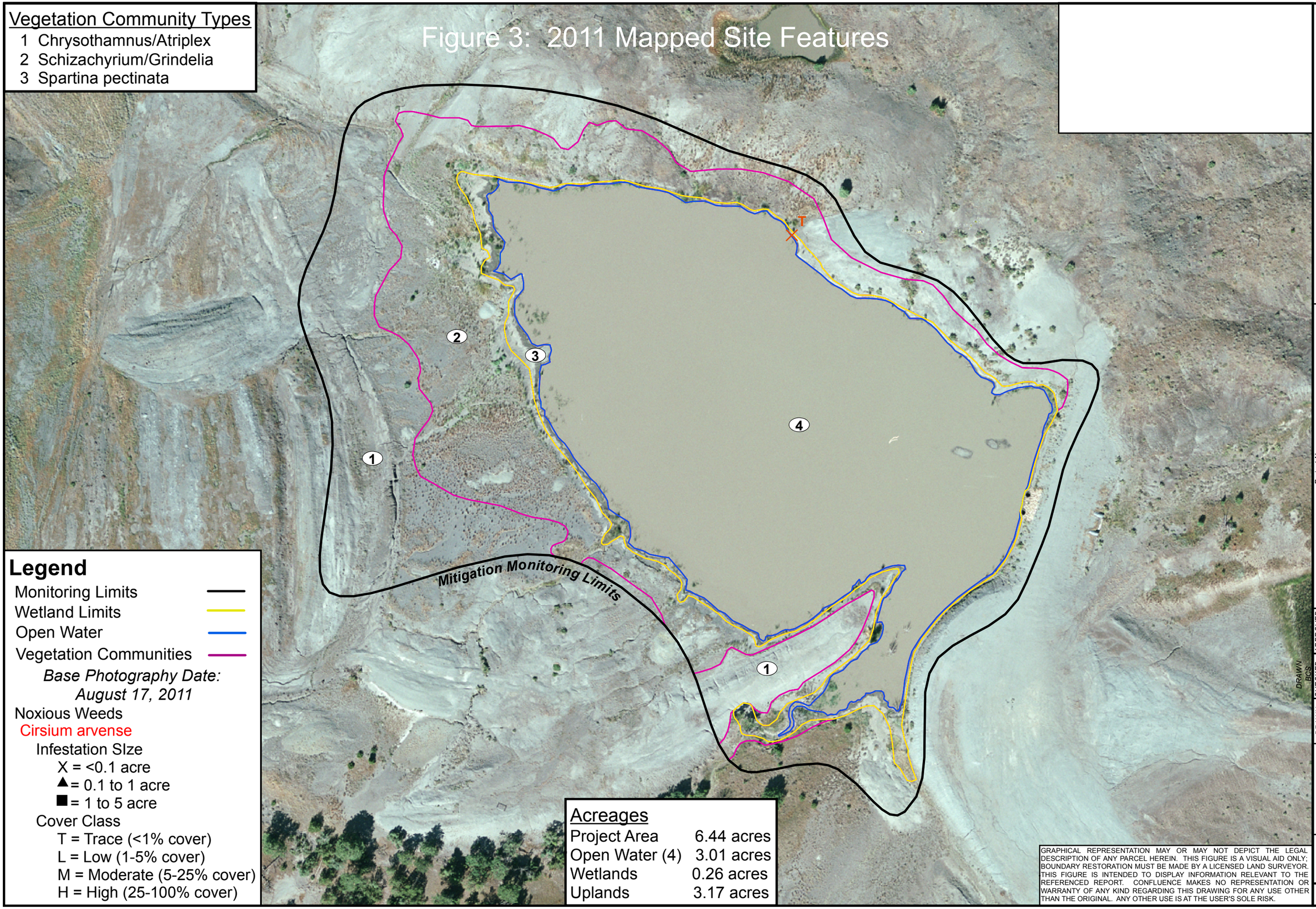
CONFLUENCE
consulting incorporated

Figure
2

REV -

Figure 3: 2011 Mapped Site Features

Vegetation Community Types
1 Chrysothamnus/Atriplex
2 Schizachyrium/Grindelia
3 Spartina pectinata



Legend

- Monitoring Limits
- Wetland Limits
- Open Water
- Vegetation Communities

Base Photography Date: August 17, 2011

Noxious Weeds
Cirsium arvense
Infestation SIze
X = <0.1 acre
▲ = 0.1 to 1 acre
■ = 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (5-25% cover)
H = High (25-100% cover)

Acreages

Project Area	6.44 acres
Open Water (4)	3.01 acres
Wetlands	0.26 acres
Uplands	3.17 acres

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Carbobn Co., MT
PROJ NO: STPX-0001(45)
FILE: AmericanColloid/Veg2011.mxd

Project Name: American Colloid Mitigation Site
Drawing Title: 2011 Mapped Site Features

DRAWN BCS
CHECKED BV
APPROVED JJ
SCALE: Noted
Drawn: September 13, 2011
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2011 MDT Wetland Mitigation Site Monitoring Form
2011 USACE Wetland Determination Data Form
2011 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
American Colloid
Carter County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: American Colloid Assessment Date/Time 8/9/2011 7:03:01 AM

Person(s) conducting the assessment: B. Sandefur, L. Soderquist

Weather: Mid 80's, partly cloudy, light wind Location: Alzada

MDT District: Billings Milepost: NA

Legal Description: T 9S R 58E Section(s) 36

Initial Evaluation Date: 8/9/2011 Monitoring Year: 1 #Visits in Year: 1

Size of Evaluation Area: 6.44 (acres)

Land use surrounding wetland:

Bentonite mine, range

HYDROLOGY

Surface Water Source: Precipitation, runoff

Inundation: ☑ Average Depth: 1.8 **(ft)** Range of Depths: 0-3.0 **(ft)**

Percent of assessment area under inundation: 80 %

Depth at emergent vegetation-open water boundary: 0.6 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes

Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc**:**

Soil cracks surrounding surface water in areas periodically inundated/saturated. Hydro indicators include drift deposits, algal crust, water-stained vegetation, and morphological adaptations (inflated stems).

Groundwater Monitoring Wells

Record depth of water surface below ground surface, in feet.

Well ID	Water Surface Depth (ft)
No wells	

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.

Hydrology Notes:

Approx 3-acres of surface water present within impounded basin.

VEGETATION COMMUNITIES

Site American Colloid

(Cover Class Codes **0** = < 1%, **1** = 1-5%, **2** = 6-10%, **3** = 11-20%, **4** = 21-50% , **5** = >50%)

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Chrysothamnus nauseousus / Atriplex argentea **Acres** 1.73

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron repens	0
Agropyron smithii	0	Atriplex argentea	3
Avena fatua	0	Bare ground	5
Chrysothamnus nauseousu	3	Grindelia squarrosa	2
Hordeum jubatum	2	Poa sp.	2
Sarcobatus vermiculatus	0		

Comments:

Community # 2 **Community Type:** Schizachyrium scoparium / Grindelia squarrosa **Acres** 1.44

Species	Cover class	Species	Cover class
Artemisia tridentata	1	Atriplex argentea	1
Bare ground	3	Bromus japonicus	1
Bromus tectorum	0	Calamovilfa longifolia	2
Echinochloa crusgalli	0	Grindelia squarrosa	3
Juncus tenuis	1	Panicum capillare	0
Puccinellia nuttalliana	1	Schizachyrium scoparium	3
Sitanion hystrix	1	Spartina pectinata	1
Xanthium strumarium	1		

Comments:

Community # 3 **Community Type:** Spartina pectinata / **Acres** 0.26

Species	Cover class	Species	Cover class
Atriplex argentea	1	Bare ground	4
Beckmannia syzigachne	0	Chenopodium sp.	1
Cirsium arvense	0	Gutierrezia sarothrae	1
Scirpus maritimus	1	Spartina pectinata	2
Typha latifolia	1		

Comments:

Community # 4 **Community Type:** Open Water / **Acres** 3.01

Species	Cover class	Species	Cover class
Cirsium arvense	0	Open water	5
Scirpus maritimus	1	Spartina pectinata	1

Comments:

Total Vegetation Community Acreage **6.44**

(Note: some area within the project bounds may be open water or other non-vegetative ground cover.

VEGETATION TRANSECTS

Site: American Colloid Date: 8/9/2011 7:03:01 AM

Transect Number: 1 **Compass Direction from Start:** 130

Interval Data:

Ending Station 10 **Community Type:** Spartina pectinata /

Species	Cover class	Species	Cover class
Bare ground	5	Beckmannia syzigachne	0
Cirsium arvense	0	Spartina pectinata	1

Ending Station 275 **Community Type:** Open Water /

Species	Cover class	Species	Cover class
Cirsium arvense	0	Open water	5
Scirpus maritimus	0	Spartina pectinata	0

Ending Station 287 **Community Type:** Spartina pectinata /

Species	Cover class	Species	Cover class
Bare ground	5	Beckmannia syzigachne	0
Spartina pectinata	1		

Ending Station 300 **Community Type:** Schizachyrium scoparium / Grindelia squarrosa

Species	Cover class	Species	Cover class
Bare ground	5	Grindelia squarrosa	0
Puccinellia nuttalliana	0	Schizachyrium scoparium	1
Spartina pectinata	0		

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

American Colloid

Planting Type	#Planted	#Alive	Notes
None planted			

Comments

American Colloid

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
Canada Goose	2	L	MF, OW, US
Grasshopper Sparrow	1	F, FO, L	SS, UP, US
Mallard	1	FO, L	MF, OW

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

AB = Aquatic bed **SS** = Scrub/Shrub **FO** = Forested **UP** = Upland buffer **I** = Island

WM = Wet meadow **MA** = Marsh **US** = Unconsolidated shore **MF** = Mud Flat **OW** = Open Water

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Muskrat	1	Yes	No	No	
Northern Leopard Frog	20	No	No	No	Many small frogs
Pronghorn	1	Yes	No	No	Several noted just outside monitoring area

Wildlife Comments:

Unidentified turtle sp. seen swimming near middle of open water.

American Colloid

PHOTOGRAPHS

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.

Photo #	Latitude	Longitude	Bearing	Description
8488	45.004608	-104.548515	130	T1 start
8496	45.003983	-104.547737	230	T1 end
8500-8506	45.003288	-104.547836	130	PP1, pano
8513	45.003796	-104.54818	270	AC-1
8514	45.003857	-104.548164	25	AC-2
8517-8523	45.00494	-104.547203	230	PP2, pano
8524	45.005119	-104.5476	185	PP4
8525	45.00383	-104.549026	10	PP5
8526-8533	45.003725	-104.548183	80	PP3, pano

Comments:

American Colloid

ADDITIONAL ITEMS CHECKLIST

Hydrology

☐ Map emergent vegetation/open water boundary on aerial photos.
☐ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc).

Photos

☐ One photo from the wetland toward each of the four cardinal directions
☐ One photo showing upland use surrounding the wetland.
☐ One photo showing the buffer around the wetland
☐ One photo from each end of each vegetation transect, toward the transect

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

☑ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)
☑ Delineate wetland – upland boundary onto aerial photograph.

Wetland Delineation Comments

Functional Assessments

☑ Complete and attach full MDT Montana Wetland Assessment Method field forms.

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? No

If yes, do they need to be repaired?

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 in need of repair? No

If yes, describe the problems below.

The outlet control structure was recently repaired and is in good working condition.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: American Colloid Mitigation Site City/County: Carter Sampling Date: 8/9/2011

Applicant/Owner: MDT State: MT Sampling Point: AC-1

Investigator(s): B. Sandefur Section, Township, Range: 36 9S 58E

Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): flat Slope (%): _____

Subregion (LRR): LRR G Lat: 45.0038183333333 Long: -104.548321666667 Datum: WGS 84

Soil Map Unit Name: Neldore-Rock outcrop complex, 4-15% slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Hydric Soil Present? Yes ☑ No ☐

Wetland Hydrology Present? Yes ☐ No ☑

Is the Sampled Area within a Wetland? Yes ☐ No ☑

Remarks: Soils with redox, no hydrophytic veg com, no hydro indicators.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Agropyron spp.	10	☐	NL
2. Xanthium strumarium	15	☑	FAC
3. Grindelia squarrosa	15	☑	UPL
4. Calamovilfa longifolia	15	☑	UPL
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
	55 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 45

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	0	x 2 =	
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	30	x 5 =	150
Column Totals:	45 (A)		195 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: AC-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100					Clay	
5-12	10YR 5/1	95	C M	10YR	4/4	5	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydro indicators, possibly endosaturated during wettest period.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: American Colloid Mitigation Site City/County: Carter Sampling Date: 8/9/2011

Applicant/Owner: MDT State: MT Sampling Point: AC-2

Investigator(s): B. Sandefur Section, Township, Range: 36 9S 58E

Landform (hillslope, terrace, etc.): Shoreline Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): LRR G Lat: 45.0038933333333 Long: -104.54816 Datum: WGS 84

Soil Map Unit Name: Neldore-Rock outcrop complex, 4-15% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑ No ☐	
Wetland Hydrology Present?	Yes ☑ No ☐	

Remarks: Point along water margin, comm 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Spartina pectinata	30	☑	FACW
2. Xanthium strumarium	20	☑	FAC
3. Grindelia squarrosa	5	☐	UPL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
	55 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 45

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	40	x 2 =	
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	70 (A)		180 (B)

Prevalence Index = B/A = 2.57143

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: AC-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR	3/1	100						Clay	
3-10	10YR	4/1	95	C	M	10YR	4/6	5	Clay	
10-14	10YR	4/1	90	C	M	10YR	4/6	10	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☑ No ☐ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 8

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name American Colloid **2. MDT project#** **Control#**

3. Evaluation Date 8/9/2011 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** American Colloid

6. Wetland Location(s): **T** 9S **R** 58E **Sec1** 36 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 10110201 **Watershed/County** Little Missouri/Carter County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 3.27

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 3.27

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Unconsolidated Bottom	Impounded	Permanent/Perennial	90
Depressional	Emergent Wetland	Impounded	Seasonal/Intermittant	10

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is <=15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	moderate	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

Recent disturbance within AA includes the repair of dam breach. Repair of the outlet control structures included the armouring of backfill around the standpipes to prevent piping along the culverts. AA is fenced to include a 10-acre upland buffer.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

AA located on DNRC property under an MDT conservation easement. No active mining or roads within 500 ft of AA. A few isolated ponds and wetland areas near AA. Site is situated within the semiarid Pierre Shale Plains with surrounding habitat of undulating rolling plains and vegetation of shortgrass prairie grasses and some scattered stands of Ponderosa pine.

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: Emergent vegetation class.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

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

Sources for documented use USFWS

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

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

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ○ D ◉ S Greater Sage-Grouse (S2)

No usable habitat ☑ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use MTNHP SOC list for Carter County.

14C. General Wildlife Habitat Rating:

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

Low

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

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

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

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

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

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

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

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

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

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

Comments Minimal wildlife observations during site visit. There are limited upland food sources.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

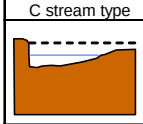
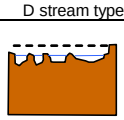
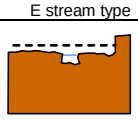
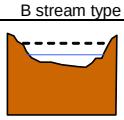
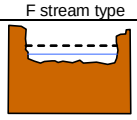
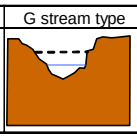
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

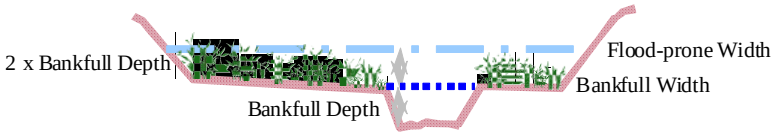
iii. Final Score and Rating: 0 NA **Comments:**

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☑ **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodrpone width / **Bankfull width** = **Entrenchment ratio**

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

Comments:

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 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**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Hydrology source for AA from precip and upland surface runoff. Approx 3-acres of surface water present during the majority of the year with an average depth of 2-3 feet.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive 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, click ☐ **NA** here and proceed to 14H.)

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

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

Comments: The depression contains a surface water outlet, water level below design elevation at time of visit. The vegetation cover is less than 70%.

14H Sediment/Shoreline Stabilization: (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 which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	
35-64%			
< 35%	.3L	.2L	.1L

Comments: 3-acre open water subject to light wave action. The vegetation cover of species w/ high stability ratings is <35%.

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .7M

Comments: The vegetation component of the AA is <1 acre. There is a surface water outlet.

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☐ Shallow water table and the site is saturated to the surface
- ☐ Other: No seeps or springs within AA identified

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other: The AA contains an unconsolidated bottom composed of bentonite with minimal permeability.

iii. Rating (use the information from i and ii above and the table below to arrive at [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	NA			

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

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 (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ○ **N** ◉ (if 'Yes' continue with the evaluation; if 'No' then click ☑ **NA** here and proceed to the overall summary and rating page)

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

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

The mitigation site is surrounded by active mining.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): American Colloid

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	L	.1	1	0.327	☐
C. General Wildlife Habitat	M	.4	1	1.308	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	NA	0	0	0	☐
F. Short and Long Term Surface Water Storage	H	1	1	3.27	☑
G. Sediment/Nutrient/Toxicant Removal	M	.6	1	1.962	☑
H. Sediment/Shoreline Stabilization	L	.3	1	0.981	☐
I. Production Export/Food Chain Support	M	.7	1	2.289	☑
J. Groundwater Discharge/Recharge	L	.1	1	0.327	☐
K. Uniqueness	L	.3	1	0.981	☐
L. Recreation/Education Potential (bonus points)	NA	0	NA	0	☐
Totals:		3.5	9	11.445	
Percent of Possible Score			**38.89** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish 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 possible score > 65% (round to nearest whole #).

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; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
American Colloid
Carter County, Montana



Photo Point 1 – *Photo 1*
Bearing: 130 Degrees

Location: Outside south boundary.
Taken in 2011



Photo Point 2 – *Photo 1*
Bearing: 230 Degrees

Location: Northeast edge of wetland cell.
Taken in 2011



Photo Point 3 – *Photo 1*
Bearing: 80 Degrees

Location: Southwest edge of wetland cell.
Taken in 2011



Photo Point 4 – *Photo 1*
Bearing: 185 Degrees

Location: North edge of cell.
Taken in 2011



Photo Point 5 – *Photo 1*
Bearing: 10 Degrees

Location: Outside N border.
Taken in 2011



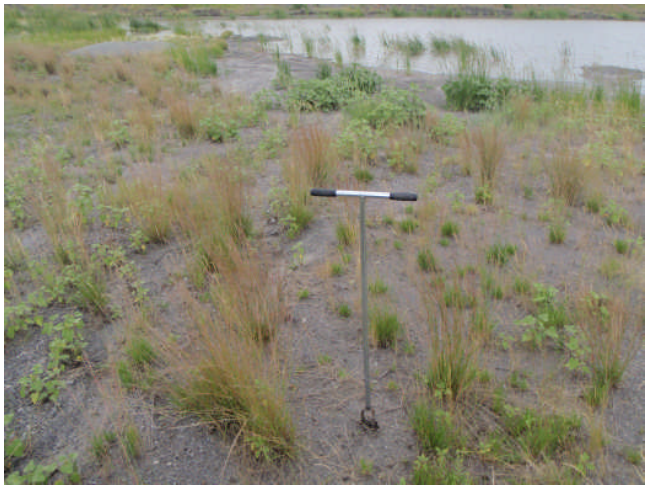
Transect 1 – *Start*
Bearing: 130 Degrees

Location: NW wet boundary
Taken in 2011



Transect 1 – *End*
Bearing: 230 Degrees

Location: SE wet boundary.
Taken in 2011



Data Point – *AC-1*
Bearing: 270 Degrees

Location: Community 2
Taken in 2011



Data Point – *AC-2*
Bearing: 25 Degrees

Location: Community 3
Taken in 2011

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
American Colloid
Carter County, Montana

RECEIVED
JAN 06 1999
ENVIRONMENTAL

LAND & WATER D-1

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 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

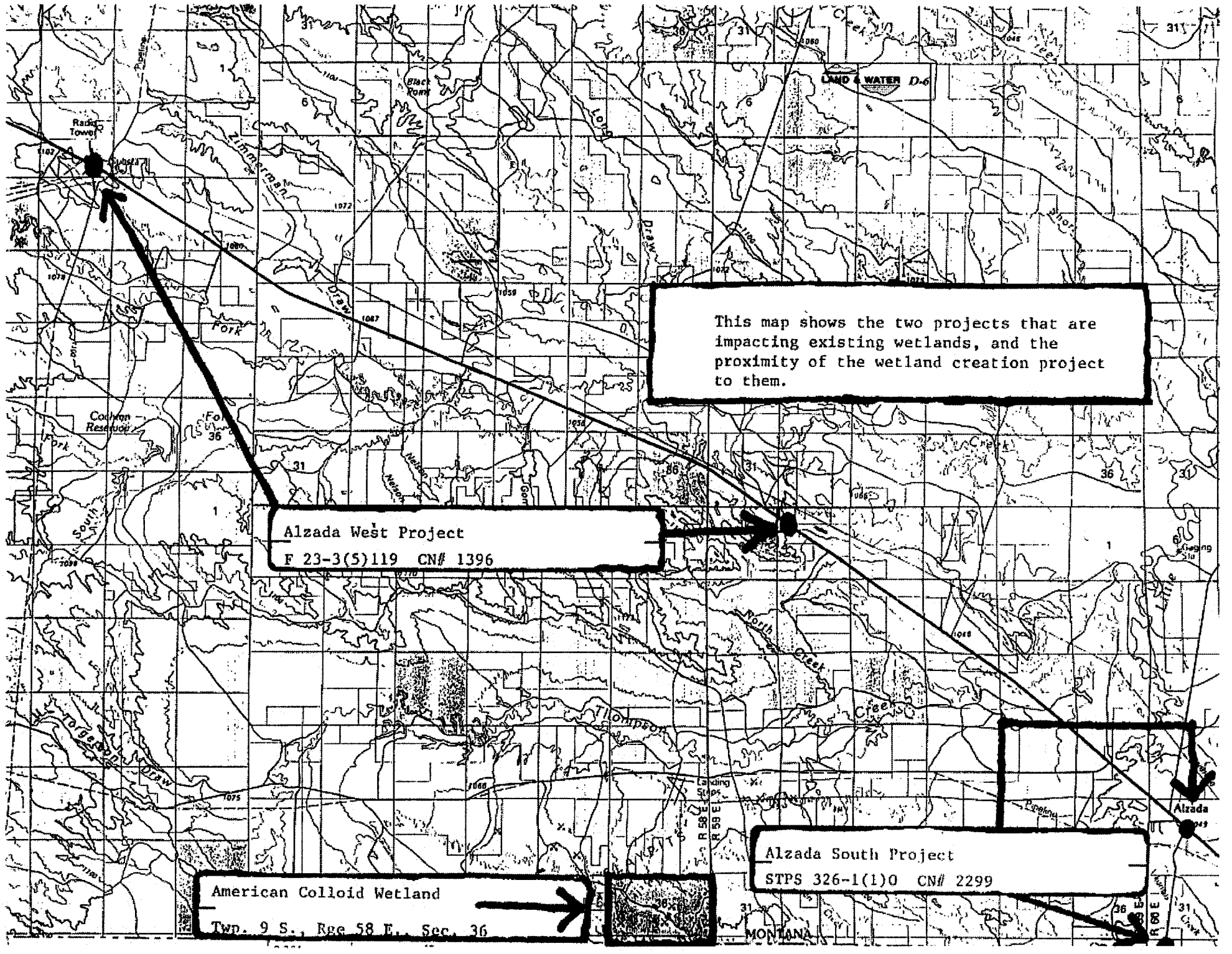
The estimated cost to construct this project is $15,500. This estimate includes Preliminary Engineering, Acquisition of Right-of-Way, and Construction costs. As soon as more information is available a modification to the programming will be made.

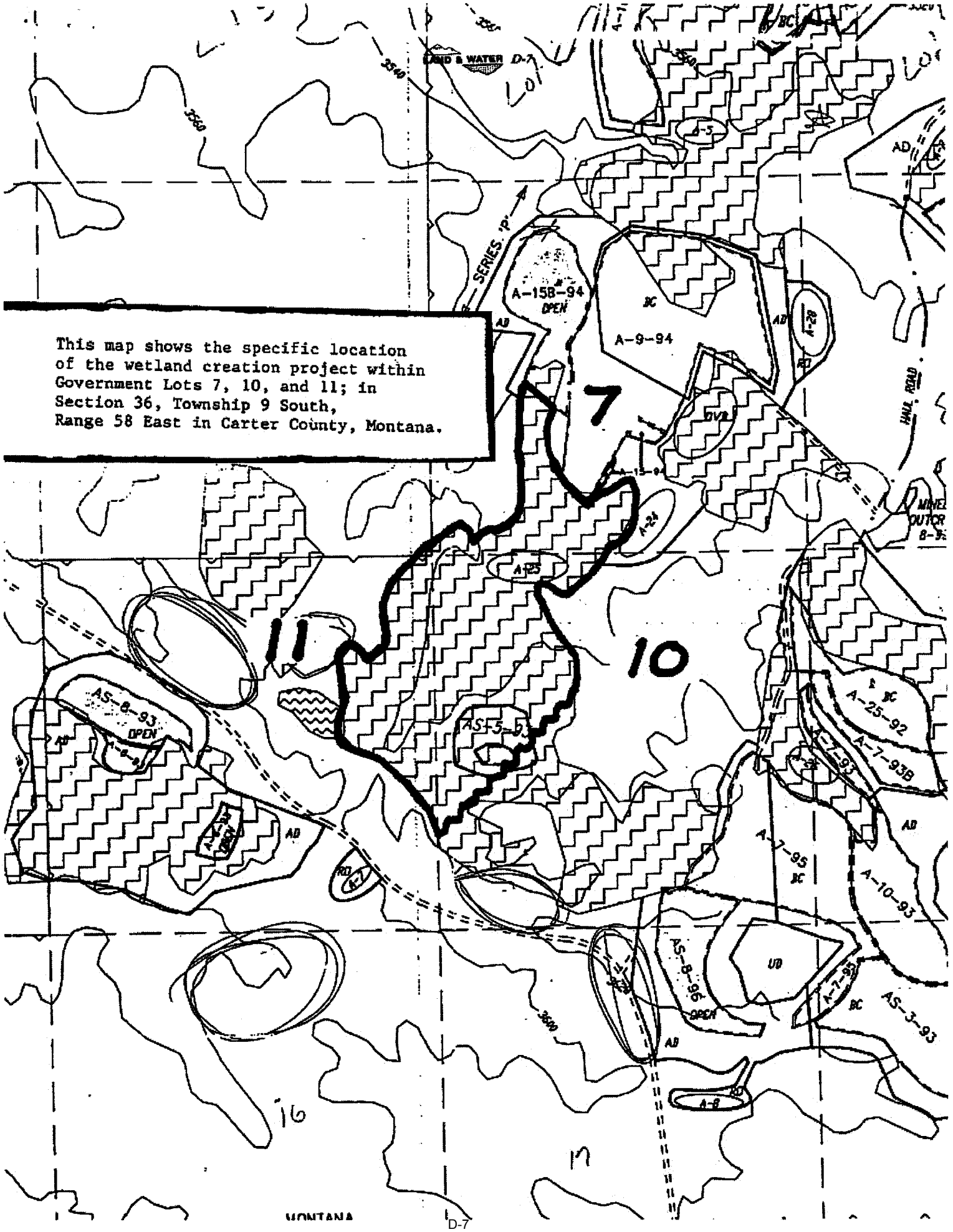
Attachment

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
Alzada
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.
7
10
11
16
17
A-158-94
OPEN
A-9-94
AS-8-93
OPEN
AS-5-93
A-25-92
A-7-93B
A-7-93
A-7-95
A-10-93
AS-8-96
OPEN
A-7-95
AS-3-93
A-8
A-15-9
A-24
A-25
A-7
AB
BC
UD
DV2
HAUL ROAD
SERIES 'P'
3540
3560
3580
3600
MONTANA

LAND & WATER D-8

MONTANA DEPARTMENT OF TRANSPORTATION
HELENA, MONTANA 59620-1001

DATE ISSUED: July 18, 2001

ADDENDUM

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	STPS-BR 61(10)	1

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

EXCAVATION
cubic meters

EMBANKMENT
cubic meters

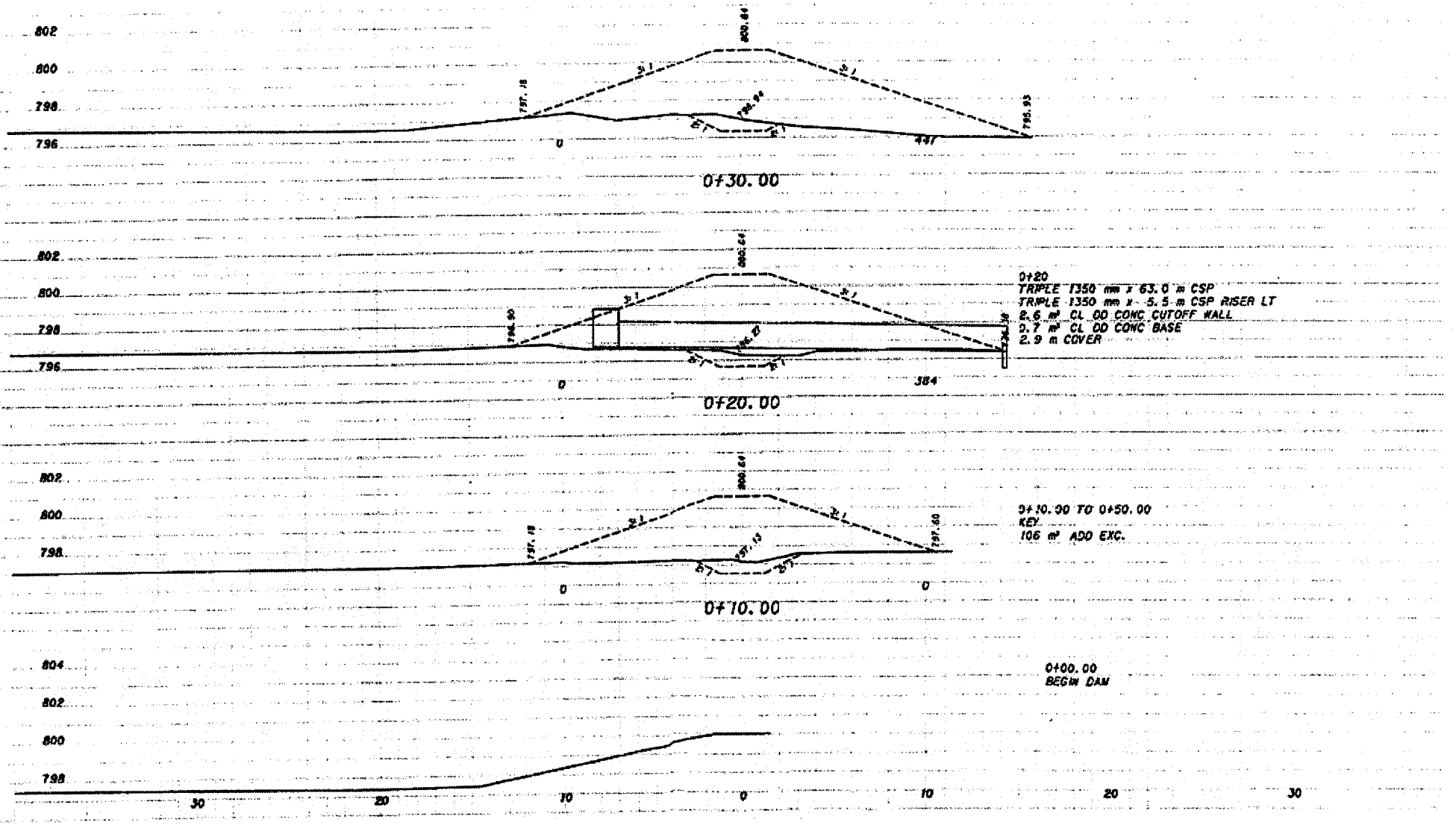


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DAM SIDE VIEW	4
DAM END VIEW	4
CONCRETE BASE	4
PLAN & PROFILE	5
CROSS SECTIONS	1-2

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.

SUMMARY

ADDENDUM NO. 1
ATTACHMENT NO. 3

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

LAND & WATER D-11

GRADING

STATION	cubic meters EXCAVATION		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	TO	meters TYPE FS#			EACH SINGLE PANEL	DOUBLE PANEL		meters GATES		REMARKS
								GZ		
		1 043			4	4		9.6		
TOTAL		1 043			4	4		9.6		

* REFERENCE TO SURVEYED EASEMENT

TOPSOIL & SEEDING*

STATION FROM	TO	cubic meters TOPSOIL SALVAGING & PLACING	hectares SEED NO. 1	NO. 2	NO. 3	FERTILIZER NO. 1	NO. 2	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	RIGHT	cubic meters CULVERT EXCAVATION	BEDDING MATERIAL	CLASS "00" CONCRETE	CULVERT RIPRAP CLASS	meters REMOVE	RELAY	HEIGHT OF COVER IN meters	EACH CLEAN CULVERT	IN PLACE mm X m	REMARKS
0+20	68.5		50.	100		3.3				2.9			TRIPLE 1350 mm x 8.5 m CSP RISER LT
TOTAL	68.5	~	~	100		3.3		~		~			

MONTANA DEPARTMENT OF TRANSPORTATION

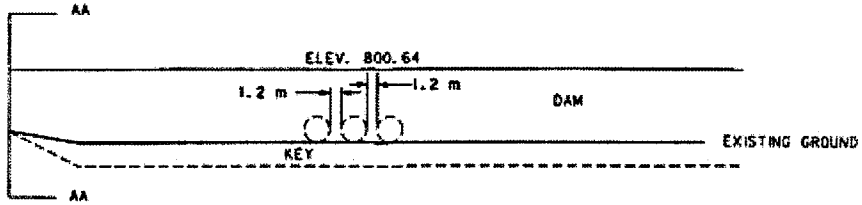
MONTANA CADD

1398\RD\wetsum.dgn

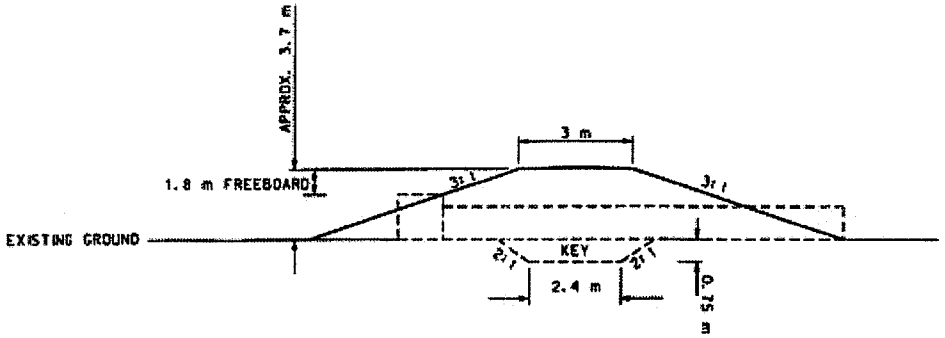
5-16-2001		
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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	MH-STPS-BR 6(10)	4

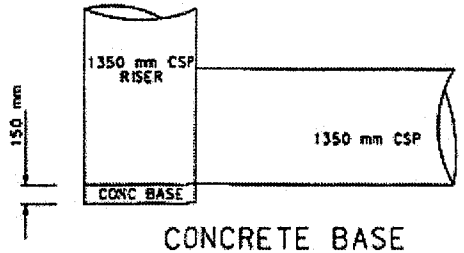
DETAILS



SIDE VIEW DAM
NOT TO SCALE

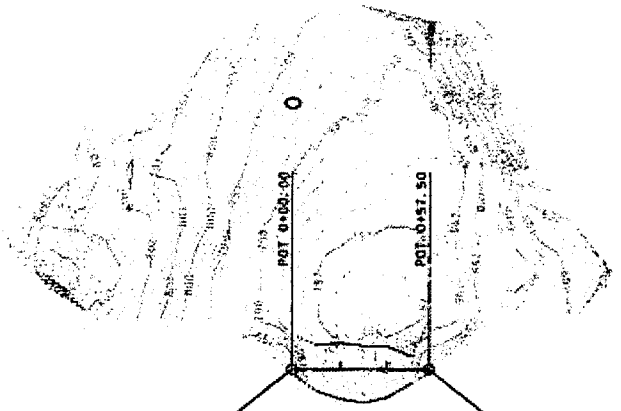


END VIEW DAM
NOT TO SCALE
SECTION AA



CONCRETE BASE
NOT TO SCALE

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH-STPS-BR 6(101)	5



PROJECT LIMITS

PROJECT LIMITS

804
802
800
798
796
794
792
790
788
786
784