MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2003

Hoskins Landing
Dixon, Montana

Prepared for:

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

Prepared by:

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

March 2004

Project No: 130091.038

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1.0 INTRODUCTION

The Hoskins Landing Wetland Mitigation Site was developed to mitigate wetland impacts associated with Montana Department of Transportation (MDT) proposed Dixon-West and Paradise-East highway reconstruction projects along Highway 200. Hoskins Landing is located in Sanders County, MDT Watershed # 3, in the Lower Clark Fork region. The mitigation site is located approximately one-quarter mile north of Dixon, adjacent to the Flathead River (**Figure 1**). Elevation is approximately 2,500 feet with slight topographic variation throughout the project site. Western EcoTech conducted the original wetland delineation for the Hoskins Landing proposed mitigation site in 1999. Land & Water Consulting conducted a biological assessment for the Hoskins Landing Mitigation Project during fall 2001.

The approximate site boundary is illustrated on **Figure 2** (**Appendix A**), and the original site plans are included in **Appendix D**. The project is located adjacent to the Flathead River in an area of historic floodplain, heavily impacted from past agriculture activities. Seasonal flooding provides the primary wetland hydrology with inundation of backwater channels. Local groundwater systems moving though alluvium also provide a secondary source of hydrology for this site. The site is located on the Flathead Indian Reservation and is managed by the Confederated Salish & Kootenai Tribes. The wetland easement area is mostly fenced with several exclusions on the east and west ends near the river banks. Livestock are still able to enter the project site and potentially could damage revegetation efforts.

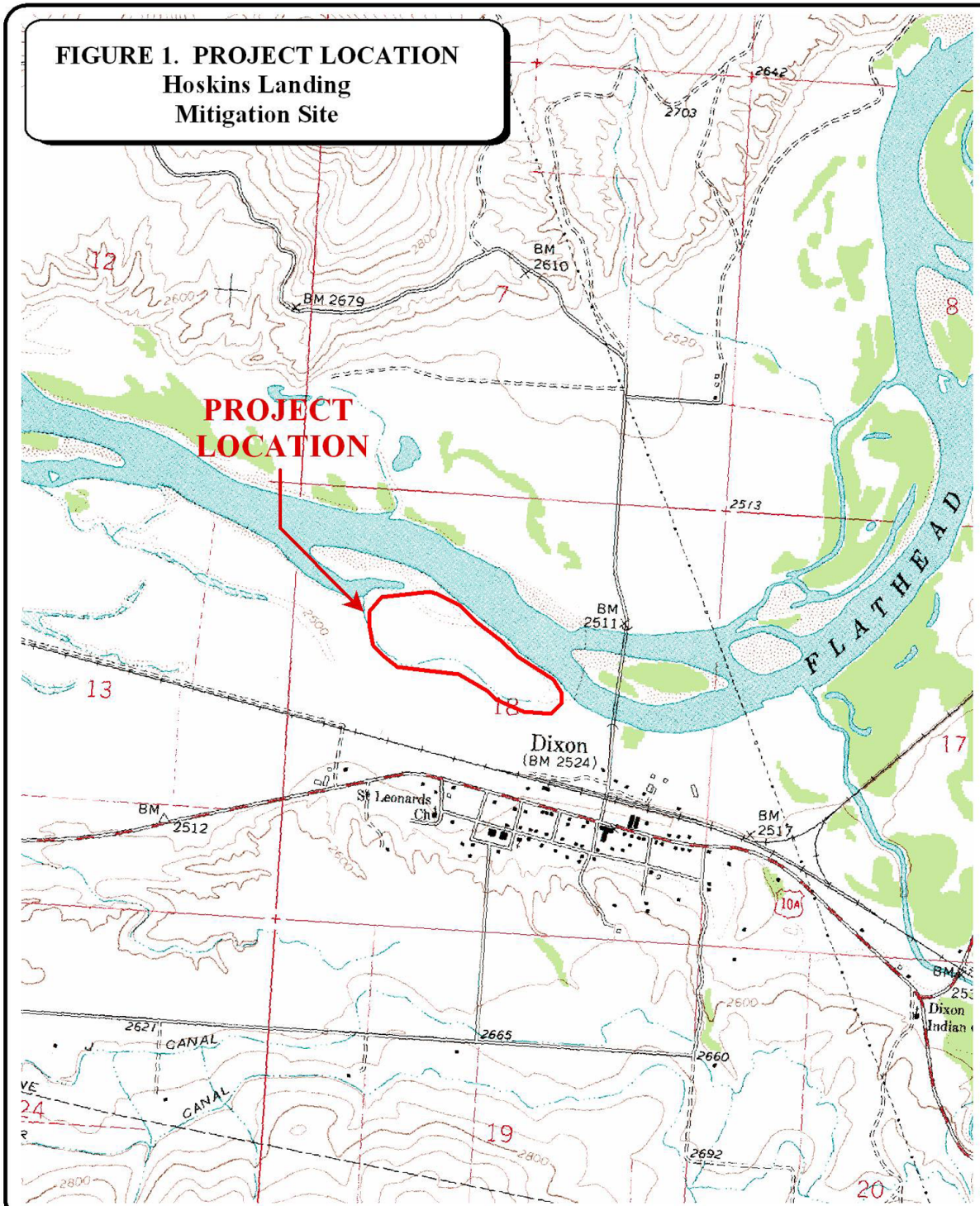
Most construction was completed in fall 2002 with the goal of restoring/creating 8.1 acres of wetlands and enhancing vegetation on 5.2 acres of heavily grazed and cleared lands. Construction diagrams are presented in **Appendix D**. Revegetation work was conducted during the spring of 2003. The primary components of construction include:

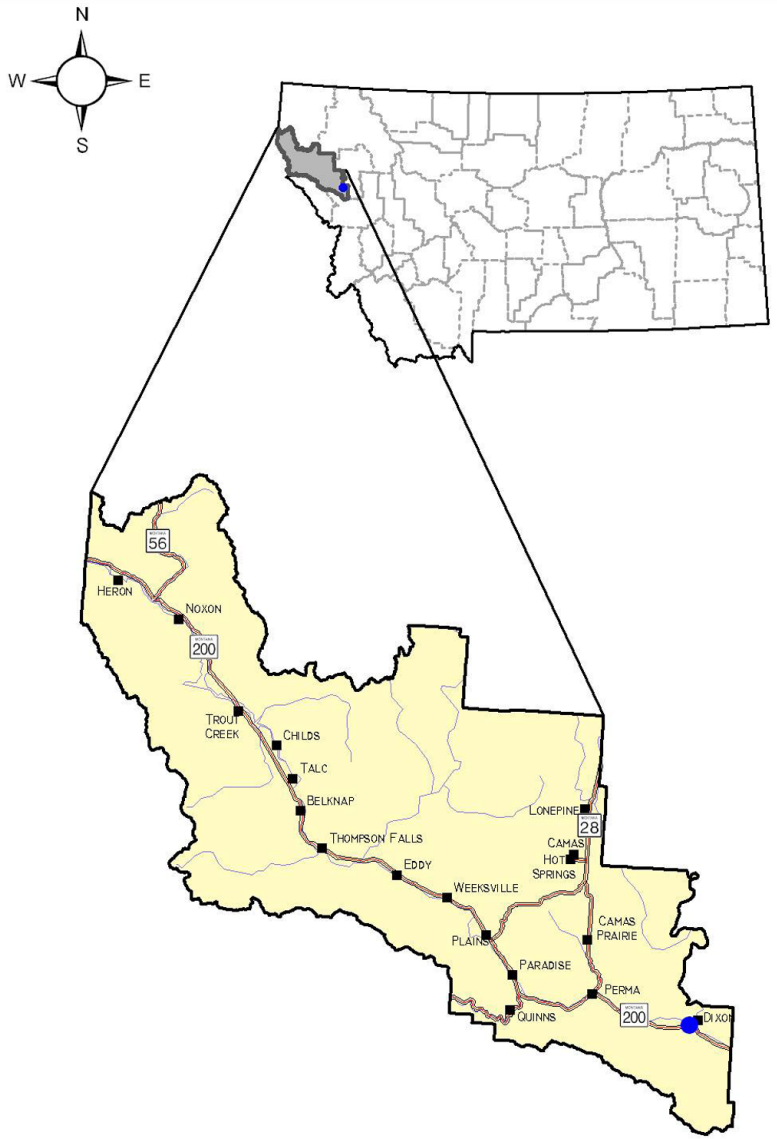
- Excavation and grading of 8.1 acres to facilitate wetland development.
- Enhancement of 5.2 acres of native vegetation characteristics in the lower Flathead River riparian corridor.
- Filling of inlet channel and removal of headgate in the northeast corner of the site.
- Removal of outlet dam along the remnant channel bordering the south portion of the site.
- Removal of man-made flood control berm along the Flathead River and grading of excavated ground to 10:1 slopes.
- Removal of a man-made berm along the remnant backwater channel.

The site was designed to mitigate for specific wetland functions impacted by MDT roadway projects, including: storm water retention, roadway runoff filtration, sediment and nutrient retention, water quality, groundwater recharge, wildlife habitat and riparian vegetation.

Pre-construction wetland delineation documented 6.67 acres of wetlands at the site (Western EcoTech, 1999). The Hoskins Landing site will be monitored once per year over the 3-year contract period to document wetland and other biological attributes. The monitoring area is illustrated in **Figure 2** (**Appendix A**).

FIGURE 1. PROJECT LOCATION
Hoskins Landing
Mitigation Site





800 0 800 1600 FEET

1: 24,000

PROJECT #: 130091.039
DATE: Nov 2002
LOCATION: DIXON
PROJECT MANAGER: J. BERGLUND
DRAWN BY: B. STEINEBACH

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

2.0 METHODS

2.1 Monitoring Dates and Activities

The site was visited on May 29th (spring-season) August 5th (mid-season). The spring -season visit was conducted to sample seasonal bird and other wildlife use. The mid-season visit was conducted to document vegetation, soil, and hydrologic conditions used to map jurisdictional wetlands. All information contained on the Wetland Mitigation Site Monitoring Form **(Appendix B)** was collected at this time. Activities and information conducted/collected included: wetland delineation; wetland/open water aquatic habitat boundary mapping; vegetation community mapping; vegetation transect; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; GPS data points; functional assessment; and (non-engineering) examination of topographic features.

2.2 Hydrology

Wetland hydrology indicators were recorded during the mid-season visit using procedures outlined in the COE 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). Additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). No groundwater monitoring wells were installed at the site

2.3 Vegetation

General dominant species-based vegetation community types (e.g., *Eleocharis/Phalaris*) were delineated on an aerial photograph during the mid-season visit. Standardized community mapping was not employed as many of these systems are geared towards climax vegetation and do not reflect yearly changes. Estimated percent cover of the dominant species in each community type was listed on the site monitoring form (**Appendix B**).

A 10-foot wide belt transect was established during the mid-season monitoring event to represent the range of current vegetation conditions. Percent cover was estimated for each vegetative species within each successive vegetative community encountered within the "belt" using the following values: T (few plants); P (1-5%), 1 (5-15%); 2 (15-25%); 3 (25-35%); 4 (35-45%); 5 (45-55%) and so on to 9 (85-95%). Wetland indicator status was recorded for each species. The transect location is illustrated on **Figure 2** (**Appendix A**). The transect will be used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect location was marked on the air photo and all data were recorded on the mitigation site monitoring form. Transect endpoint locations were recorded with the GPS unit in 2002. A photo was taken from both ends of the transect looking along the transect path.

A comprehensive plant species list for the site was compiled and will be updated as new species are encountered. Ultimately, observations from past years will be compared with new data to document vegetation changes over time.

2.4 Soils

Soils were evaluated during the mid-season site visit using the hydric soils determination procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Forms (**Appendix B**). The most current terminology used by NRCS was used to describe hydric soils (USDA 1998).

2.5 Wetland Delineation

Wetland delineation was conducted during the mid-season visit according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The information was recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). The wetland/upland boundary was originally delineated on the air photo and then recorded with a resource grade GPS unit using the procedures outlined in **Appendix E**. Modifications to these boundaries in 2003 were accomplished by hand mapping onto the 2002 aerial photograph. The wetland/upland boundary in combination with the wetland/open water boundary was used to calculate the final wetland acreage. Pre-construction wetland delineation documented 6.7 acres of wetlands at the site (Western EcoTech 1999).

2.6 Mammals, Reptiles and Amphibians

Mammal and herptile species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during each visit. Indirect use indicators, including tracks, scat, burrows, eggshells, skins, bones, etc. were also recorded. Observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used.

2.7 Birds

Bird observations were primarily recorded during the early-season visit. No formal census plots, spot mapping, point counts, or strip transects were conducted. Observations were recorded incidental to other monitoring activities and were categorized by species, activity code, and general habitat association.

2.8 Macroinvertebrates

Macroinvertebrate samples were collected during the mid-season site visit at two separate locations (**Figure 2**). Samples were preserved as outlined in the sampling procedure **(Appendix F)** and sent to Rhithron Associates for analysis.

2.9 Functional Assessment

A functional assessment form was completed using the 1999 MDT Montana Wetland Assessment Method (**Appendix B**). Field data necessary for this assessment was collected during the mid-season visit. Western Eco Tech completed baseline functional assessment during the initial wetland delineation using the 1996 MDT Montana Wetland Field Evaluation Form.

2.10 Photographs

Photographs were taken illustrating current land uses surrounding the site, the upland buffer, the monitored area and the vegetation transect. Each photograph point location was recorded with a resource grade GPS in 2002. The location of photo points is shown on **Figure 2**, **Appendix A**. All photographs were taken using a digital camera.

2.11 GPS Data

During the 2002 monitoring season, point data were collected with a resource grade GPS unit at the vegetation transect beginning and ending locations and at all photograph locations. Wetland boundaries were also recorded with a resource grade GPS unit in 2002, but were modified via hand mapping onto aerial photographs in 2003. The method used to collect these points is described in the GPS protocol in **Appendix E**.

2.12 Maintenance Needs

Observations were made of existing structures and of erosion/sediment problems to identify maintenance needs. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current or future potential problems were documented on the monitoring form.

3.0 RESULTS

3.1 Hydrology

The main source of hydrology is seasonal flooding by the Flathead River. This mitigation site occurs in Flathead River floodplain consisting of back channels and open water areas. The eastern end of the site once contained a headgate that controlled the flow of water into the remnant channel running along the southern boundary. This has been removed, allowing water to flow through channel during seasonally high flows. A secondary source of hydrology is the persistent upwelling and lateral movement of groundwater through the alluvium materials. The water regime at Hoskins Landing is ultimately controlled by water release from Kerr Dam over 42 miles upriver.

Open water occurred across approximately 1.14 acres or 9% of the wetland area (**Figure 3**) during the mid-season visit. Water depth at the open water/rooted vegetation boundary was

approximately 0.5 feet. Inundation was observed at this time across another 60% of the wetland area. Inundation was present throughout all of community types 1, 2, 3, 11 and 12 (**Figure 3**).

3.2 Vegetation

Seventy-one plant species were identified at the site and are listed in **Table 1**. The majority of these species are herbaceous. A few small remnant shrub patches exist, found mostly along the active backwater channel. Several small stands of black cottonwood (*Populus trichocarpa*) and box elder (*Acer negundo*) were also found on higher terraces located along the river and backwater channels. Seven wetlands types and five upland community types were identified and mapped at the mitigation site (**Figure 3**, **Appendix A**). The seven wetland community types include Type 2: *Eleocharis/Phalaris*, Type 3: *Potamogeton/Elodea*, Type 5: *Phalaris/Salix*, Type 7: *Phalaris/Populus*, Type 11: *Ceratophyllum*, Type 12: *Juncus/Eleocharis* and Type 13: *Phalaris/Agrostis.* Plant species observed within each of these communities are listed on the attached data form (**Appendix B**). The five upland community types include Type 4: *Plantago/Cirsium*, Type 6: *Festuca/Phleum*, Type 8: *Plantago/Sisymbrium*, Type 9 *Centaurea/Sisymbrium* and Type 10 *Populus/Crataegus.* Plant species observed within each of these communities are listed on the attached data form (**Appendix B**).

Types 3 and 11 are the wettest community types and occurred as aquatic bed/emergent wetland communities in the shallow waters of the excavated wetlands and remnant backwater channel (**Figure 3**). Type 3 is dominated by largeleaf pondweed (*Potamogeton amplifolius*), curly pondweed (*Potamogeton crispus*), broad water-weed (*Elodea canadensis*) and least spike-rush (*Eleocharis acicularis*). Type 11 is mostly dominated by common hornwort (*Ceratophyllum demersum*). Type 2 and 12 are the next wettest area, consisting of emergent vegetation occurring in an undisturbed wetland and newly developed emergent vegetation around the excavated wetland fringe.

Type 2 is located on the west side, surrounded by the newly constructed wetlands, dominated by least spike rush, reed canarygrass (*Phalaris arundinacea*) and bulrush (*Scirpus acutus*). Type 12 occurs along the created wetland fringes in areas that receive annual inundation; vegetation is dominated by three-stamen rush (*Juncus ensifolius*), creeping spike rush (*Eleocharis palustris*) and redtop (*Agrostis alba*). Type 5 is the next wettest wetland type and occurs throughout the backwater channel located on the south side of the project border. Type 7 and 13 are the last wetland, dominated by reed canarygrass, located within the seasonally flooded depression adjacent to river. A few mature cottonwoods growing on the along the river terrace are also mapped as part of the Type 7 community.

Adjacent upland vegetation communities are mainly dominated by rangeland and/or aggressive invasive species. Type 6 upland areas are currently dominated with pasture grasses such as *Festuca/Phleum*, and show little evidence of any recent livestock grazing. The created uplands have a low overall percent cover, dominated by weedy species associated with disturbance. Type 4 mostly consists of created upland topography dominated by white goosefoot (*Chenopodium album)* and Canada thistle (*Cirsium arvense)*. Native shrubs were planted during the spring of 2003 as part of the riparian enhancement efforts. Currently the planted vegetation cover is limited and planted species were not considered dominant for this community type.

Type 10 is located along the higher terraces of the river and backwater channel, consisting of mature cottonwoods and box elder. A minor shrub layer is present, consisting of hawthorne (*Crataegus douglasii*) and American plum (*Prunus americana*).

Several noxious weeds were observed throughout the Hoskins Landing site. Type 4 and 6 had small amounts and Type 9 was mapped exclusively as being dominated by only invasive species. These plants include spotted knapweed (*Centaurea maculosa*), Canada thistle, hounds tongue (*Cynoglossum officinale*) and oxeye daisy (*Chrysanthemum leucanthemum*). Other weedy species include curly dock (*Rumex crispus*), common dandelion (*Taraxicum officinalis*), white goosefoot, pepper-grass (*Lepidium perfoliatum*), tumbleweed (*Sisymbrium altissimum*) and quackgrass (*Agropyron repens*).

Vegetation transect results are detailed in the attached data forms (**Appendix B**) and are summarized in the transect maps, **Table 2**, and **Chart 1** below.

2003 Transect Map

Start	***Type 6 Upland (14')***	***Type 4 Upland (24')***	***Type 12 Wetland (24')***	***Type 3 Wetland (84')***	***Type 12 Wetland (3')***	***Type 2 Wetland (84')***	***Type12 Wetland (4')***	***Type 3 Wetland (45')***	***Type 12 Wetland (30')***	***Type 4 Upland (45')***	***Type 6 Upland (33')***	**Total: 390'**	**End**

2002 Transect Map

Start	***Type 6 Upland (18')***	***Type 4 Upland (24')***	***Type 3 Wetland (108')***	***Type 2 Wetland (84')***	***Type 3 Wetland (90')***	***Type 4 Upland (66')***	**Total: 390'**	**End**

Table 1: ***2002-2003 Hoskins Landing Vegetation Species List***

Scientific Name[1]	Common Name	Region 9 (Northwest) Wetland Indicator
Acer negundo	Box elder	FAC+
Agropyron repens	Quackgrass	FACU
Agrostis alba	Redtop	FAC+
Achillea millefolium	Common yarrow	FACU
Alopecurus pratensis	Meadow foxtail	FACW
Alnus incana	Alder	FACW
Amaranthus retroflexus	Red-root pigweed	FACU+
Amelanchier alnifolia	Serviceberry	FACU
Artemisia ludoviciana	White sagebrush	FACU-
Bromus japonicus	Japanese brome	UPL
Carex lanuginosa	Wooly sedge	OBL
Carex retrorsa	Retrorsa sedge	FAC
Centaurea maculosa	Spotted knapweed	--
Ceratophyllum demersum	Common hornwort	OBL
Chenopodium album	White goosefoot	FAC
Chrysanthemum leucanthemum	Oxeye daisy	--
Cirsium arvense	Canadian thistle	FACU+
Cirsium vulgare	Bull thistle	FACU
Coreopsis atkinsoniana	Tickseed	FACU
Cornus stolonifera	Red-osier dogwood	FACW
Crataegus douglasii	Douglas Hawthorn	FAC
Cynoglossum officinale	Hound's toungue	FACU
Dactylis glomerata	Orchard grass	--
Eleocharis acicularis	Least spike rush	OBL
Eleocharis palustris	Creeping spike rush	OBL
Elodea canadensis	Broad water-weed	OBL
Equisetum arvense	Field horsetail	FAC
Equisetum hyemale	Scouring rush	FACW
Festuca pratensis	Meadow fescue	FACU+
Eroduim cicutarium	Red-stem filaree	NI

Table 1: ***2002 - 2003 Hoskins Landing Vegetation Species List (Continued)***

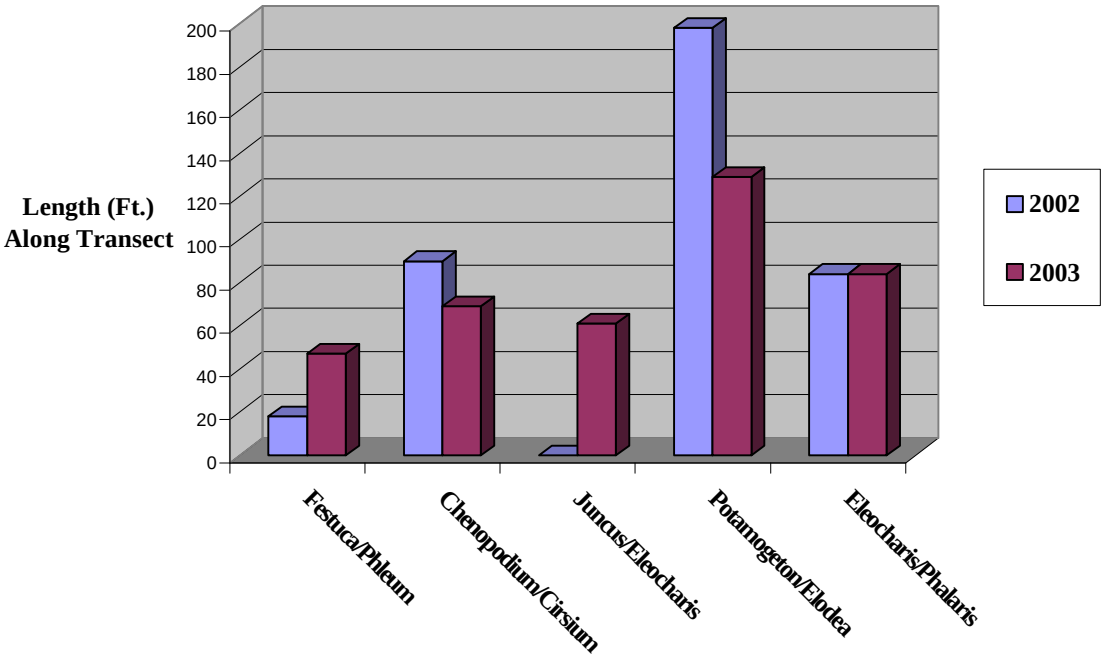
Scientific Name[1]	Common Name	Region 9 (Northwest) Wetland Indicator
Gnaphalium palustre	Cudweed	FAC+
Helianthus annuus	Common sunflower	FACU+
Hippuris vulgaris	Common mare's-tail	OBL
Iris pseudacorus	Yellow iris	OBL
Juncus balticus	Baltic rush	FACW
Juncus ensifolius	Three-stamen rush	FACW
Juniperus scopulorum	Rocky Mountain Juniper	--
Lepidium perfoliatum	Clasping pepper-grass	FACU+
Malva neglecta	Mallow	--
Melilotus officinalis	Yellow sweetclover	FACU
Mentha arvensis	Field mint	FAC
Myosotis scorpioides	True forget me not	FACW
Panicum capillare	Old witchgrass	FACU+
Phalaris arundinacea	Canary reed grass	FACW
Phleum pratense	Timothy	FACU
Pinus ponderosa	Ponderosa pine	FACU-
Plantago lanceolata	English plantain	FAC
Plantago major	Plantain	FACU+
Poa pratensis	Kentucky bluegrass	FACU+
Polygonum amphibium	Water smartweed	OBL
Polygonum aviculare	Prostrate Knotweed	FACW+
Populus tremuloides	Quaking aspen	FAC+
Populus trichocarpa	Cottonwood	FAC
Potamogeton amplifolius	Largeleaf pondweed	OBL
Potamogeton crispus	Curly Pondweed	OBL
Potamogeton natans	Floating-leaf Pondweed	OBL
Prunus americana	American plum	FACU
Rosa woodsii	Woods rose	FACU
Rumex crispus	Curly Dock	FACW
Sagittaria latifolia	Arrow-head	OBL
Salix bebbiana	Bebbs willow	FACW
Salix exigua	Sandbar Willow	OBL
Scirpus acutus	Hard stem Bulrush	OBL
Scirpus microcarpus	Small-fruit Bulrush	OBL
Scirpus validus	Soft-Stem Bulrush	OBL
Sisymbrium altissimum	Tall Tumble mustard	FACU-
Solidago missouriensis	Missouri goldenrod	--
Symphoricarpos albus	Snowberry	FACU
Taraxicum officinalis	Common dandelion	FACU
Verbascum thapsus	Common mullien	--
Veronica americana	American speedwell	OBL

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

Table 2: ***Transect 1 Data Summary***

Monitoring Year	2002	2003
Transect Length	390 feet	390 feet
# Vegetation Community Transitions along Transect	6	11
# Vegetation Communities along Transect	4	5
# Hydrophytic Vegetation Communities along Transect	2	3
Total Vegetative Species	31	31
Total Hydrophytic Species	22	23
Total Upland Species	9	8
Estimated % Total Vegetative Cover	65%	70%
% Transect Length Comprised of Hydrophytic Vegetation Communities	72%	70%
% Transect Length Comprised of Upland Vegetation Communities	28%	30%
% Transect Length Comprised of Unvegetated Open Water	0%	0%
% Transect Length Comprised of Bare Substrate	0%	0%

Chart 1: ***Length of Vegetation Communities Along Transect 1***



3.3 Soils

Soils at the site are mapped in the Sanders County Soil Survey as Horseplains-riverwash and Revais silt loam. Horseplains-riverwash is described as a fine sandy loam, 60 inches deep with a lighter surface layer, and slopes of 0-2%. Revais silt loam has a depth of 60 inches with lighter colored surface and slopes of 0-2% (NRCS 2002). Horseplains and Revais soils are not listed on the Montana NRCS Hydric Soil list. Soil characteristics at each wetland determination point were compared with those of the Horseplains and Revais soil. The soils observed across most of the site did not generally match the Horseplains and Revais soil descriptions, as textures were slightly different.

Wetland soils observed during monitoring and documented on the Routine Wetland Determination form were mostly loams, silt loams or clays with very low chromas (1 or 2) within 2 inches of the surface. Mottles (redoximorphic features) were present in three profiles, both having surface inundation. The two remaining soil profiles described on the Routine Wetland Determination forms were mapped as upland sampling points, having no soil moisture or distinct hydric characteristics within 18 inches of the surface.

3.4 Wetland Delineation

Delineated wetland boundaries are illustrated on **Figure 3** in **Appendix A**. Completed wetland delineation forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. Monitoring in 2003 identified the following conditions:

	Monitoring Area 2003	Monitoring Area 2002
Gross Aquatic Area	12.49	12.13
Open Water Area	1.14	1.14
Net Wetland Area	**11.35**	**10.99**

Approximately 11.35 wetland acres and 1.14 open water acres are currently within the monitoring area (**Figure 3**). The pre-construction wetland delineation reported 6.67 wetland and no open water acres. A pre-project delineation map is provided in **Appendix D**. The net increase in aquatic habitat acres is 12.49 – 6.67 = 5.82 acres. Additional area may form with time and more normal precipitation around the low gradient portions of the current wetland area.

An increase in wetland acres was observed between 2002 and 2003 monitoring. The increase in wetland acres was observed along the created open water fringe and a section of backwater channel located nearest to the Flathead River. Community Type 12 was mapped as newly developing emergent vegetation along the open water fringe. Community Type 13 is a wetland area delineated during the 1999 assessments, but not observed during the 2002 monitoring. Due to the location and topography of the backwater channel, being adjacent to the river, seasonally high flows can aggressively scour the channel surface and alter vegetation located within the channel.

During 2002 and 2003 delineation the backwater channel areas were mapped as Waters of the U.S. due to the hydrologic connection to the Flathead River, but were not considered wetlands due to the lack of vegetation and soils characteristics. During the 2002 monitoring vegetative cover was dominated by mostly invasive species, classifying this area as upland vegetation. The majority of the backwater channel still remains in similar conditions as indicted in 2002 monitoring, except for the small area dominated by reed canarygrass and redtop.

The only decrease in wetland area was observed within Community Type 7 located in the eastern side of the project, bordering the river. This area was delineated as a larger unit during the 2002 monitoring. Located on a slightly higher topography than the adjacent backwater channel, these areas were not subject to the intense scouring effects observed within other wetland areas located along the backwater channels. During the 2003 monitoring this area was observed to have a portion dominated by mostly upland species associated with Community Type 6 and was classified as upland.

3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2002 and 2003 monitoring efforts is listed in **Table 3**. Specific evidence observed, as well as activity codes pertaining to birds, is provided on the completed monitoring form in **Appendix B**.

This site provides habitat for a variety of wildlife species. One mammal and seven bird species were noted at the mitigation site during the 2003 site visits. Many other wildlife species presumably use the site but were not observed during the monitoring visits. During the spring visit, Tribal personnel were treating the site for weeds. This human activity very likely

temporarily reduced the number of bird species and other wildlife on the site during the survey, resulting in few observations.

Table 3: ***Wildlife Species Observed at the Hoskins Landing Mitigation Site During 2002 – 2003 Monitoring***

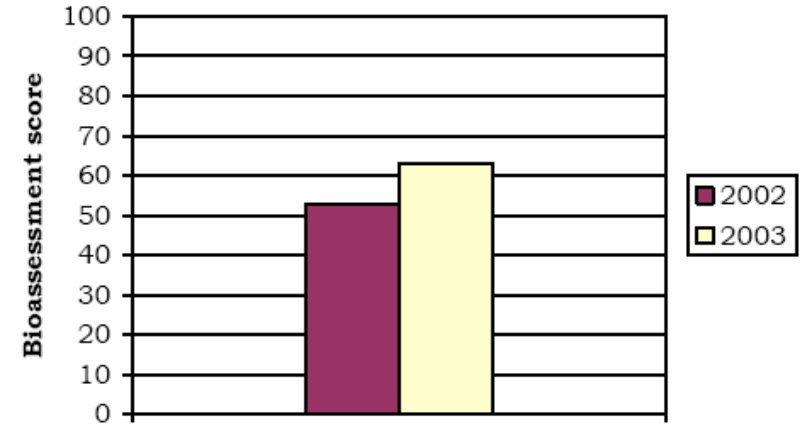
FISH None (no fish surveys implemented)	
AMPHIBIANS None	
REPTILES None	
BIRDS American Crow (Corvus brachyrhynchos) Great Blue Heron (Ardea herodias) **Killdeer (*Charadrius vociferous*)** **Mallard (*Anas platyrhynchos*)** **Osprey (*Pandoin haliaetus*)** Red-tail Hawk (Buteo jamaicensis)	**Red-winged blackbird (*Agelaius phoeniceus*)** **Song sparrow (*Melospiza melodia*)** **Spotted sandpiper (*Actitis macularia*)** **Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)**
MAMMALS Coyote (Canis latrans)	**Deer (*Odocoileus spp.*)**
Bolded species were observed during 2003 monitoring. All other species were observed during one or more of the previous monitoring years, but not during 2003.	

3.6 Macroinvertebrates

Complete results from the macro invertebrate sampling locations (**Figure 2**) are presented in **Appendix F.** Sampling points for Hoskins Landing were located along the western side of the current open water area. The following analysis was provided by Rhithron Associates (Bollman 2003).

Poor conditions reported in 2002 apparently improved to sub-optimal conditions at the Hoskins Landing site in 2003, according to bioassessment scores. However, low numbers of organisms render this assessment tenuous. Benthic assemblage sensitivity may have increased since 2002; improvement in the biotic index value suggests that this may be a response to improvement in water quality. Habitats were apparently limited to macrophyte surfaces and the water column.

Chart 2: ***Bioassessment Scores for Hoskins Landing***



3.7 Functional Assessment

Completed 2003 functional assessment forms are included in **Appendix B**. The Hoskins Landing site was separated into two assessment areas (AA's) for the purpose of functional assessments. The two assessment areas on the Hoskins Landing mitigation site are currently rated as Category III (moderate value), primarily due to moderate ratings for wildlife/fish habitat, TE species habitat, and flood attenuation variables. Other factors contributing to this score were low rating for MNHP species habitat, sediment/nutrient removal, sediment/shoreline stabilization and recreation/education ratings.

The site received a high rating for surface water storage due to the acre-feet of water contained in wetlands. The variable for production export/food chain support rated high due to the overall vegetated acres, high structural diversity and perennial water regime. The site received a moderate fish rating due to surface water duration and some habitat deficiencies. The site received a moderate flood attenuation rating due to the presence of an inflow channel into the wetland and restricted nature of outlet. The site received a low recreation/education rating since it has moderate disturbance level and is in private (Tribal) ownership. The site received a low rating for sediment/shoreline stability due to a lack of plants with deep binding roots. Recent revegetation efforts along created open water fringe should eventually increase the sediment/shoreline stability rating. Installation of woody plants will help contribute to the development of deep binding roots.

It is significant to note that the wildlife habitat functional capacity would likely increase at wetlands as an indirect result of vegetation enhancement in adjacent uplands. Vegetation community Type 4 (**Figure 3**), in particular, provides little cover or vertical diversity. Eliminating or reducing grazing, planting taller herbaceous species and planting woody species are examples of methods for enhancing both wetlands and upland habitats at the site.

Based on functional assessment results (**Table 4)**, approximately 82.55 functional units occur at the Hoskins Landing mitigation site. Baseline functional assessment results are also provided in **Table 4** for general comparative purposes. However, it should be noted that direct comparison between the baseline and 2003 functional assessments is not possible as they were completed using different versions of the MDT functional assessment method. The baseline assessment was completed using the 1996 version, while the 2002 and 2003 assessments were conducted using the most current (1999) version.

Table 4: ***Summary of Baseline, 2002 and 2003 Wetland Function/Value Ratings and Functional Points [1] at the Hoskins Landing Mitigation Project***

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	Wetland Numbers									
	Baseline 1A (1996 Method)	Baseline 1B (1996 Method)	Baseline 3 (1996 Method)	Baseline 8 (1996 Method)	Baseline 2, 9A, 9B, 10, 11, 12, 13 (1996 Method)	Baseline 5, 6, 7, 14A, 14B (1996 Method)	2002 Site 5 (1999 Method)	2002 Remainder of Wetlands (1999 Method)	2003 Site 5 (1999 Method)	2003 Remainder of Wetlands (1999 Method)
Listed/Proposed T&E Species Habitat	Low (0.3)	Mod (0.7)	None (0.0)	Mod (0.7)	None (0.0)	None (0.0)	Low (0.0)	Mod (0.7)	Low (0.0)	Mod (0.7)
MNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.1)	Mod (0.7)	None (0.0)	None (0.0)	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.1)
General Wildlife Habitat	High (0.9)	Mod (0.5)	Mod (0.5)	High (0.9)	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.7)	Low (0.2)	Mod (0.7)
General Fish/Aquatic Habitat	Low (0.2)	Mod (0.7)	NA	High (1)	NA	NA	NA	Mod (0.6)	NA	Mod (0.6)
Flood Attenuation	Mod (0.5)	Low (0.2)	Low (0.2)	Low (0.1)	Low (0.2)	NA	Low (0.2)	Mod (0.5)	Low (0.2)	Mod (0.5)
Short and Long Term Surface Water Storage	High (0.8)	NA	Low (0.3)	NA	NA	Low (0.3)	Low (0.3)	High (0.9)	Low (0.3)	High (0.9)
Sediment, Nutrient, Toxicant Removal	High (1)	High (1)	High (1)	Mod (0.5)	High (1)	Mod (0.5)	Mod (0.5)	Low (0.3)	Mod (0.5)	Low (0.3)
Sediment/Shoreline Stabilization	Mod (0.7)	Mod (0.7)	NA	Mod (0.4)	High (0.9)	NA	NA	Low (0.2)	NA	Low (0.2)
Production Export/Food Chain Support	High (0.8)	Mod (0.6)	Mod (0.6)	Mod (0.7)	Low (0.2)	Low (0.1)	Low (0.2)	High (0.9)	Low (0.2)	High (0.9)
Groundwater Discharge/Recharge	High (1)	High (1)	High (1)	Low (0.1)	Low (0.1)	High (1)	High (1)	High (1.0)	High (1)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Low (0.1)	High (1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.3)	Low (0.1)	Low (0.3)
Actual Points/Possible Points	6.6 / 12	5.8 / 11	4.0 / 9	6.3 / 11	2.8 / 10	2.3 / 9	2.8 / 10	6.7 / 12	2.8 / 10	6.7 / 12
% of Possible Score Achieved	55%	53%	44%	57%	28%	26%	28%	56%	28%	55%
Overall Category	III	III	III	II*	IV	IV	IV	III	IV	III
Total Acreage of Assessed Wetlands and Open Water within Easement	2.58 ac	0.86 ac	0.68 ac	0.06 ac	0.75 ac	1.74 ac	0.29 ac	11.84 ac	0.29 ac	12.20 ac
Functional Units (acreage x actual points)	17.03	4.99 fu	2.73 fu	0.37 fu	2.10 fu	4.00 fu	0.81 fu	79.32 fu	0.81 fu	81.74
Total Acreage at Site	6.67 ac						12.13 ac		12.49 ac	
Total Functional Units at Site	31.22 fu						80.13 fu		82.55 fu	
Net Acreage Gain	NA						5.46 ac		5.82 ac	
Net Functional Unit Gain	NA						48.91 fu		51.33 fu	

[1] See completed 2003 MDT functional assessment forms **Appendix B** for further detail.

[2] The baseline assessment was performed using the 1996 MDT assessment method, several parameters which were substantially revised during development of the 1999 MDT assessment method, which was applied during 2002 & 2003 monitoring. Thus, direct comparison of pre- and post-project functions is not possible, although some general trends can be noted. * Did not achieve Category II rating based on functional points, but did achieve Category II rating based on score for fish and wildlife habitat; this narrow fringe wetland was absent during 2003 delineation.

3.8 Photographs

Representative photographs taken from photo-points and transect ends are presented in **Appendix C**. A copy of the 2003 aerial photograph is also provided in **Appendix C**.

3.9 Revegetation Efforts

Wetland and riparian vegetation enhancements were implemented in the spring 2003. **Appendix G** presents the different planting specification for each seed mix and containerized plantings. These enhancements included drill seeding of an upland seed mix into the areas of higher topography and planting of native riparian seedlings. Plants installed in the upland areas included two tree species, cottonwood and ponderosa pine *(Pinus ponderosa),* and six shrub species including American plum, choke cherry *(Prunus virginiana),* serviceberry *(Amelanchier alnifolia),* snowberry (*Symphoricarpos albus),* Rocky Mountain juniper *(Juniperus scopulorum), and* woods rose (*Rosa woodsii).*

Wetland areas surrounding the excavated open water area were broadcast seeded with a custom wetland seed mix and also planted with seedlings. Vegetation planted in the wetland areas included three tree species - cottonwood, quaking aspen *(Populus tremuloides),* and water birch (*Betula occidentalis*), and three shrub species - alder (*Alnus incana),* red osier dogwood *(Cornus stolonifera),* and sandbar willow *(Salix exigua).* Several species were planted in both the upland and wetland areas. These species include ponderosa pine, serviceberry and woods rose.

Survival rates for native shrub plantings were assessed during the summer of 2003. Both Land & Water Consulting (**LWC**) and Salish Kootenai College (**SKC**) conducted separate survival ratings for 2003 spring plantings. LWC results are presented in **Appendix B** in the *Wetland Mitigation Site Monitoring Form*. The survival data results presented in the body of the report are based on SKC more intensive monitoring. **Appendix G** presents detailed survival information for each species and planting area.

Two upland plantings areas were evaluated; these areas include the upland islands and access road sites. Survival rates for the upland islands ranged from 58% to 80 % for the tree species and 60% to 81% for the shrub species. Ponderosa pine and serviceberry had the lowest survival ratings in the upland islands. Cottonwood and woods rose had the highest ratings for the upland islands.

The access road site had a survival rate of 60% for tree species and a range of 0% to 40% for the shrub species. Rocky Mountain juniper had the lowest rating with no surviving seedlings (0%). The remaining shrub species also had an overall low survival rating, ranging from 3% to 40%. The shrubs with these lower survival rates included American plum, woods rose, common snowberry and serviceberry. The highest survival ratings for this area included ponderosa pine (60%) and chokecherry (40%).

Two wetland-planting areas were also evaluated; these sites included the created open water fringe and backwater channel. Survival rates for the fringe area ranged from 37% to 55% for the tree species and 29% to 81% for the shrub species. Quaking aspen and alder had the lowest

ratings for their life forms. The highest survival ratings were recorded for water birch (SKC considered this a tree species) and sandbar willow. The remaining shrub species, red osier dogwood, had a moderate rating at 45%. Cottonwood plantings rated just below the slightly higher water birch rating with 50%. Areas located around the created open water fringe were also sprigged with sandbar willow cuttings. Survival rates for the cuttings were the highest out of any revegetation efforts conducted on site. The survival rate for sandbar willow was 98%.

Low survival rates found in the upland islands could be due to the lack water and maintenance of new seedlings. An irrigation system was present on site, but was not operational. For species located along the excavated wetland fringes, where adequate water supply was available, mortality is mostly due to weak planting stock.

In addition to planted species, cottonwoods are beginning to volunteer on the site. It is estimated that over 1,000 seedlings were observed in the side channel in the north portion of the site that had sprouted during the 2003 monitoring season.

3.10 Maintenance Needs/Recommendations

Weed control activities were observed during the early-season visit. Several noxious weeds are still present including Canada thistle, hound's-tongue and spotted knapweed that must be controlled under the Montana County Noxious Weed Control Act [7-22-2151]. Some barren soils are still present in certain areas and should be seeded or planted with additional native species. Areas where plantings failed or had a low survival should be replanted with new seedlings with species that had the higher survival rates.

3.11 Current Credit Summary

At this time approximately 11.35 acres of wetland and 1.14 acres of open water occur on the mitigation site. Subtracting the original 6.67 acres of pre-project wetlands from this total yields a current net of approximately 5.82 wetland/open water acres. It is likely that additional acreage will form with additional time and more normal precipitation. Additionally, approximately 51.33 functional units have been gained at the site, although pre- and post-construction functional assessment methods slightly differed.

4.0 REFERENCES

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Appendix A

FIGURES 2 - 3

MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

Figure 2-Monitoring Activities Locations

PROJECT NAME
MDT Hoskin's Landing Wetland Mitigation
DRAWING TITLE
Monitoring Activity Locations

PROJ NO: 1300911
FILE NAME: TASK3@BASE
SCALE: 1"=2000ft
LOCATION: Dixon, MT.

DRAWN: R.A.
CHECKED: J.B.
APPVD: J.B.
PROJ MGR: J.BERGLAND

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

FIGURE
2
REV -
DATE: 9-10-02

Figure 3-Mapped Site Features 2003

PROJECT NAME: MDT Hoskin's Landing Wetland Mitigation
DRAWING TITLE: Mapped Site Features 2003
DRAWN: R.A.
CHECKED: J.B.
APPVD: G.H.
PROJ MGR: J.BERGLAND
PROJ NO: 130091
FILE NAME: TASK3@BASE
SCALE: 1"=200ft
LOCATION: Dixon, Mt.
LAND & WATER CONSULTING, INC.
P.O. BOX 8254
Missoula, MT 59807
FIGURE 3
REV -
DATE: 12-05-03

Appendix B

COMPLETED 2003 WETLAND MITIGATION SITE MONITORING FORM
COMPLETED 2003 BIRD SURVEY FORM
COMPLETED 2003 WETLAND DELINEATION FORMS
COMPLETED 2003 FUNCTIONAL ASSESSMENT FORM

MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Hoskins Landing Project Number: 130091.038 Assessment Date: 08 / 05 / 03
Location: N. of Dixon, MT MDT District: Missoula Milepost:
Legal description: T: 18 R: 21 Section: 18 Time of Day: Afternoon to early evening
Weather Conditions: Clear & sunny Person(s) conducting the assessment: Greg Howard
Initial Evaluation Date: 09 / 04 / 02 Visit #: 2 Monitoring Year: 2003
Size of evaluation area: 48 acres Land use surrounding wetland: Agriculture; alfalfa & cattle grazing

HYDROLOGY

Surface Water Source: Flathead River
Inundation**:** Present X Absent Average depths: 1.5 ft Range of depths: 0 – 2 ft
Assessment area under inundation: 40 %
Depth at emergent vegetation-open water boundary: 0.5 ft
If assessment area is not inundated are the soils saturated w/in 12" of surface**:** Yes - No -
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): Drift lines present around constructed open water area. Annual high water event, inundation of created open water area by flooding of backwater channel.

Groundwater
Monitoring wells: Present Absent x
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:
X Map emergent vegetation-open water boundary on air photo
X Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)
- GPS survey groundwater monitoring wells locations if present

COMMENTS/PROBLEMS: No evidence of excessive disturbances from high water flows as seen in 2002 monitoring. Topography near the created open water area has changed since 2002 monitoring. Side slopes along excavated areas have been recontoured to have a lower slope angle. Large upland humps present during 2002 monitoring have been also graded to a lower topography and slope. Riparian and wetland species planted throughout the mitigation site.

VEGETATION COMMUNITIES

Community No.: _2__ Community Title (main species): Eleocharis / Phalaris_____

Dominant Species	% Cover	Dominant Species	% Cover
Scirpus acutus	10	*Sagittaria latifolia*	20
Scirpus validus	P	*Carex retrorsa*	P
Phalaris arundinacea	30		
Eleocharis palustris	50		
Potamogeton natans	10		

COMMENTS/PROBLEMS: Undisturbed emergent wetlands located on W. side of site. Type 2 is connected to the outlet of the southern backwater channel. Area is surrounded by newly constructed open water areas and wetlands. Wetland inundated during mid-season visit.

Community No.: _3__ Community Title (main species): Potamogeton / Elodea_____

Dominant Species	% Cover	Dominant Species	% Cover
Potamogeton amplifolius	60		
Elodea canadensis	10		
Potamogeton crispus	10		
Potamogeton natans	T		

COMMENTS/PROBLEMS: Areas of aquatic vegetation, excavated area observed to mostly be vegetated w/aquatic species during this monitoring. Emergent vegetation found along the outer fringes of open water in areas of lower water depths and mostly saturated ground.

Community No.: _4__ Community Title (main species): Chenopodium / Cirsium_____

Dominant Species	% Cover	Dominant Species	% Cover
Plantago lanceolata	T	*Helianthus annuus*	P
Plantago major	P	*Lepidium perfoliatum*	10
Cirsium arvense	P	*Sisymbrium altissimum*	P
Verbascum thapsus	P	*Chenopodium album*	20
Grasses-sprouts, no id	P	Plantings	10

COMMENTS/PROBLEMS: Constructed upland slopes w/ re-contoured topography and spring 2003 native shrub plantings. Area of mostly invasive and disturbance related species with overall low % vegetation cover. One Montana State listed noxious weeds (Cirsium arvense).

Additional Activities Checklist:
_X_ Record and map vegetative communities on air photo

COMMENTS: Community # 1 is open water.

VEGETATION COMMUNITIES

Community No.: _5__ Community Title (main species): Phalaris / Salix

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	60	*Juncus ensifolius*	T
Salix exigua	30	*Eleocharis acicularis*	P
Juncus balticus	P	*Salix bebbiana*	T
Scirpus acutus	T		
Cornus stolonifera	T		

COMMENTS/PROBLEMS: Undisturbed side channel running along S. edge of project boundary. Channel w/ stagnate water, no flowing inlet or outlet, except during seasonally high flows. Channel vegetation consisting mostly of aquatic bed, emergent and scrub-shrub types.

Community No.: _6__ Community Title (main species): Festuca / Phleum_____

Dominant Species	% Cover	Dominant Species	% Cover
Phleum pratense	20	*Rosa woodsii*	T
Agropyron repens	20	*Symphoricarpos albus*	T
Taraxacum officinale	P	*Agrostis alba*	10
Cirsium arvense	P	*Festuca pratensis*	30
Rumex crispus	T	*Centaurea maculosa*	10

COMMENTS/PROBLEMS: Areas of pre-existing upland pasture historically grazed. Type 6 area showing little evidence of livestock grazing, herbaceous vegetation much taller during 2003 monitoring. A stated listed noxious weed (Centaurea maculosa & Cirsium arvense) found in this type.

Community No.: _7__ Community Title (main species): Phalaris / Populus_____

Dominant Species	% Cover	Dominant Species	% Cover
Populus trichocarpa	10	*Taraxacum officinale*	P
Salix exigua	P		
Rumex crispus	10		
Agrostis alba	P		
Phalaris arundinacea	60		

COMMENTS/PROBLEMS: This area receives seasonal flooding and is adjacent to main river. This site has experienced heavy grazing in the past. Removal of livestock grazing has left a vigorous canary reedgrass population.

Additional Activities Checklist:
_X_ Record and map vegetative communities on air photo

COMMENTS:

VEGETATION COMMUNITIES

Community No.: _8__ Community Title (main species): Plantago / Sisymbrium

Dominant Species	% Cover	Dominant Species	% Cover
Plantago major	10	*Panicum capillare*	T
Plantago lanceolata	P	*Chrysanthemum leucanthemum*	T
Verbascum thapsus	P	*Centaurea maculosa*	T
Populus trichocarpa	10	*Agropyron repens*	P
Sisymbrium altissimum	20		

COMMENTS/PROBLEMS: Area adjacent to Flathead River, cobble and gravel substrate/banks. Low vegetation cover, mostly invasive or disturbance related species. Large quantities of cottonwood sprouts found throughout the cobble area. Community type #8 considered Waters of the U.S.

Community No.: _9__ Community Title (main species): Centaurea/Sisymbrium

Dominant Species	% Cover	Dominant Species	% Cover
Centaurea maculosa	20	*Chenopodium album*	P
Sisymbrium altissimum	P		
Lepidium perfoliatum	P		
Malva neglecta	T		
Symphoricarpos albus	P		

COMMENTS/PROBLEMS: Area dominated by spotted knapweed & other invasive species

Community No.: _10__ Community Title (main species): Populus/Crataegus

Dominant Species	% Cover	Dominant Species	% Cover
Crataegus douglasii	20	*Festuca pratensis*	P
Prunus americana	10	*Phleum pratense*	P
Rosa woodsii	P	*Agropyron repens*	20
Cornus stolonifera	P	*Symphoricarpos albus*	P
Populus trichocarpa	30	*Centaurea maculosa*	P

COMMENTS/PROBLEMS: Mature cottonwood& hawthorne found along higher terrace, adjacent to river & backwater channel. The herbaceous layer consisting of pasture grasses and weeds. A few small shrub patches present along backwater channel.

Additional Activities Checklist:
_X_ Record and map vegetative communities on air photo

COMMENTS:

VEGETATION COMMUNITIES

Community No.: _11__ Community Title (main species): Ceratophyllum

Dominant Species	% Cover	Dominant Species	% Cover
Ceratophyllum demersum	40		T
Equisetum hyemale	P		P
Eleocharis acicularis	P		T
Juncus balticus	P		
Phalaris arundinacea	T		

COMMENTS/PROBLEMS: Aquatic bed habitat dominated by common hornwort, standing water in channel. Some evidence of flowing water through channel during seasonal high water: scour marks, drift lines and sediment depositions.

Community No.: _12_ Community Title (main species): Juncus/Eleocharis

Dominant Species	% Cover	Dominant Species	% Cover
Juncus ensifolius	20	*Chrysanthemum leucanthemum*	T
Eleocharis palustris	10	*Rumex crispus*	T
Agrostis alba	10	Willow sprigs (*Salix*)	P
Phalaris arundinacea	P		
Eleocharis acicularis	P		

COMMENTS/PROBLEMS: Emergent wetland vegetation developing along the fringes of excavated area, evidence of annual inundation. Shrub plantings installed during spring 2003 along excavated wetland fringe.

Community No.: 13 Community Title (main species): Phalaris/Agrostis

Dominant Species	% Cover	Dominant Species	% Cover
Phalaris arundinacea	20		
Agrostis alba	10		
Eleocharis palustris	P		
Alopecurus pratensis	T		
Plantago major	P		

COMMENTS/PROBLEMS: Small area of vegetation developing in the dry backwater channel nearest to the river. Surrounding area mostly cobble substrate and low vegetation cover.

Additional Activities Checklist:
_X_ Record and map vegetative communities on air photo

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
Acer negundo	10	*Juniperus scopulorum**	4
Agropyron repens	4,6,10	*Lepidium perfoliatum*	4,6
Agrostis alba	6,12	*Malva neglecta*	4
Achillea millefolium	4,6	*Melilotus officinalis*	4,6,10
*Alnus incana**	12	*Mentha arvensis*	2
Alopecurus pratensis	6	*Myosotis scorpioides*	2
Amaranthus retroflexus	6	*Panicum capillare*	8
*Amelanchier alnifolia**	4	*Phalaris arundinacea*	2,5,7,11
Artemisia ludoviciana	4,8	*Phleum pratense*	6,10
Bromus japonicus	6	*Pinus ponderosa**	4
Carex lanuginosa	2	*Plantago lanceolata*	4,8
Carex retrorsa	2	*Plantago major*	4,8
Centaurea maculosa	4,6,8,10	*Poa pratensis*	6
Ceratophyllum demersum	11	*Polygonum amphibium*	2,11,12
Chenopodium album	4,6	*Polygonum aviculare*	4
Chrysanthemum leucanthemum	4,8	*Populus tremuloides**	4
Cirsium arvense	4,6	*Populus trichocarpa***	7,8,10
Cirsium vulgare	4,6	*Potamogeton amplifolius*	3
Coreopsis atkinsoniana	8	*Potamogeton crispus*	3
*Cornus stolonifera***	5,10	*Potamogeton natans*	3
Crataegus douglasii	10	*Prunus americana***	10
Cynoglossum officinale	4,6	*Rosa woodsii*	10
Dactylis glomerata	6	*Rumex crispus*	2,4,6
Eleocharis acicularis	2,12	*Sagittaria latifolia*	2
Eleocharis palustris	4,12	*Salix bebbiana*	5
Elodea canadensis	3	*Salix exigua***	5,7,12
Equisetum arvense	2,4,8,12	*Scirpus acutus*	2
Equisetum hyemale	2,11	*Scirpus microcarpus*	2
Festuca pratensis	6	*Scirpus validus*	2
Eroduim cicutarium	4,8,10	*Sisymbrium altissimum*	6,8
Gnaphalium palustre	4,8	*Solidago missouriensis*	10
Helianthus annuus	4	*Symphoricarpos albus***	6
Hippuris vulgaris	2	*Taraxacum officinalis*	4,6,8
Iris pseudacorus	5	*Verbascum thapsus*	4,6,8
Juncus balticus	5,12	*Veronica americana*	12
Juncus ensifolius	4,12		

* Species planted during 2003 riparian vegetation enhancements.

** Species observed during vegetation survey and also planted during 2003 riparian vegetation enhancements.

COMMENTS/PROBLEMS: _____

_____

PLANTED WOODY VEGETATION SURVIVAL

Species	Number Originally Planted	Number Observed	Mortality Causes
Alnus incana	3	3	
Amelanchier alnifolia	18	18	
Cornus stolonifera	61	44	
Juniperus scopulorum	6	3	
Pinus ponderosa	76	32	
Populus tremuloides	2	1	
Populus trichocarpa	69	10	
Prunus americana	13	9	
Rosa woodsii	97	91	
Salix exigua	33	33	
Symphoricarpos albus	29	11	

COMMENTS/PROBLEMS: The above species were planting during the spring of 2003. The results are for species found along transect assesses by LWC and do not reflect the total of number of species planted. Refer to **Appendix G** for the total number of plants installed. **Appendix G** also includes more intensive shrub density monitoring conducted by the installation crews (**SKC**) during the early summer of 2003.

WILDLIFE

BIRDS

See attached Bird Survey – Field Data Sheet

Were man-made nesting structures installed? Yes____ No _X_ Type:_____ How many?_____ Are the nesting structures being utilized? Yes____ No____ Do the nesting structures need repairs? Yes____ No____

MAMMALS AND HERPTILES

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other
Deer		X			

Additional Activities Checklist:
__X_ Macroinvertebrate sampling (if required)

COMMENTS/PROBLEMS: Macroinvertebrate samples collected and location marked on map.

PHOTOGRAPHS

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

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

Location	Photo	Photograph Description	Compass Reading
1	1	Picture looking S. at upland, emergent vegetation and open water area.	180°
2	2	Picture looking N. at emergent vegetation and open water area.	180°
3	3	Picture looking E. at emergent vegetation that existed before construction.	90°
4	4	Panoramic view running W. to E., created open water area.	315° – 135°
5	5	Picture looking E. at backwater side channel.	90°
6	6	Panoramic view running W. to E., emergent wetlands, open water area & upland.	315° – 90°
7	7	Picture looking E. at side channel & area where berm was removed.	90°
8	8	Picture looking E. at side channel & area of high water disturbance.	90°
9	9a	Picture looking W. at upland, emergent wetlands & created open water areas.	315°
9	9b	Picture looking N. at upland pasture.	0°
9	9c	Picture looking S. at riparian vegetation along side channel.	180°
10	10	Picture looking W. at inlet to backwater side channel.	270° –135°
11	11	Picture looking NW. along N. side of project boundary & Flathead River.	315°
12	12	Picture looking NW. along N. side of site, areas where berm was removed.	315°
13	13	Picture looking W. at empty floodplain channel near river.	315°

COMMENTS/PROBLEMS: All pictures were taken with a digital camera.

GPS SURVEYING

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

Checklist:

__X__ Jurisdictional wetland boundary
__X__ 4-6 landmarks recognizable on the air photo
__X__ Start and end points of vegetation transect(s)
__X__ Photo reference points
_____ Groundwater monitoring well locations

COMMENTS/PROBLEMS: _____

_____

_____

WETLAND DELINEATION

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

COMMENTS/PROBLEMS: _____

FUNCTIONAL ASSESSMENT

See attached completed MDT Montana Wetland Assessment Method forms.

MAINTENANCE

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

Were man-made structures build or installed to impound water or control water flow into or out of the wetland? YES____ NO _X_
If yes, are the structures working properly and in good working order? YES____ NO___
If no, describe the problems below.

COMMENTS/PROBLEMS: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Hoskins Landing Date: 08/05/03 Examiner: Greg Howard Transect # 1

Approx. transect length: 390 ft Compass Direction from Start (Upland): 45°

Vegetation type 1:	Festuca/Phleum (Community No. 6)
Length of transect in this type:	14 feet
Species:	Cover:
Plantago lanceolata	30
Cirsium arvense	20
Agrostis alba	10
Phleum pratense	P
Festuca pratensis	P
Plantago major	T
Agropyron repens	T
Rumex crispus	T
Chenopodium album	T
Total Vegetative Cover:	70%

Vegetation type 2:	Chenopodium/Cirsium (Community No. 4)
Length of transect in this type:	24 feet
Species:	Cover:
Equisetum arvense	20
Plantago major	10
Cirsium arvense	10
Populus trichocarpa (sprouts)	T
Salix exigua	P
Plantago lanceolata	P
Achillea millefolium	T
Agropyron repens	T
Rumex crispus	P
Phalaris arundinacea	T
Total Vegetative Cover:	60%

Vegetation type 3:	Juncus/Eleocharis (Community No. 12)
Length of transect in this type:	24 feet
Species:	Cover:
Eleocharis acicularis	50
Juncus ensifolius	T
Eleocharis palustris	T
Scirpus microcarpus	T
Plantago major	P
Total Vegetative Cover:	55%

Vegetation type 4:	Potamogeton/Elodea (Community No. 3)
Length of transect in this type:	84 feet
Species:	Cover:
Eleocharis acicularis	T
Elodea canadensis	10
Potamogeton amplifolius	60
Eleocharis palustris	T
Potamogeton crispus	10
Potamogeton natans	P
Total Vegetative Cover:	85%

LAND & WATER

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Hoskins Landing Date: 08/05/03 Examiner: Greg Howard Transect # 1

Approx. transect length: 390 ft Compass Direction from Start (Upland): 45°

Vegetation type 5:	Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	90	feet
Eleocharis acicularis	50	
Juncus ensifolius	T	
Eleocharis palustris	T	
Scirpus microcarpus	T	
Plantago major	P	
Total Vegetative Cover:	60%	

Vegetation type 6:	Eleocharis/Phalaris (Community No. 2)	
Length of transect in this type:	84	feet
Species:	Cover:	
Phalaris arundinacea	20	
Eleocharis palustris	40	
Hippuris vulgaris	P	
Scirpus acutus	10	
Sagittaria latifolia	T	
Veronica americana	P	
Potamogeton natans	20	
Rumex crispus	T	
Myosotis scorpioides	T	
Equisetum arvense	T	
Carex retrorsa	P	
Total Vegetative Cover:	95%	

Vegetation type 7:	Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	4	feet
Species:	Cover:	
Eleocharis acicularis	50	
Juncus ensifolius	T	
Eleocharis palustris	T	
Scirpus microcarpus	T	
Plantago major	P	
Total Vegetative Cover:	60%	

Vegetation type 8:	Potamogeton/Elodea (Community No. 3)	
Length of transect in this type:	45	feet
Species:	Cover:	
Eleocharis acicularis	T	
Elodea canadensis	10	
Potamogeton amplifolius	60	
Eleocharis palustris	T	
Potamogeton crispus	10	
Potamogeton natans	P	
Total Vegetative Cover:	85%	

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Hoskins Landing Date: 08/05/03 Examiner: Greg Howard Transect # 1

Approx. transect length: 390 ft Compass Direction from Start (Upland): 45°

Vegetation type 9:	Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	30	feet
Species:	Cover:	
Eleocharis acicularis	50	
Juncus ensifolius	T	
Eleocharis palustris	T	
Scirpus microcarpus	T	
Plantago major	P	
Total Vegetative Cover:	55%	

Vegetation type 10:	Chenopodium/Cirsium (Community No. 4)	
Length of transect in this type:	45	feet
Species:	Cover:	
Phalaris arundinacea	P	
Plantago lanceolata	20	
Polygonum amphibium	T	
Achillea millefolium	T	
Cirsium vulgare	T	
Chenopodium album	20	
Agropyron repens	P	
Cirsium arvense	P	
Plantago major	P	
Total Vegetative Cover:	50%	

Vegetation type 11:	Festuca/Phleum (Community No. 6)	
Length of transect in this type:	33	feet
Species:	Cover:	
Festuca pratensis	20	
Agropyron repens	40	
Cirsium vulgare	P	
Cirsium arvense	10	
Verbascum thapsus	T	
Phalaris arundinacea	P	
Agrostis alba	P	
Plantago major	P	
Total Vegetative Cover:	80%	

Vegetation type :		
Length of transect in this type:		feet
Species:	Cover:	
Total Vegetative Cover:		

LAND & WATER

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

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

Percent of perimeter _____ % developing wetland vegetation – excluding dam/berm structures.

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

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

Notes:

3/01 rev

BIRD SURVEY – FIELD DATA SHEET

Page_1__of__1_
Date: 5/29/03

SITE: Hoskins Landing

Survey Time: 1100

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Killdeer	2	F	US				
Mallard	2	L,F	OW,MA				
Osprey	2	N	UP				
Red-winged Blackbird	8	N,BP	MA				
Song Sparrow	2	L,BD	SS				
Spotted Sandpiper	2	F	US				
Yellow-headed blackbird	4	N,BP	MA				

Notes: Conditions: Mostly sunny and light wind, approximately 85 degrees.
Tribal staff onsite spraying weeds and looking at plantings. They are trying to establish an irrigation system for the upland plantings, many of which died over winter. More planting scheduled for fall of 2003.
Not many birds using site during visit – too much human activity.

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

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

LAND & WATER

BIRD SURVEY – FIELD DATA SHEET

Page_1__of__1_
Date: 8/5/03

SITE: Hoskins Landing

Survey Time: 9:00

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Killdeer	2	F	US				
Mallard	2	L,F	OW,MA				
Red-winged Blackbird	8	N	MA				
Sparrow	2	L	SS				

Notes: Conditions: Hot (90's) and sunny, clear skies.
Bird activity mostly near excavated wetlands and shrub-scrub habitats.

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

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

LAND & WATER

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Hoskins Landing	Date: 8/05/03
Applicant/Owner: MDT	County: Sanders
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	X	Yes	___	No
Is the site significantly disturbed (Atypical Situation)?	___	Yes	___	No
Is the area a potential Problem Area?:	___	Yes	___	No
(If needed, explain on reverse.)				

Community ID: Upland
Transect ID: T1
Plot ID: 1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Plantago lanceolata*	H	FAC	9			
2	*Cirsium arvense*	H	FACU+	10			
3	*Phleum pratense*	H	FACU	11			
4	*Agropyron repens*	H	FACU+	12			
5	*Agrostis alba*	H	FACU	13			
6		H	FAC+	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/6 = 33%

Upland pasture along the outer fringes of created wetland slopes.

HYDROLOGY

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

Field Observations:

Depth of Surface Water: - (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

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

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

Remarks:
No evidence of hydrology. Soil pit was dry and crumbly. Seasonal flooding does occur; soils were not saturated or moist at the time of inspection.

SOILS

Map Unit Name (Series and Phase): Horseplains-riverwash complex
Drainage Class: _____
Taxonomy (Subgroup): _____
Field Observations
Confirm Mapped Type? X Yes _____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 2	A	10 YR 3/2	-	-	Loam
2 – 12	B1	10 YR 4/2	-	-	Silty Loam
12+	B2	10 YR 5/2	-	-	Silty Loam

Hydric Soil Indicators:

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

Marginal hydric indicators, slight evidence of hydric conditions with low-chroma colors.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? _____ Yes X No
Wetland Hydrology Present? _____ Yes X No
Hydric Soils Present? x Yes _____ No

Is this Sampling Point Within a Wetland? _____ Yes X No

Remarks:
Sampling point considered within an upland area. Sampling point located near the beginning of vegetation transect. Area of historically intensive livestock grazing, dominated by upland species.

Approved by HQUSACE 2/92

LAND & WATER

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Hoskins Landing	Date: 8/05/03
Applicant/Owner: MDT	County: Sanders
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	x	Yes		No
Is the site significantly disturbed (Atypical Situation)?		Yes		No
Is the area a potential Problem Area?:		Yes		No
(If needed, explain on reverse.)				

Community ID: Emergent
Transect ID: T1
Plot ID: 2

VEGETATION

	Dominant Plant Species	Stratum	Indicator
1	*Eleocharis acicularis*	H	OBL
2	*Juncus ensifolius*	H	FACW
3	*Eleocharis palustris*	H	OBL
4	***Scirpus microcarpus***	H	OBL
5	*Plantago major*	H	FACU+
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/5 = 80%

Area dominated by hydrophytic vegetation. Newly developing emergent vegetation along open water fringe.

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other
x No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
x Inundated
_____ Saturated in Upper 12 Inches
_____ Water Marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 Inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks:
Hydrology indicators present with inundation and saturated ground.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): Horseplains-riverwash complex
Drainage Class: _____
Taxonomy (Subgroup): _____
Field Observations
Confirm Mapped Type? _____ Yes x No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 12+	B	7.5 YR 4/1	7.5 YR 3/4	Common / Prominent	Sandy Clay

Hydric Soil Indicators:

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

Hydric soil indicators present with low-chroma colors and mottles.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? X Yes ____ No
Wetland Hydrology Present? X Yes ____ No
Hydric Soils Present? X Yes ____ No

Is this Sampling Point Within a Wetland? x Yes ____ No

Remarks:
Sampling point considered within an emergent wetland type.

Approved by HQUSACE 2/92

LAND & WATER

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineation Manual)

Project/Site: Hoskins Landing	Date: 8/05/03
Applicant/Owner: MDT	County: Sanders
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	x	Yes		No	Community ID: Emergent
Is the site significantly disturbed (Atypical Situation)?		Yes		No	Transect ID: T1
Is the area a potential Problem Area?:		Yes		No	Plot ID: 3
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Eleocharis palustris*	H	OBL	9			
2	*Phalaris arundinacea*	H	FACW	10			
3	*Scirpus acutus*	H	OBL	11			
4	*Potamogeton natans*	H	OBL	12			
5	*Carex retrorsa*	H	FAC	13			
6	*Sagittaria latifolia*	H	OBL	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 6/6 = 100%

Area dominated by hydrophytic vegetation. Area of inundation with several inches of surface water.

HYDROLOGY

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

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

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

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

Remarks:
Hydrology indicators present with inundation and saturated ground.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): Horseplains-riverwash complex
Drainage Class: _____
Taxonomy (Subgroup): _____
Field Observations
Confirm Mapped Type? _____ Yes x No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 2	O	10 YR 3/2	-	-	Organics
2 – 10	A	10 YR 3/1	10 YR 2/6	Medium, 25%	Clay
10+	B	10 YR 4/1	10 YR 2/6	Large, 75%	Clay

Hydric Soil Indicators:

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

Hydric soil indicators present with mottles and low-chroma colors.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? X Yes _____ No
Wetland Hydrology Present? X Yes _____ No
Hydric Soils Present? X Yes _____ No

Is this Sampling Point Within a Wetland? x Yes _____ No

Remarks:
Sampling point considered within an emergent wetland type.

Approved by HQUSACE 2/92

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineation Manual)

Project/Site:	Hoskins Landing			Date:	8/05/03
Applicant/Owner:	MDT			County:	Sanders
Investigator:	Greg Howard			State:	MT
Do Normal Circumstances exist on the site:	x	Yes	No	Community ID:	Aquatic bed & emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	T1
Is the area a potential Problem Area?: (If needed, explain on reverse.)		Yes	No	Plot ID:	4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Potamogeton crispus*	H	OBL	9			
2	*Ceratophyllum demersum*	H	OBL	10			
3	*Elodea canadensis*	H	OBL	11			
4	*Eleocharis acicularis*	H	OBL	12			
5	*Juncus ensifolius*	H	FACW	13			
6				14			
7				15			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 5/5 = 100%

Aquatic habitat dominated by obligate wetland species. Sampling point located along outer fringes of excavated wetland area.

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
- _____ Stream, Lake, or Tide Gauge
- _____ Aerial Photographs
- _____ Other

x No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

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

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

Remarks:
Soil pit located along the outer fringe of created open water area. Soils saturated through profile. Evidence of receding water level, sampling point inundated during early season.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): Horseplains-riverwash complex

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations

Confirm Mapped Type? _____ Yes x No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 1	A	10 YR 3/1	-	-	Organics w/clay loam
1 – 12	B1	10 YR 5/1	10 YR 4/6	Medium, 15%	Clay
12+	B2	2.5 YR 4/1	10 YR 4/6	Small, 10%	Clay

Hydric Soil Indicators:

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

Hydric soil indicators present with low-chroma colors & mottles.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? x Yes _____ No

Wetland Hydrology Present? x Yes _____ No

Hydric Soils Present? x Yes _____ No

Is this Sampling Point Within a Wetland? x Yes _____ No

Remarks:

Sampling point considered with a wetland area. Created wetland; open water, aquatic bed and emergent wetland types.

Approved by HQUSACE 2/92

LAND & WATER

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineation Manual)

Project/Site: Hoskins Landing	Date: 8/05/03
Applicant/Owner: MDT	County: Sanders
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	x	Yes		No	Community ID: -
Is the site significantly disturbed (Atypical Situation)?		Yes		No	Transect ID: T1
Is the area a potential Problem Area?:		Yes		No	Plot ID: 5
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Cirsium arvense*	H	FACU+	9			
2	*Plantago lanceolata*	H	FAC	10			
3	*Panicum capillare*	H	FACU+	11			
4	*Verbascum thapsus*	H	-	12			
5	*Plantago major*	H	FACU	13			
6	*Centaurea maculosa*	H	-	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/6 = 16%

Low vegetation cover, area dominated by invasive / disturbance species and upland vegetation.

HYDROLOGY

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

Field Observations:

Depth of Surface Water: - (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

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

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

Remarks:
No hydrology indicators present, soil pit was dry and crumbly.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): Horseplains-riverwash complex
Taxonomy (Subgroup): _____
Drainage Class: _____
Field Observations
Confirm Mapped Type? _____ Yes x No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 1	B1	10 YR 4/2	-	-	Roots w/silty clay
1 – 12+	B2	10 YR 4/2	-	-	Silty loam

Hydric Soil Indicators:

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

Soil profile observed to have low-chroma colors, no other hydric soils indicators found.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? _____ Yes X No
Wetland Hydrology Present? _____ Yes X No
Hydric Soils Present? _____ Yes X No

Is this Sampling Point Within a Wetland? _____ Yes x No

Remarks:
Sampling point considered within an upland area.

Approved by HQUSACE 2/92

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

1. Project Name: Hoskins Landing **2. Project #:** 130091.038 **Control #:** AA-1

3. Evaluation Date: 8/5/2003 **4. Evaluator(s):** Greg Howard **5. Wetland / Site #(s):** Pond, emergent wetland & channels

6. Wetland Location(s) i. T: 18 N **R:** 21 W **S:** 18 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 17010212 **GPS Reference No. (if applies):** _____

Other Location Information: _____

7. A. Evaluating Agency MDT

B. Purpose of Evaluation:

- ☐ Wetlands potentially affected by MDT project
- ☐ Mitigation wetlands; pre-construction
- ☒ Mitigation wetlands; post-construction
- ☐ Other

8. Wetland Size (total acres): _____ (visually estimated)
12 (measured, e.g. GPS)

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

Comments: _____

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	*MODIFIER* [2]	% OF AA
Riverine	Palustrine	None	Aquatic Bed	Permanently Flooded	Excavated	50
Riverine	Palustrine	None	Emergent Wetland	Seasonally Flooded	---	15
Riverine	Palustrine	None	Unconsolidated Bottom	Permanently Flooded	Excavated	20
Riverine	Palustrine	None	Scrub-Shrub Wetland	Seasonally Flooded	---	5
Riverine	Palustrine	None	Rock Bottom	Seasonally Flooded	---	10

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

Comments: _____

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

12. GENERAL CONDITION OF AA

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

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

Comments: (types of disturbance, intensity, season, etc.) Historic livestock grazing, cattle have been removed.

ii. Prominent weedy, alien, & introduced species: Spotted Knapweed, Canadian thistle, bull thistle, hound's tongue, common dandelion & quackgrass.

iii. Briefly describe AA and surrounding land use / habitat: Area of heavy alteration from livestock grazing. AA had several small wetlands and an active backwater channel. Surrounding lands are used for croplands & livestock.

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

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

Comments: _____

LAND & WATER

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

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

Primary or Critical habitat **(list species)**	☐ D ☐ S	_____
Secondary habitat **(list species)**	☐ D ☒ S	Bald Eagle
Incidental habitat **(list species)**	☐ D ☒ S	Gray wolf & bull trout
No usable habitat	☐ D ☒ S	Spalding's campion, grizzly bear & Canada lynx

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

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

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

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

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

Primary or Critical habitat **(list species)**	☐ D ☐ S	_____
Secondary habitat **(list species)**	☐ D ☐ S	_____
Incidental habitat **(list species)**	☐ D ☒ S	Boreal toad & peregrine falcon
No usable habitat	☐ D ☐ S	_____

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

Highest Habitat Level:	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	---	---	---	---	---	.1 (L)	---

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

14C. General Wildlife Habitat Rating

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

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

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

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

ii. **Wildlife Habitat Features** (Working from top to bottom, select appropriate AA attributes to determine the exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from #13. For class cover to be considered evenly distributed, vegetated classes must be within 20% of each other in terms of their percent composition in the AA (see #10). Duration of Surface Water: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; A= absent.

Structural Diversity (from #13)	☒High								☐Moderate								☐Low			
Class Cover Distribution (all vegetated classes)	☒Even				☐Uneven				☐Even				☐Uneven				☐Even			
Duration of Surface Water in = 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☐ Exceptional	☒ High	☐ Moderate	☐ Low
Substantial	--	--	--	--
Moderate	--	.7 (M)	--	--
Low	--	--	--	--

Comments: _____

LAND & WATER

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

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

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

Duration of Surface Water in AA	☒ Permanent/Perennial			☐ Seasonal / Intermittent			☐ Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	M	--	--	--	--	--	--

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

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

Types of Fish Known or Suspected Within AA	**Modified Habitat Quality** from 14D(ii)			
	☐ Exceptional	☐ High	☒ Moderate	☐ Low
Native game fish	--	--	--	--
Introduced game fish	--	--	.6 (M)	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: AA has in the past been altered by man-made berms, head gates & grading. These features were removed to restore connection.

14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14G)
Applies only to wetlands subject to flooding via in-channel or overbank flow.
If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	☐ ≥ 10 acres			☒ <10, >2 acres			☐ ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	--	--	--	--	--	.5 (M)	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--	--

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

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)
Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	☒ >5 acre feet			☐ <5, >1 acre feet			☐ ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond [3] **5 out of 10 years**	--	.9 (H)	--	--	--	--	--	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: ____

14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)
Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check NA above.

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	☐ ≥ 70%		☐ < 70%		☐ ≥ 70%		☒ < 70%	
Evidence of flooding or ponding in AA	☐ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No	☒ Yes	☐ No
AA contains **no or restricted outlet**	--	--	--	--	--	--	.3 (L)	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: ____

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

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	***Duration of Surface Water Adjacent to Rooted Vegetation***		
	☐Permanent / Perennial	☒Seasonal / Intermittent	☐Temporary / Ephemeral
[3] **65 %**	--	--	--
35-64 %	--	--	--
< 35 %	--	.2 (L)	--

Comments: _____

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

A	☐ Vegetated component >5 acres						☒ Vegetated component 1-5 acres						☐ Vegetated component <1 acre					
B	☐ High		☐ Moderate		☐ Low		☒ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low	
C	☐Y	☐N	☐Y	☐N	☐Y	☐N	☒Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	.9H	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: _____

14J. GROUNDWATER DISCHARGE/RECHARGE (D/R) (Check the indicators in i & ii below that apply to the AA)

i. ☒ **Discharge Indicators**
- ☐ Springs are known or observed.
- ☐ Vegetation growing during dormant season/drought.
- ☐ Wetland occurs at the toe of a natural slope.
- ☐ Seeps are present at the wetland edge.
- ☒ AA permanently flooded during drought periods.
- ☐ Wetland contains an outlet, but no inlet.
- ☐ Other _____

ii. ☒ **Recharge Indicators**
- ☒ Permeable substrate presents without underlying impeding layer.
- ☐ Wetland contains inlet but not outlet.
- ☐ Other _____

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

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	--
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: _____

14K. UNIQUENESS

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant	☐rare	☐common	☐abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (#12i)	--	--	--	--	.5M	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

i. Is the AA a known recreational or educational site? ☒ **Yes (Rate** ☐ **High (1.0)**, then proceed to 14L(ii) only] ☐ **No** [Proceed to 14L(iii)]

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?
☒ **Yes** [Proceed to 14L (ii) and then 14L(iv).] ☐ **No** [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	☐ Low	☒ Moderate	☐ High
Public ownership	--	--	--
Private ownership	--	.3(L)	--

Comments: Area managed by Confederated Salish & Kootenia Tribes.

FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Moderate	0.70	1	
B. MT Natural Heritage Program Species Habitat	Low	0.10	1	
C. General Wildlife Habitat	Moderate	0.50	1	
D. General Fish/Aquatic Habitat	Moderate	0.60	1	
E. Flood Attenuation	Moderate	0.70	1	
F. Short and Long Term Surface Water Storage	High	0.90	1	
G. Sediment/Nutrient/Toxicant Removal	Low	0.30	1	
H. Sediment/Shoreline Stabilization	Low	0.20	1	
I. Production Export/Food Chain Support	High	0.90	1	
J. Groundwater Discharge/Recharge	High	1.00	1	
K. Uniqueness	Moderate	0.50	1	
L. Recreation/Education Potential	Low	0.30	1	
	Totals:	**6.70**	**12.00**	
	Percent of Total Possible Points:	**56%** (Actual / Possible) x 100 [rd to nearest whole #]		

Category I Wetland: (Must satisfy **one** of the following criteria. If not proceed to Category II.)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E(ii) is "yes"; **or**
- ☐ Percent of total Possible Points is > 80%.

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed to Category IV.)
- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish / Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of total possible points is > 65%.

☒ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied.)

Category IV Wetland: (Criteria for Categories I or II are not satisfied **and** all of the following criteria are met; If not satisfied, proceed to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

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

☐ **I** ☐ **II** ☒ **III** ☐ **IV**

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

1. Project Name: Hoskins Landing **2. Project #:** 130091.038 **Control #:** AA-2

3. Evaluation Date: 8/5/2003 **4. Evaluator(s):** Greg Howard **5. Wetland / Site #(s):** Emergent wetland seperated from remaining group

6. Wetland Location(s) i. T: 18 N **R:** 21 W **S:** 18 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 17010212 **GPS Reference No. (if applies):** _____

Other Location Information: _____

7. A. Evaluating Agency MDT

8. Wetland Size (total acres): _____ (visually estimated)
_____ (measured, e.g. GPS)

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

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

Comments: _____

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	*MODIFIER* [2]	% OF AA
Riverine	Palustrine	None	Emergent Wetland	Seasonally Flooded	---	100
---	---	---	---	---	---	
---	---	---	---	---	---	
---	---	---	---	---	---	
---	---	---	---	---	---	

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

Comments: _____

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

12. GENERAL CONDITION OF AA

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

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

Comments: (types of disturbance, intensity, season, etc.) Historic grazing.

ii. Prominent weedy, alien, & introduced species: Timothy, spotted knapweed & tumble mustard.

iii. Briefly describe AA and surrounding land use / habitat: Small isolated emergent depression within larger mitigation site. This site is essentially at baseline conditions currently.

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

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

Comments: _____

LAND & WATER

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

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

Primary or Critical habitat **(list species)** ☐ D ☐ S _____
Secondary habitat **(list species)** ☐ D ☐ S _____
Incidental habitat **(list species)** ☐ D ☐ S _____
No usable habitat ☐ D ☒ S none

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

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

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

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

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

Primary or Critical habitat **(list species)** ☐ D ☐ S _____
Secondary habitat **(list species)** ☐ D ☐ S _____
Incidental habitat **(list species)** ☐ D ☐ S _____
No usable habitat ☐ D ☒ S none

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

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

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

14C. General Wildlife Habitat Rating

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

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

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

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

ii. **Wildlife Habitat Features** (Working from top to bottom, select appropriate AA attributes to determine the exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from #13. For class cover to be considered evenly distributed, vegetated classes must be within 20% of each other in terms of their percent composition in the AA (see #10). Duration of Surface Water: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; A= absent.

Structural Diversity (from #13)	☐High								☐Moderate								☒Low			
Class Cover Distribution (all vegetated classes)	☐Even				☐Uneven				☐Even				☐Uneven				☒Even			
Duration of Surface Water in = 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	M	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☐ Exceptional	☐ High	☒ Moderate	☐ Low
Substantial	--	--	--	--
Moderate	--	--	--	--
Low	--	--	.2 (L)	--

Comments: _____

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

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

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

Duration of Surface Water in AA	☐ Permanent/Perennial			☐ Seasonal / Intermittent			☐ Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

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

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

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

Comments: _____

14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14G)
Applies only to wetlands subject to flooding via in-channel or overbank flow.
If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	☐ ≥ 10 acres			☐ <10, >2 acres			☒ ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	--	--	--	--	--	--	--	--	.2 (L)
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--	--

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

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)
Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	☐ >5 acre feet			☐ <5, >1 acre feet			☒ ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond [3] **5 out of 10 years**	--	--	--	--	--	--	--	.3 (L)	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: _____

14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)
Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check NA above.

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	☐ ≥ 70%		☐ < 70%		☒ ≥ 70%		☐ < 70%	
Evidence of flooding or ponding in AA	☐ Yes	☐ No	☐ Yes	☐ No	☒ Yes	☐ No	☐ Yes	☐ No
AA contains **no or restricted outlet**	--	--	--	--	.5 (M)	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: _____

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

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	***Duration of Surface Water Adjacent to Rooted Vegetation***		
	☐ Permanent / Perennial	☐ Seasonal / Intermittent	☐ Temporary / Ephemeral
[3] **65 %**	--	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments: _____

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

A	☐ Vegetated component >5 acres						☐ Vegetated component 1-5 acres						☒ Vegetated component <1 acre					
B	☐ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☒ Low	
C	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☒N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.2L
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: _____

14J. GROUNDWATER DISCHARGE/RECHARGE (D/R) (Check the indicators in i & ii below that apply to the AA)

i. ☒ **Discharge Indicators**
- ☐ Springs are known or observed.
- ☐ Vegetation growing during dormant season/drought.
- ☐ Wetland occurs at the toe of a natural slope.
- ☒ Seeps are present at the wetland edge.
- ☐ AA permanently flooded during drought periods.
- ☐ Wetland contains an outlet, but no inlet.
- ☒ Other _____

ii. ☐ **Recharge Indicators**
- ☐ Permeable substrate presents without underlying impeding layer.
- ☐ Wetland contains inlet but not outlet.
- ☐ Other _____

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

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	--
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: Likely discharges groundwater through alluvium.

14K. UNIQUENESS

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	.3L	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

i. Is the AA a known recreational or educational site? ☒ **Yes (Rate** ☐ **High (1.0)**, then proceed to 14L(ii) only] ☐ **No** [Proceed to 14L(iii)]

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

☐ **Yes** [Proceed to 14L (ii) and then 14L(iv).] ☒ **No** [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	☐ Low	☐ Moderate	☒ High
Public ownership	--	--	--
Private ownership	--	--	.1(L)

Comments: _____

FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.00	1	
B. MT Natural Heritage Program Species Habitat	Low	0.00	1	
C. General Wildlife Habitat	Low	0.20	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	Low	0.20	1	
F. Short and Long Term Surface Water Storage	Low	0.30	1	
G. Sediment/Nutrient/Toxicant Removal	Moderate	0.50	1	
H. Sediment/Shoreline Stabilization	NA		--	
I. Production Export/Food Chain Support	Low	0.20	1	
J. Groundwater Discharge/Recharge	High	1.00	1	
K. Uniqueness	Low	0.30	1	
L. Recreation/Education Potential	Low	0.10	1	
	Totals:	**2.80**	**10.00**	
	Percent of Total Possible Points:		**28%** (Actual / Possible) x 100 [rd to nearest whole #]	

Category I Wetland: (Must satisfy **one** of the following criteria. If not proceed to Category II.)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E(ii) is "yes"; **or**
- ☐ Percent of total Possible Points is > 80%.

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed to Category IV.)
- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish / Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of total possible points is > 65%.

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied.)

Category IV Wetland: (Criteria for Categories I or II are not satisfied **and** all of the following criteria are met; If not satisfied, proceed to Category III.)
- ☒ "Low" rating for Uniqueness; **and**
- ☒ "Low" rating for Production Export / Food Chain Support; **and**
- ☒ Percent of total possible points is < 30%.

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

☐ **I** ☐ **II** ☐ **III** ☒ **IV**

Appendix C

REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

	
Photo Point No. 1: View looking south along vegetation transect, upland slopes, excavated wetland & emergent wetlands in background.	Photo Point No. 2: View looking south towards excavated wetland and emergent wetlands.
	
Photo Point No. 3: View looking east, excavated wetland, adjacent to undisturbed emergent wetlands.	Photo Point No. 4: View looking north across the mitigation site. Western side of excavated wetland with aquatic bed and emergent wetland types, undisturbed wetland located in center.
	
Photo Point No. 5: View looking east, remnant backwater channel along southern edge of site boundary.	Photo Point No. 7: View looking east along backwater channel. Area of native shrub plantings with browse protection guards. Vegetation mostly dominated by weedy upland species.

Photo Point No. 8: View looking east, backwater channel; scouring & sediment deposition from high water flows during 2002 spring.

Photo Point No. 9: View looking west, towards excavated wetland. Upland community in foreground and excavated wetland in background.

Photo Point No. 9: View looking north across remnant pasture. Undisturbed upland consisting of mostly upland pasture grasses and weedy species. Heavy grazing alteration in the past.

Photo Point No. 9: View looking south, upland shrub community type consisting of hawthorne, American plum and cottonwood. Located on higher terrace along backwater channel.

Photo Point No. 10: View looking west; inlet to backwater channel on eastern side of mitigation site. Increased vegetation cover observed during 2003 monitoring. Area becoming dominated by mostly invasive upland species.

Photo Point No. 11: View looking northwest along the Flathead river banks. Increase in vegetation cover, area dominated by reed canarygrass and redtop.

Photo Point No. 12: View looking northwest along Flathead River. Area of excavation and grading work to remove historic berm along north boundary of site during 2002.

Photo Point No. 13: View looking west along backwater flood channel. Substrate of cobbles and gravels with increasing vegetation cover. Cottonwood sprouts observed during 2002 monitoring. Sprouts still abundant and developing into 1-2 ft seedlings.

Photo Point No. 6: Panoramic view looking north; area of upland community with weedy vegetation in foreground and excavated wetland in background. Deeper areas of the excavated wetland with sections of open water. Emergent wetland vegetation developing around fringe.

Photo Point No. 4: Panoramic view looking north across the mitigation site. Western side of excavated wetland, aquatic bed and emergent wetland types, undisturbed wetland located in center. Outlet to remnant backwater channel located on left side of photo. Transect located along western side of excavated wetland.

Hoskins Landing Mitigation Site
2003 Aerial Photograph

Appendix D

ORIGINAL SITE PLAN
SOIL SURVEY MAP AND DESCRIPTION

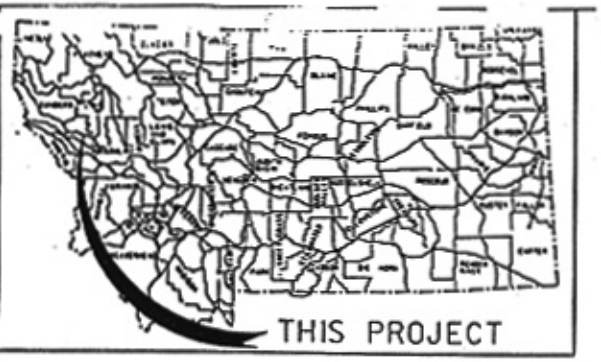
MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

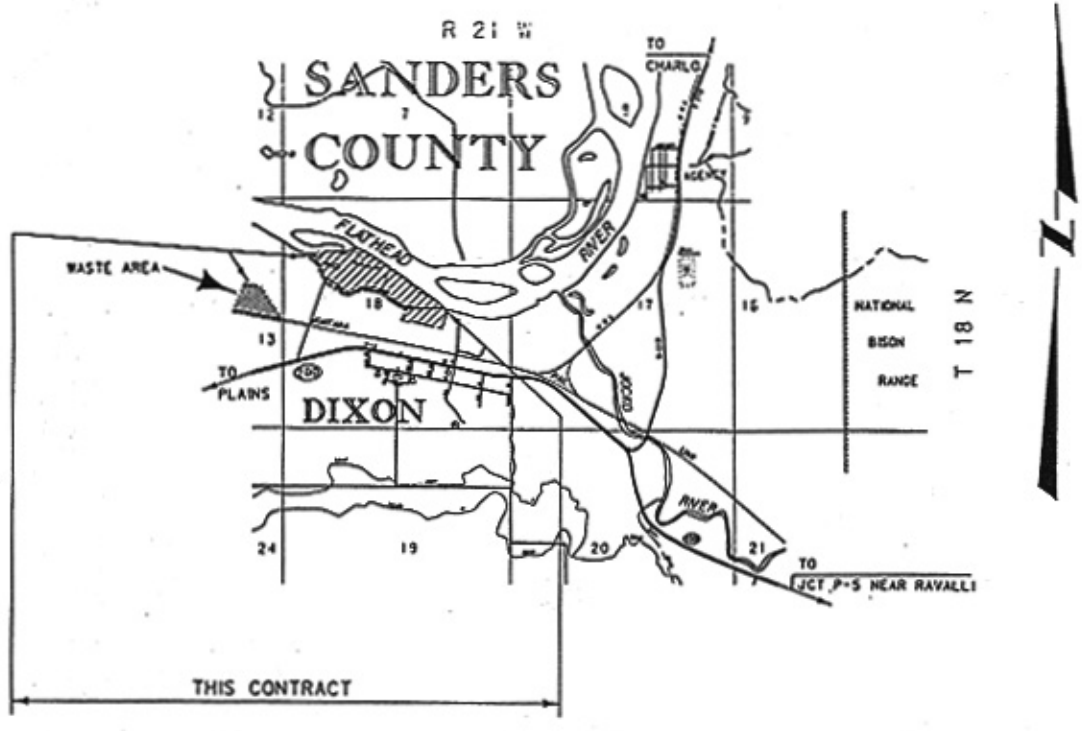
MONTANA DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPP 45(29)	1

FEDERAL AID PROJECT NO. STPP 45(29)
WETLAND
DIXON WETLAND MITIGATION
SANDERS COUNTY



SCALES AS NOTED ON PLANS
REDUCED PRINTS 1 /2 ORIGINAL SCALE



PRELIMINARY
FOR PLAN IN HAND ONLY

MONTANA DEPARTMENT OF TRANSPORTATION

APPROVED :

DAVID A. GALT
DIRECTOR OF TRANSPORTATION

BY

RECONSTRUCTION ENGINEER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED :

DIVISION ADMINISTRATOR — DATE

RELATED PROJECTS

ASSOCIATED PROJECT AGREEMENT NUMBERS

R/W & UC	
P.E.	STPP 45(29)

CONTROL NO. 0000

LAND & WATER D-1

STATE	PROJECT NUMBER	SHEET
MONTANA	STPP 45(29)1	2

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NOTES

CONSTRUCTION ACCESS

THE CONTRACTOR IS RESPONSIBLE FOR REVEGETATING ALL DISTURBED ACCESS AND STAGING AREAS.

WETLAND TOPSOIL

EXCAVATE WETLAND TOPSOIL FROM WITHIN CONSTRUCTION LIMIT AREAS AND STOCKPILE TOPSOIL IN THE AREAS DESIGNATED ON THE PLANS. PLACE TOPSOIL TO A MINIMUM DEPTH OF 100mm ON ALL DISTURBED AREAS.
FINISHED GRADE ELEVATIONS DO NOT INCLUDE TOPSOIL.

GRADING

PERFORM ALL EXCAVATION AND EMBANKMENTS BY METHODS DESCRIBED IN SECTION 203 OF THE STANDARD SPECIFICATIONS. ALL EXCAVATION INCLUDING MUCK EXCAVATION AND DISPOSAL OF EXCESS MATERIAL WILL BE PAID FOR AS "UNCLASSIFIED EXCAVATION". EXCAVATION OF SATURATED MATERIAL IS ANTICIPATED IN SOME AREAS, HOWEVER NO PAYMENT WILL BE MADE FOR MUCK EXCAVATION. DISPOSE OF EXCESS MATERIAL OFF SITE IN AREA SPECIFIED SOUTHWEST OF THE WETLAND SITE.
ROUND ALL SLOPES 10:1 AND STEEPER

SEEDING

SEED AREAS SHOWN ON THE PLANS AND OTHER AREAS DISTURBED DURING CONSTRUCTION. SEE SPECIAL PROVISIONS FOR SEED MIX TO BE USED ON EACH AREA.

FENCING

PERIMETER FENCING IS STANDARD HOT BARBED 5-WIRE FENCE WITH WOODEN POSTS (TYPE FSW1. PLACE PERIMETER FENCING 0.2 m OUTSIDE THE BOUNDARY DEFINED BY THE CERTIFICATE OF SURVEY (C.O.S. 20701. DO NOT FENCE THE NORTH BOUNDARY ADJACENT TO THE RIVER.

PRELIMINAR

LINEAR AND LEVEL DATA

CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
0+00.00	POT	23,419.1288	66,607.6708	LINE + C1
9+72.97	POT	23,049.3802	67,507.5916	LINE + C1
[illegible]	PCT	23,335.3275	[illegible]	LINE + C1N
[illegible]	PCT	23,437.8[illegible]	66,[illegible]	LINE + C1N
[illegible]	PCT	23,417.6[illegible]	66,843.9[illegible]	LINE + C1N
[illegible]	PCT	23,355.8[illegible]	66,907.[illegible]	LINE + C1N
3+[illegible]	POT	23,319.0218	66,957.3147	LINE + C1N
4+04.95	POT	23,[illegible].9620	67,186.0414	LINE + C1N
4+85.10	POT	23,247.8142	67,242.3900	LINE + C1N
4+[illegible].62	POT	23,164.0087	67,321.6587	LINE + C1N
8+51.31	POT	23,144.2415	67,355.9310	LINE + C1N
9+51.[illegible]	POT	23,051.7045	67,398.1406	LINE + C1N
10+54.05	PCT	23,049.3802	67,507.5916	LINE + C1N
1+00.00	POT	23,381.1264	66,700.1185	LINE + C1S
2+19.85	PCT	23,271.4341	66,716.1085	LINE + C1S
3+28.74	PCT	23,212.4[illegible]	66,817.7145	LINE + C1S
4+14.01	PCT	23,202.8054	66,902.0229	LINE + C1S
5+24.12	PCT	23,215.7634	67,012.1344	LINE + C1S
6+74.57	PCT	23,165.5146	67,149.7328	LINE + C1S
0+00.00	POT	23,041.2000	66,127.1600	WASTE AREA
[illegible]	PCT	22,957.7[illegible]	66,402.0200	WASTE AREA

BEARING SOURCE

THE BASIS OF BEARING N 69°10'00" E BETWEEN MDOH CONTROL CAPS STAMPED 108B AND 108C ESTABLISHED FOR THE DIXON - WEST PROJECT STPP 6-1(86)99.

LEVEL DATUM SOURCE

U.S.C.&G.S. BRONZE DISK (L373) ELEV. 782.48 ESTABLISHED THE ELEVATIONS FOR THE CONTROL TRAVERSE ON THE DIXON - WEST PROJECT STPP 6-1(86)99. CONTROL POINT 108B ON DIXON - WEST = CONTROL POINT 2 ON THIS PROJECT. ELEVATION = 784.253

BENCH MARKS *

LOCATION	DESCRIPTION	ELEVATION
9.0 m S. OF CL.	BRONZE DISK 1.6 km S.E. OF [illegible] (USC&GS L373)	782.48

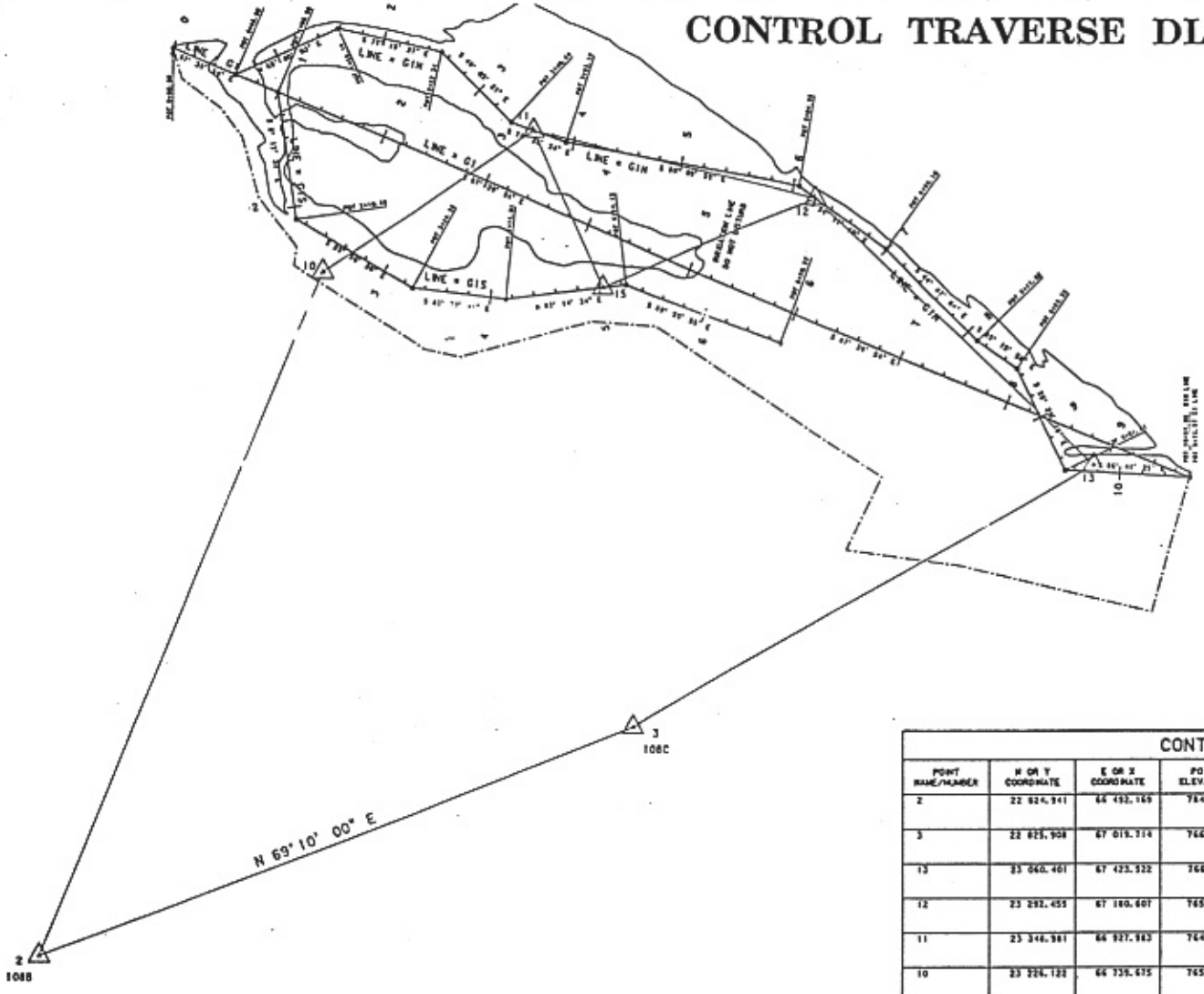
LEVEL DATUM SOURCE *

LEVEL DATUM IS BASED ON U.S.C. & G.S. BENCH MARKS WHICH ARE BASED ON THE SEA-LEVEL DATUM OF 1929 THROUGH THE PACIFIC NORTHWEST SUPPLEMENTARY ADJUSTMENT OF 1947.

PRELIMINARY

CONTROL TRAVERSE DIAGRAM

STATE	PROJECT NUMBER	SHEET
MONTANA	STPP 4512(9)	4

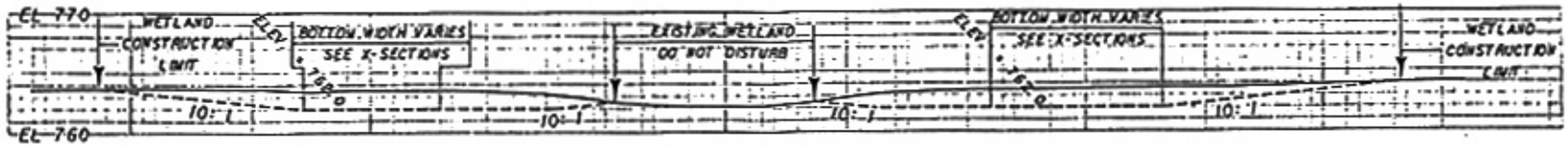


CONTROL TRAVERSE ABSTRACT

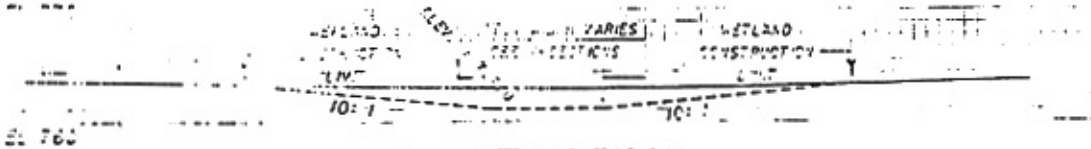
POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
2	22 824.941	66 432.169	764.253	16 mm X 762 mm L.P. w/ALUM CAP • 50 mm 1088 ON BLUFF 15.2 m + ABOVE ROAD, 1.9 m N.W. OF FX LINE, 21 m N.E. OF FX COR.
3	22 825.908	67 019.114	766.218	16 mm X 762 mm L.P. w/ALUM CAP • 50 mm 108C 2 m S.W. OF R/R FX, 10.8 m N.E. OF TEL. POLE, 11.6 m S.W. CENTERLINE B.N. RAILROAD
13	23 060.401	67 423.522	766.551	16 mm X 762 mm L.P. w/25mm YELLOW PLASTIC CAP
12	23 292.455	67 180.607	765.266	16 mm X 762 mm L.P. w/25mm YELLOW PLASTIC CAP
11	23 348.981	66 927.983	764.725	16 mm X 762 mm L.P. w/25mm YELLOW PLASTIC CAP
10	23 226.122	66 735.675	765.846	16 mm X 762 mm L.P. w/25mm YELLOW PLASTIC CAP
15	23 213.133	66 991.185	764.752	16 mm X 762 mm L.P. w/25mm YELLOW PLASTIC CAP
139	22 905.475	67 430.571	765.850	SET 600 MAIL BETWEEN GRAVEL ACCESS ROAD FENCE AROUND STORM WATER LAGOON 25m NORTH OF THE SE FENCE CORNER

PRELIMINARY

TYPICAL SECTIONS

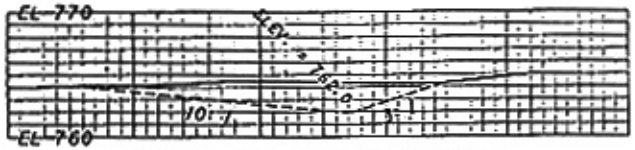


WETLAND TYPICAL
STATION 1+20 TO 2+70
LINE = G1

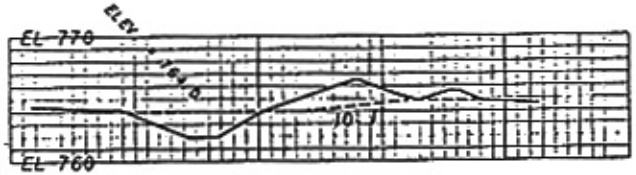


WETLAND TYPICAL
STATION 2+40 TO 5+00
LINE = G1

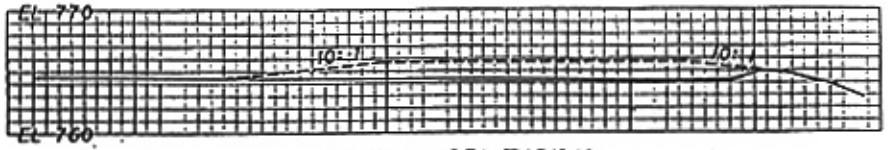
INLET CHANNEL DAM REMOVAL TYPICAL
STATION 9+35
LINE = G1N



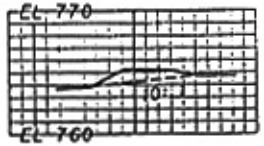
OUTLET DAM REMOVAL TYPICAL
STATION 2+15
LINE = G1S



INLET CHANNEL FILL AND BERM REMOVAL TYPICAL
STATION 9+60 TO 10+40
LINE = G1N



UPLAND AREA TYPICAL
STATION 6+20 TO 7+10
STATION 7+20 TO 8+00
LINE = G1



BERM REMOVAL TYPICAL
STATION 2+50 TO 9+25 LINE = G1N
STATION 1+60 TO 5+90 LINE = G1S

PRELIMINAR

LAND & WATER D-5

SUMMARY

GRADING

STATION FROM	STATION TO	cubic meters EXCAVATION	cubic meters EMB. *	cubic meters TOPSOIL	cubic meters EXCESS	cubic meters WASTE AREA	REMARKS
1+00.00	8+16.00	33 356	6 813	2 765	23 576		CL LINE
1+25.00	10+00.00	3 893	879	933	3 493		CLN LINE
		3 729	0	543	3		CLS LINE
							TOPSOIL SALVAGE WASTE AREA
8+16.00	9+48.00					30 091	WASTE AREA
TOTAL		41 631	* 6 896	* 7 543	* 30 192	* 30 091	

* FOR INFORMATION ONLY

IRRIGATION STRUCTURES

STATION	each	REMOVE IRRIGATION STRUCTURE	each	REMARKS
9+37.00		1		CLN LEFT
TOTAL		1		

TOPSOIL & SEEDING

STATION FROM	STATION TO	cubic meters TOPSOIL SALVAGING & PLACING	hectares SEED NO. 1			hectares FERTILIZER NO. 1		CONDITION SEEDBED		REMARKS
1+00.00	8+16.00	2 765	2.68			2.68		2.68		CL LINE
1+25.00	10+00.00	933	0.99			0.99		0.99		CLN LINE
1+00.00	3+25.00	360	0.55			0.55		0.55		CLS LINE
8+00.00	9+48.00	3 213	2.29			2.29		2.29		WASTE AREA
TOTAL		7 543	7.5			7.5		7.5		

ADD 2; 3 ½ WASTE AREA

PLUG WATER WELL

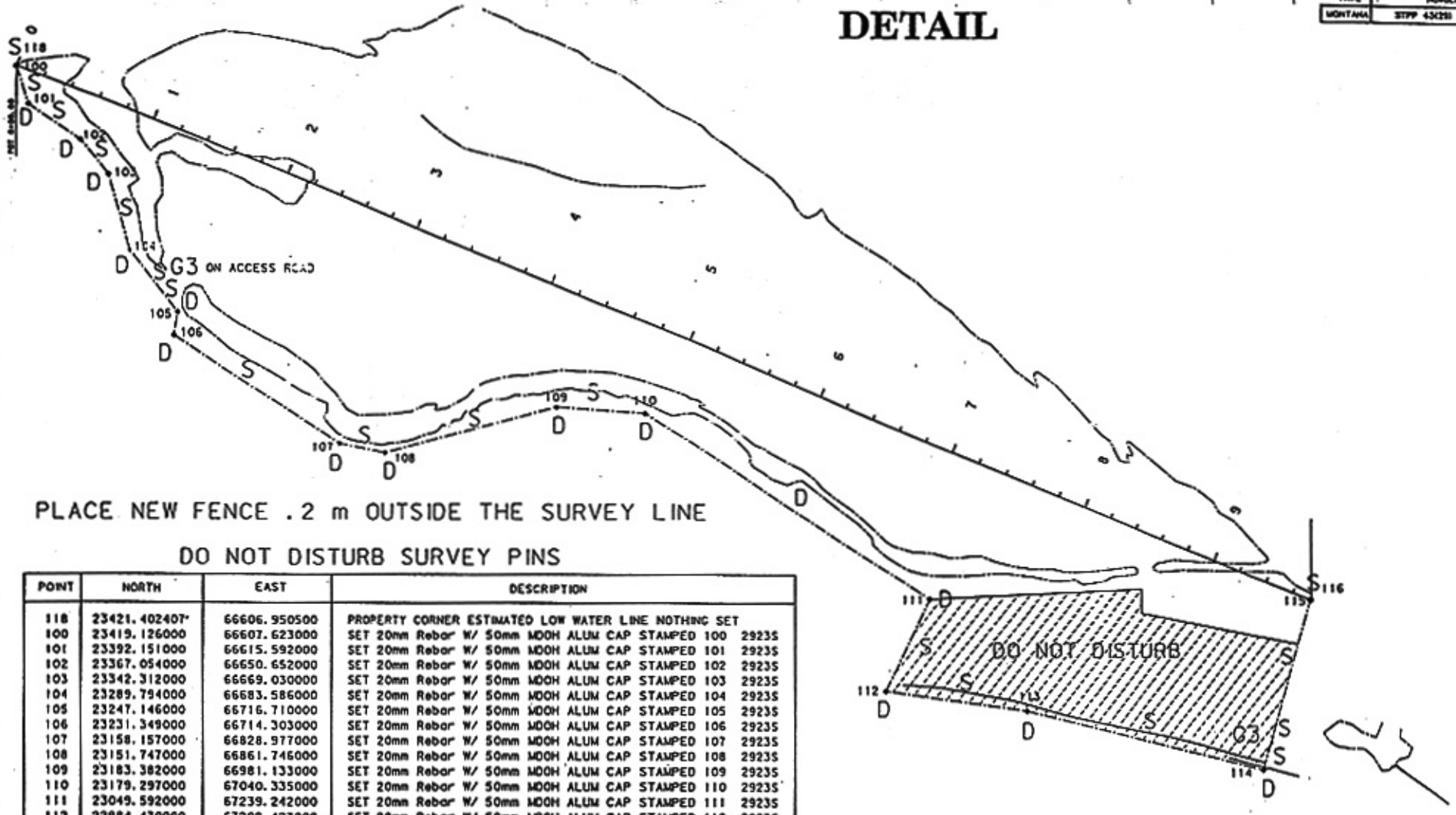
STATION	lump sum PLUG WATER WELLS	REMARKS
1+00	0.5	1m RIGHT OF LINE CL
4+00	0.5	1m RIGHT OF LINE CL
TOTAL	1.0	

FENCING

STATION FROM	STATION TO	meters REMOVE FENCE	meters FARM FENCE		each FARM FENCE PANEL SINGLE	each FARM FENCE PANEL DOUBLE	meters FARM GATE TYPE 63	REMARKS
0+00	3+73			1297.86	10	15	9.76	RIGHT OF CL LINE
1+18	3+73	1055.44						RIGHT OF CL LINE
TOTAL		1055.44		1297.86	10	15	9.76	

PRELIMINARY

DETAIL



PLACE NEW FENCE .2 m OUTSIDE THE SURVEY LINE

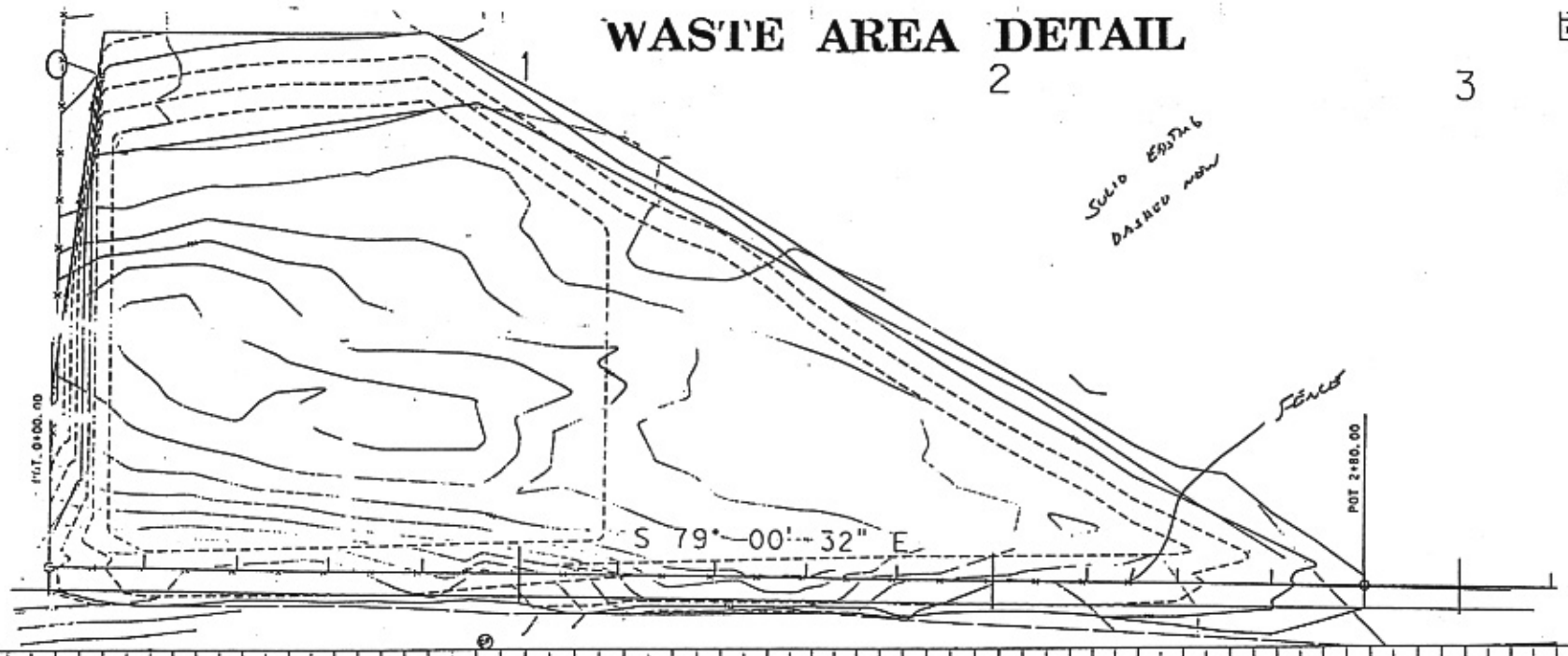
DO NOT DISTURB SURVEY PINS

POINT	NORTH	EAST	DESCRIPTION
118	23421.402407	66606.950500	PROPERTY CORNER ESTIMATED LOW WATER LINE NOTHING SET
100	23419.126000	66607.623000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 100 2923S
101	23392.151000	66615.592000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 101 2923S
102	23367.054000	66650.652000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 102 2923S
103	23342.312000	66669.030000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 103 2923S
104	23289.794000	66683.586000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 104 2923S
105	23247.146000	66716.710000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 105 2923S
106	23231.349000	66714.303000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 106 2923S
107	23158.157000	66828.977000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 107 2923S
108	23151.747000	66861.746000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 108 2923S
109	23183.382000	66981.133000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 109 2923S
110	23179.297000	67040.335000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 110 2923S
111	23049.592000	67239.242000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 111 2923S
112	22984.430000	67208.423000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 112 2923S
113	22970.254000	67306.505000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 113 2923S
114	22928.750000	67475.036000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 114 2923S
115	23049.382000	67507.593000	SET 20mm Rebar W/ 50mm MDOH ALUM CAP STAMPED 115 2923S
116	23053.606339	67508.733094	PROPERTY CORNER ESTIMATED LOW WATER LINE NOTHING SET

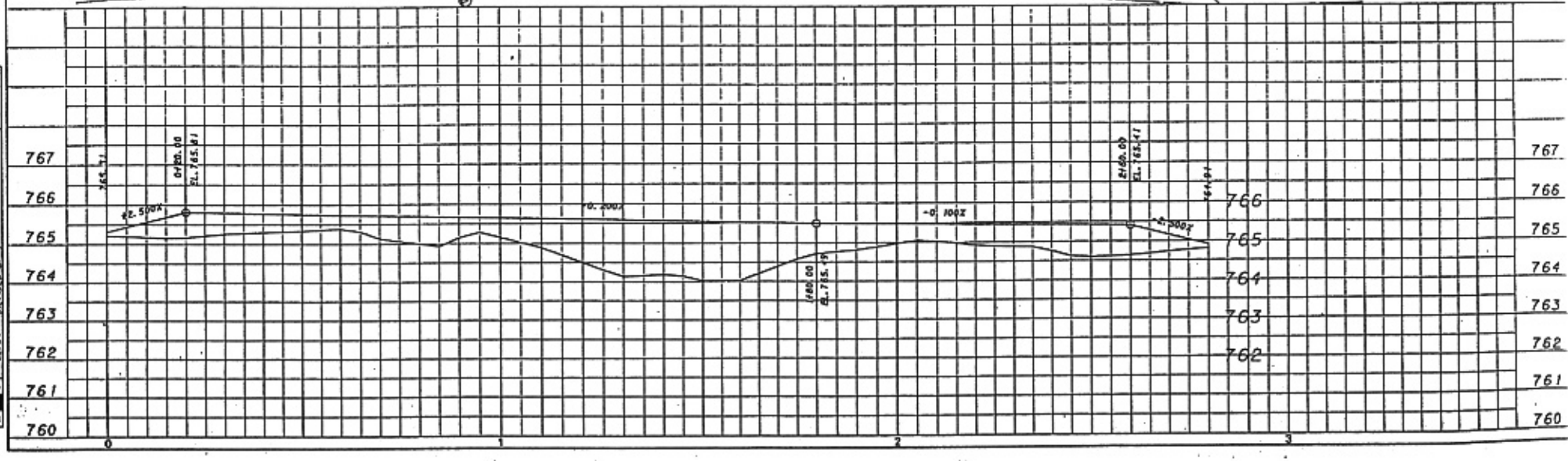
FENCING

PRELIMINARY

WASTE AREA DETAIL



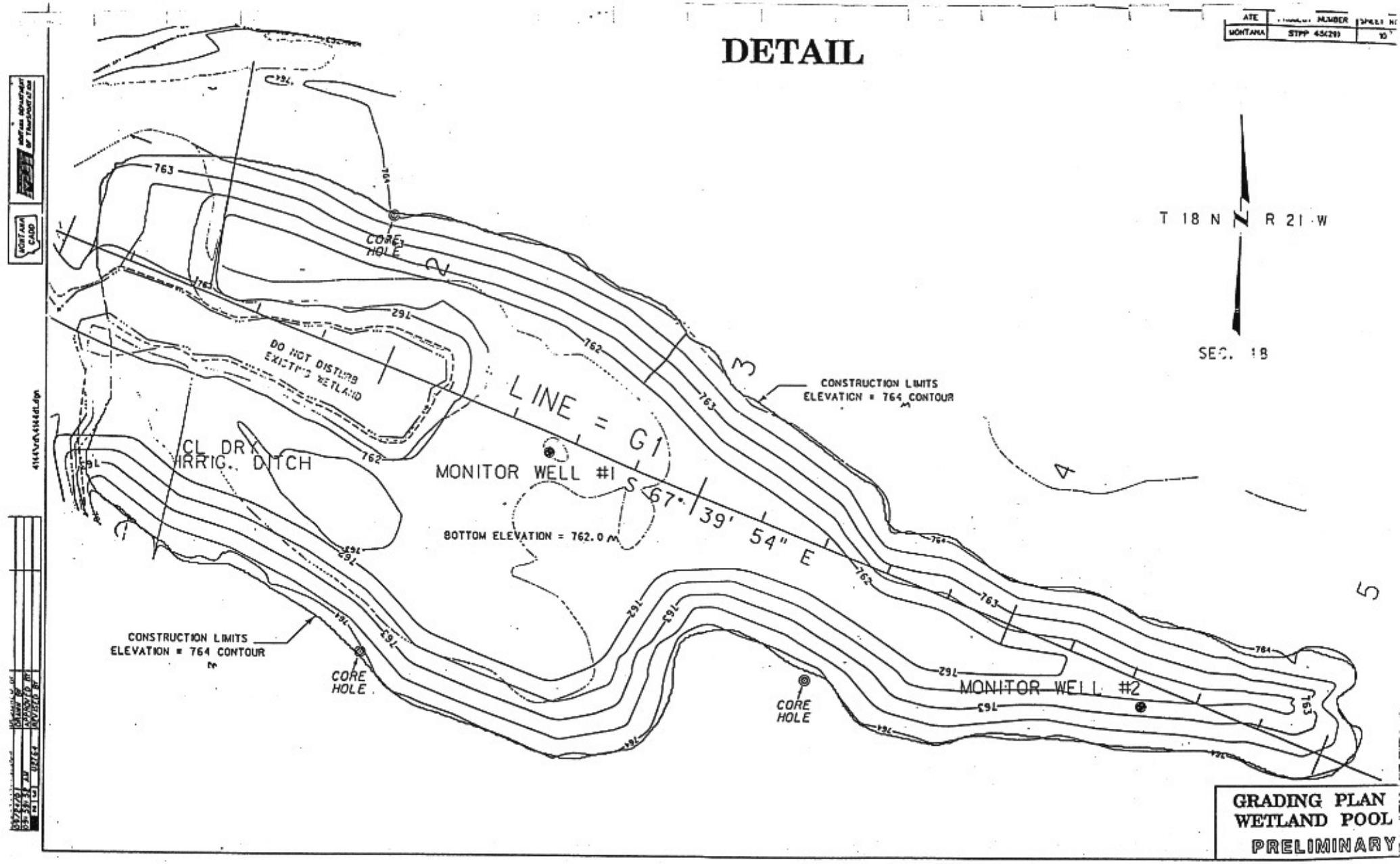
PRELIMINARY



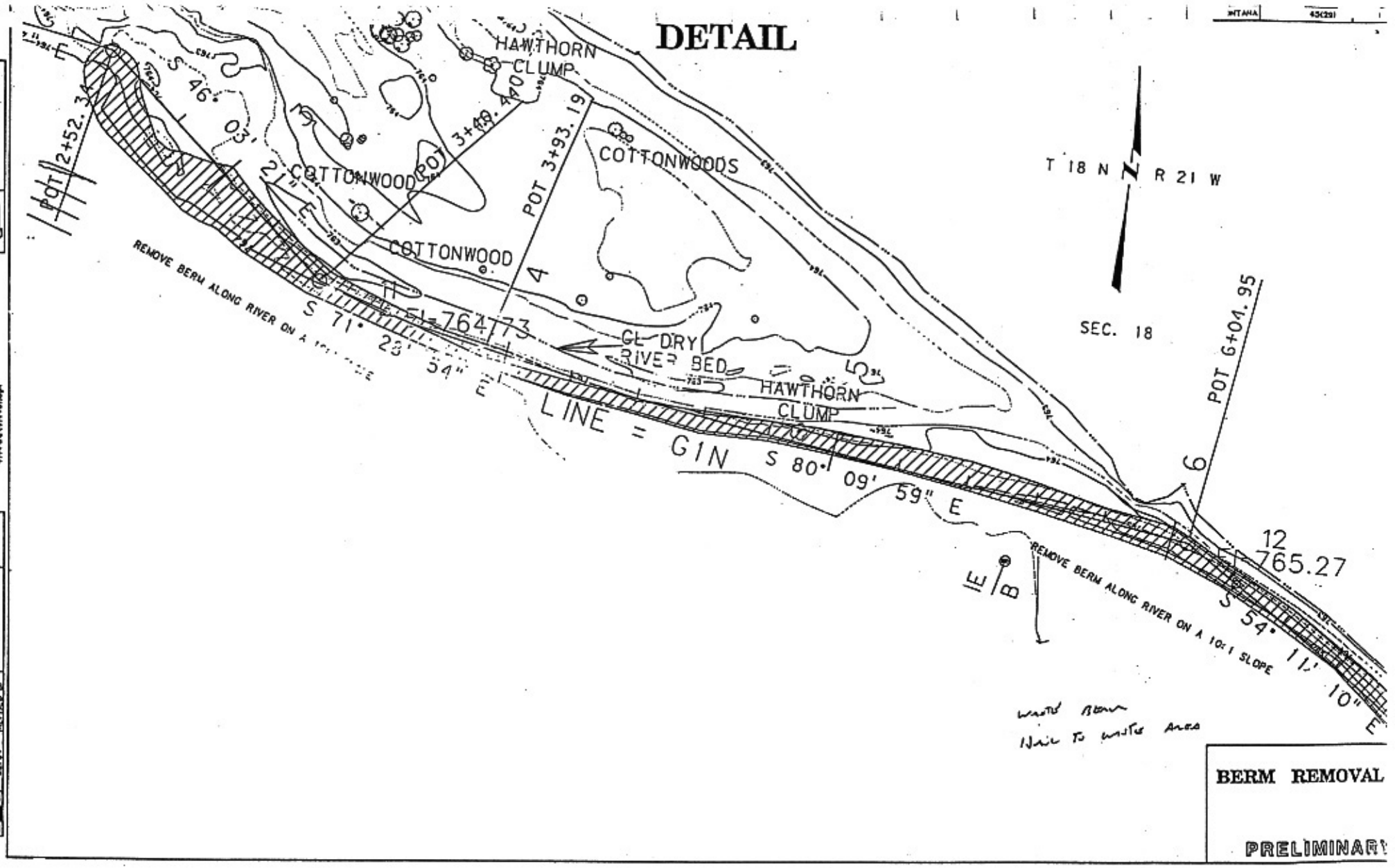
SITE PLAN

PRELIMINARY

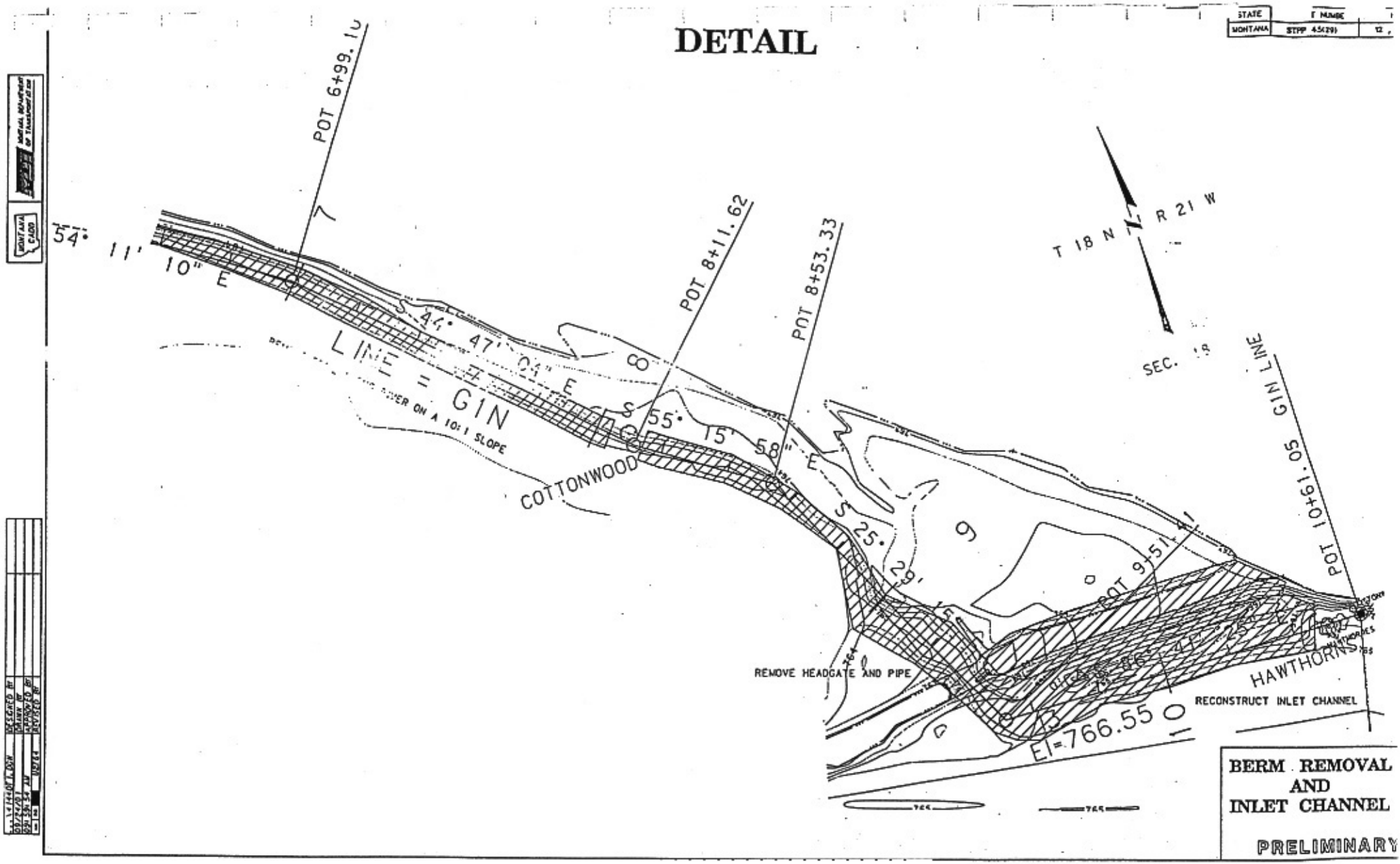
DETAIL



GRADING PLAN
WETLAND POOL
PRELIMINARY

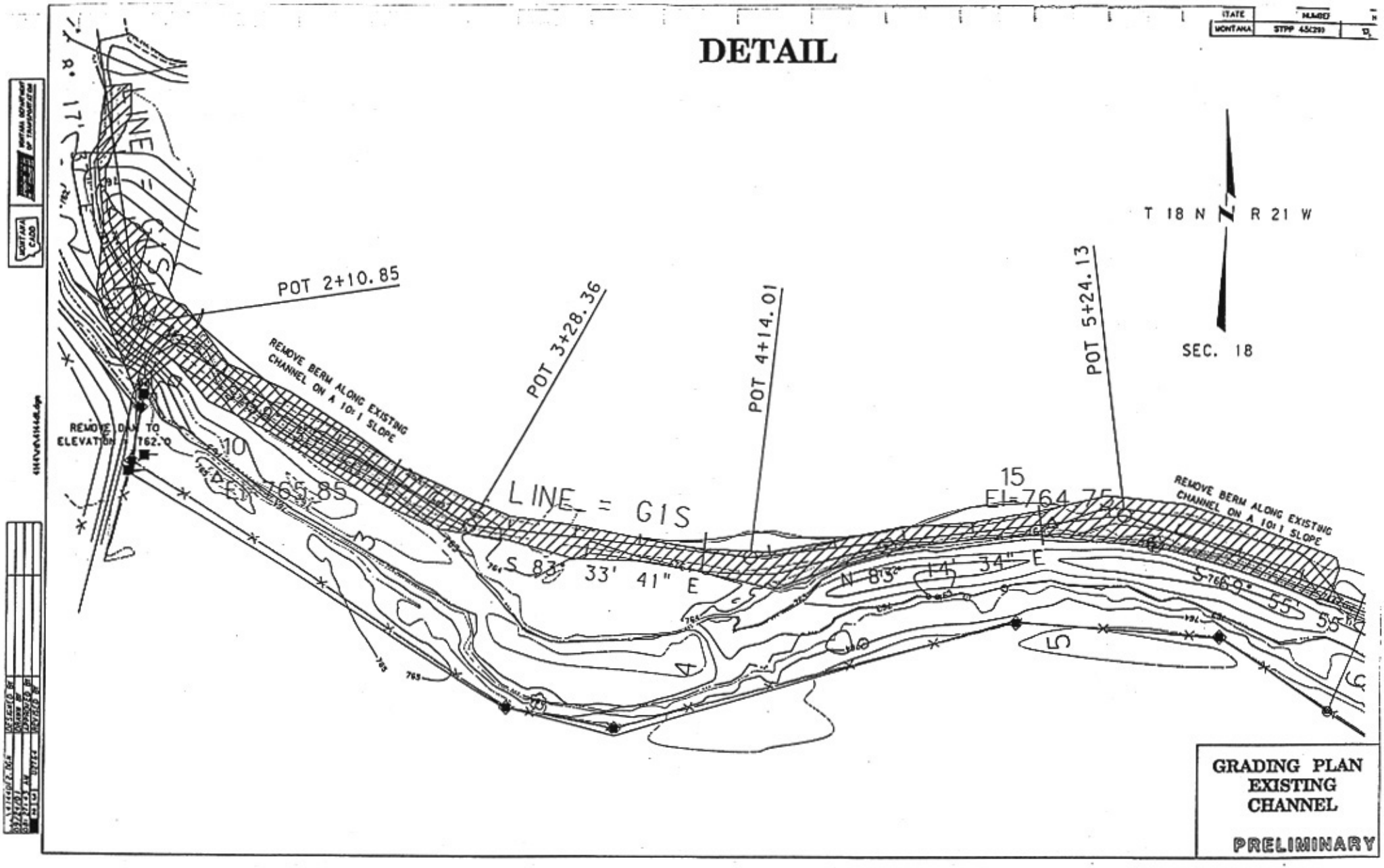

DETAIL
HAWTHORN CLUMP
COTTONWOODS
COTTONWOOD
POT 2+52.34
POT 3+49.40
POT 3+93.19
POT 6+04.95
S 46° 03' 21" E
T 18 N R 21 W
SEC. 18
REMOVE BERM ALONG RIVER ON A 10:1 SLOPE
S 71° 23' 54" E
LINE = G1N
S 80° 09' 59" E
CL DRY RIVER BED
HAWTHORN CLUMP
S 54° 11' 10" E
765.27
BERM REMOVAL
PRELIMINARY
LAND & WATER D-11

DETAIL



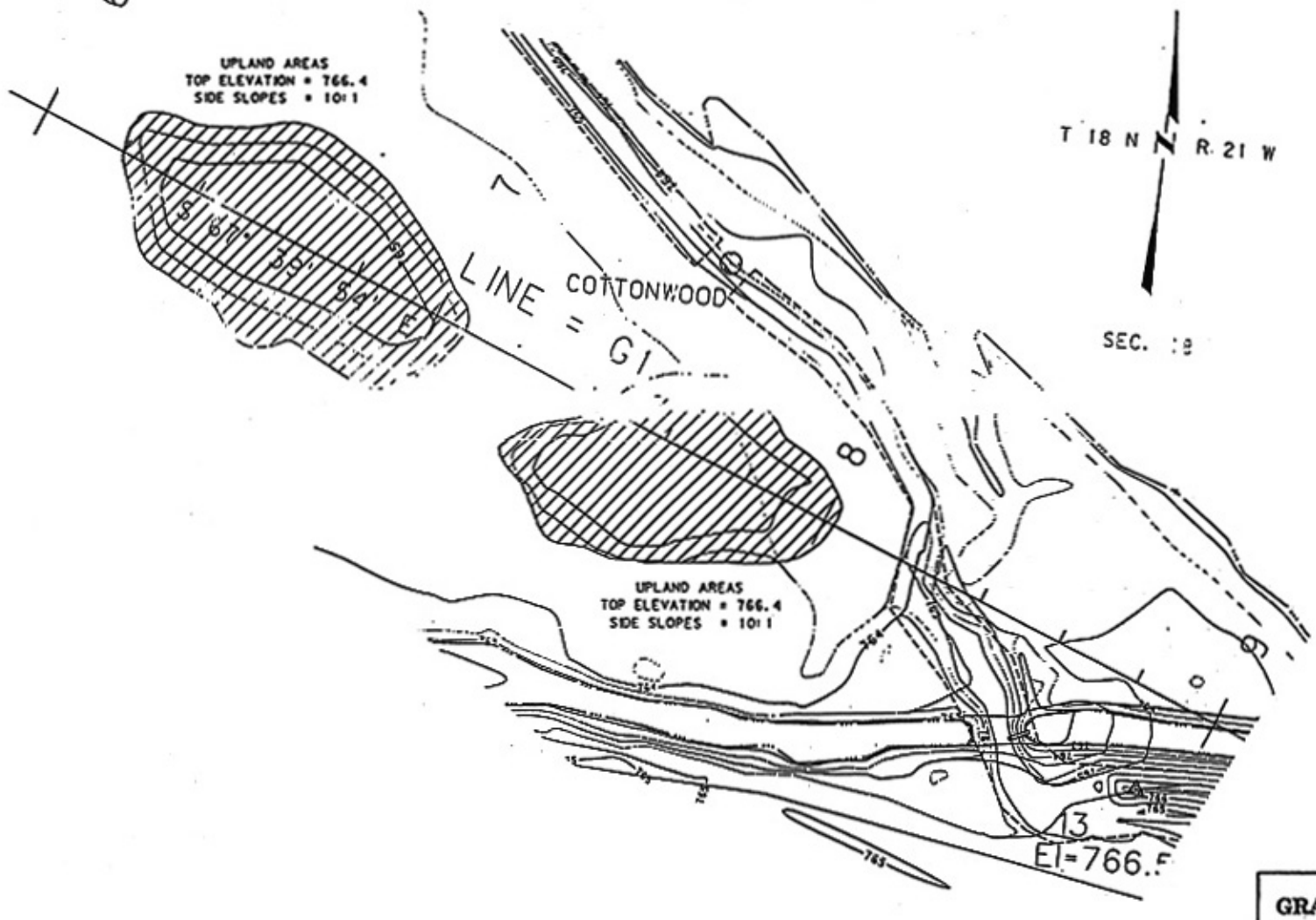
LAND & WATER D-12

DETAIL


POT 2+10.85
POT 3+28.36
POT 4+14.01
POT 5+24.13
REMOVE BERM ALONG EXISTING CHANNEL ON A 10:1 SLOPE
REMOVE DAM TO ELEVATION = 762.0
LINE = GIS
S 83° 33' 41" E
N 83° 14' 34" E
T 18 N
R 21 W
SEC. 18
GRADING PLAN
EXISTING
CHANNEL
PRELIMINARY

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPP 6302(9)	14

DETAIL



GRADING PLAN
UPLAND AREAS

PRELIMINARY

LAND & WATER D.14

Soils Map

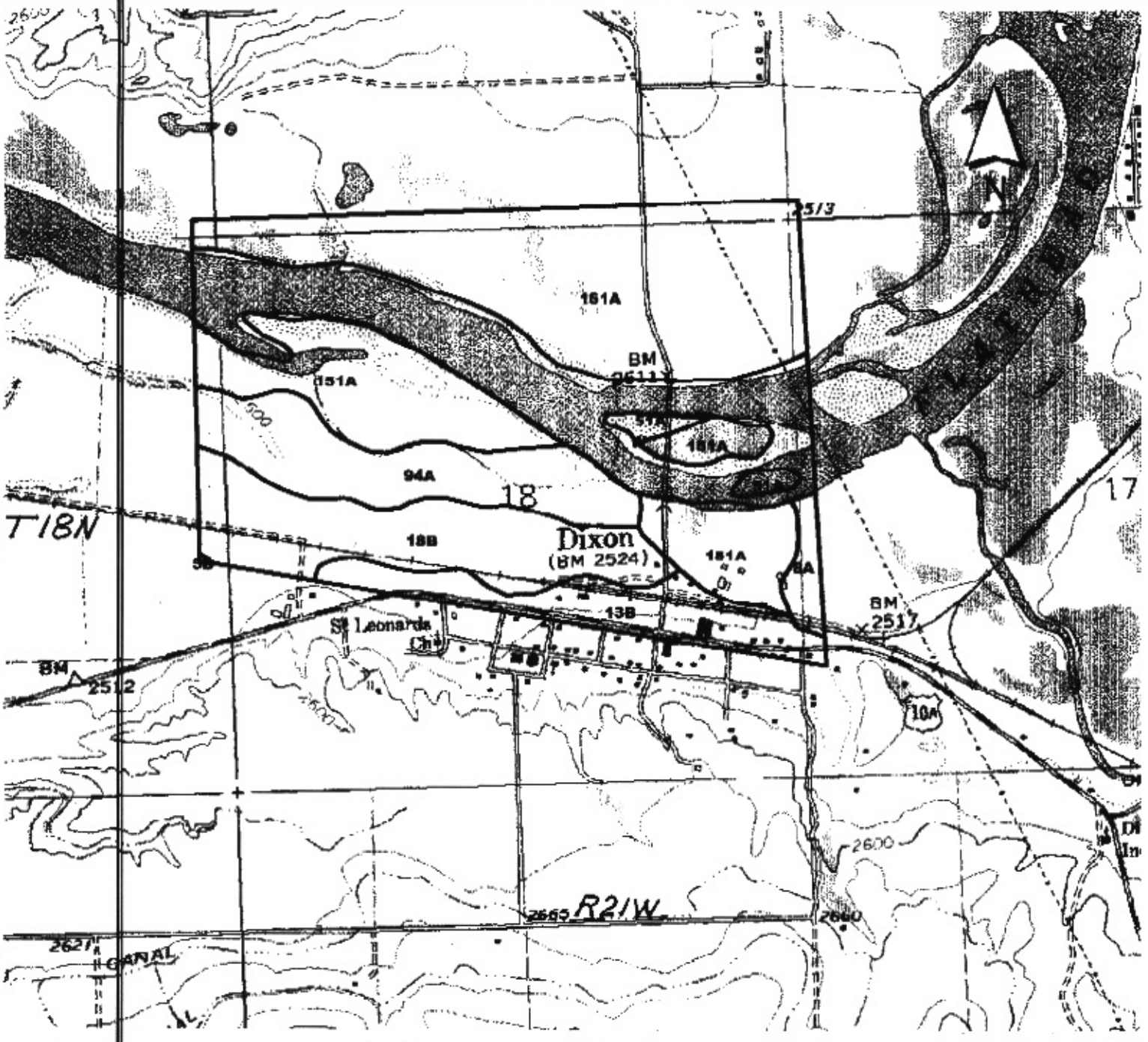
To: Greg Howard
From: Don Feist

Land and Water Consulting

ESCD

Date: 11/27/2002

Plains Service Center
NRCS
Don J. Feist



Legend

2000 0 2000 4000 Feet

Scale 1:15840 (4" = 1 mile)

USDA

LAND & WATER D-15

Non-Technical Descriptions

Sanders And Parts Of Lincoln And Flathead Counties, Montana

Only those map units that have entries for the selected non-technical description categories are included in this report.

Map Unit: 8A - Hewolf gravelly loam, 0 to 2 percent slopes

Description Category: SOI

HEWOLF GRAVELLY LOAM IS MORE THAN 60 INCHES DEEP WITH A DARK COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: STREAM TERRACES; FROST FREE DAYS: 90-110; AVAILABLE WATER CAPACITY IN INCHES: 2.1-3.4; MAJOR CONSIDERATIONS: FLOODING, WATER TABLE; LANDUSE MAY INCLUDE: RANGELAND.

Map Unit: 13B - Round butte silty clay loam, 2 to 8 percent slopes

Description Category: SOI

ROUND BUTTE SILTY CLAY LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 2-8 PERCENT. LANDFORM: LAKE PLAINS OR TERRACES; FROST FREE DAYS: 105-125; AVAILABLE WATER CAPACITY IN INCHES: 4.8-6.7; MAJOR CONSIDERATIONS: SODICITY; LANDUSE MAY INCLUDE: RANGELAND.

Map Unit: 18B - Dryfork silt loam, 0 to 4 percent slopes

Description Category: SOI

DRYFORK SILT LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-4 PERCENT. LANDFORM: LAKE PLAINS OR TERRACES; FROST FREE DAYS: 105-125; AVAILABLE WATER CAPACITY IN INCHES: 9.1-11.5; MAJOR CONSIDERATIONS: SODICITY; LANDUSE MAY INCLUDE: CROPLAND, RANGELAND.

Map Unit: 51A - Horseplains-riverwash complex, 0 to 2 percent slopes

Description Category: SOI

RIVERWASH (NO DATA)

Description Category: SOI

HORSEPLAINS FINE SANDY LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: FLOOD PLAINS; FROST FREE DAYS: 105-120; AVAILABLE WATER CAPACITY IN INCHES: 4.0-5.7; MAJOR CONSIDERATIONS: FLOODING; LANDUSE MAY INCLUDE: CROPLAND, WOODLAND.

Map Unit: 94A - Revais silt loam, 0 to 2 percent slopes

Description Category: SOI

REVAIS SILT LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: FLOOD PLAINS; FROST FREE DAYS: 105-125; AVAILABLE WATER CAPACITY IN INCHES: 9.1-11.5; MAJOR CONSIDERATIONS: FLOODING; LANDUSE MAY INCLUDE: CROPLAND, WOODLAND.

Non-Technical Descriptions - Continued

Sanders And Parts Of Lincoln And Flathead Counties, Montana

Map Unit: 151A - Revais silt loam, gravelly substratum, 0 to 2 percent slopes

Description Category: SOI

REVAIS SILT LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: FLOOD PLAINS; FROST FREE DAYS: 95-115; AVAILABLE WATER CAPACITY IN INCHES: 6.7-9.8; MAJOR CONSIDERATIONS: FLOODING; LANDUSE MAY INCLUDE: CROPLAND, WOODLAND.

Appendix E

BIRD SURVEY PROTOCOL
GPS PROTOCOL

MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

BIRD SURVEY PROTOCOL

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

Species Use within the Mitigation Wetland: Survey Method

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

Sites that can be circumambulated or walked throughout.

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

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

Sites that cannot be circumambulated.

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

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

Species Use within the Mitigation Wetland: Data Recording

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

1. Bird Species List

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

2. Bird Density

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

3. Bird Behavior

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

4. Bird Species Habitat Use

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

GPS Mapping and Aerial Photo Referencing Procedure

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

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

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

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

Appendix F

MACROINVERTEBRATE SAMPLING PROTOCOL AND DATA

MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

AQUATIC INVERTEBRATE SAMPLING PROTOCOL

Equipment List

- D-frame sampling net with 1 mm mesh. Wildco is a good source of these.
- Spare net.
- 1-liter plastic sample jars, wide-mouth. VWR has these: catalog #36319-707.
- 95% ethanol: Northwest Scientific in Billings carries this.

All these other things are generally available at hardware or sporting goods stores. Make the labels on an ink jet printer preferably.

- hip waders.
- pre-printed sample labels (printed on Rite-in-the-Rain or other coated paper, two labels per sample).
- pencil.
- plastic pail (3 or 5 gallon).
- large tea strainer or framed screen.
- towel.
- tape for affixing label to jar.
- cooler with ice for sample storage.

Site Selection

Select the sampling site with these considerations in mind:

- Select a site accessible with hip waders. If substrates are too soft, lay a wide board down to walk on.
- Determine a location that is representative of the overall condition of the wetland.

Sampling

Wetland invertebrates inhabit the substrate, the water column, the stems and leaves of aquatic vegetation, and the water surface. Your goal is to sweep the collecting net through each of these habitat types, and then to combine the resulting samples into the 1-liter sample jar.

Dip out about a gallon of water into the pail. Pour about a cup of ethanol into the sample jar. Fill out the top half of the sample labels, using pencil, since ink will dissolve in the ethanol.

Ideally, you can sample a swath of water column from near-shore outward to a depth of approximately 3 feet with a long sweep of the net, keeping the net at about half the depth of the water throughout the sweep. Sweep the water surface as well. Pull the net through a vegetated area, beneath the water surface, for at least a meter of distance.

Sample the substrate by pulling the net along the bottom, bumping it against the substrate several times as you pull.

This step is optional, but it gives you a chance to <u>see</u> that you've collected some invertebrates. Rinse the net out into the bucket, and look for insects, crustaceans, etc. If

necessary, repeat the sampling process in a nearby location, and add the net contents to the bucket. Remember to sample all four environments.

Sieve the contents of the bucket through the straining device and pour or carefully scrape the contents of the strainer into the sample jar.

If you skip the bucket-and-sieve steps, simply lift handfuls of material out of the sampling net into the jars. In either case, please include some muck or mud and some vegetation in the jar. Often, you will have collected a large amount of vegetable material. If this is the case, lift out handfuls of material from the sieve into the jar, until the jar is about half full. Please limit material you include in the sample, so that there is only a single jar for each sample.

Top off the sample jar with enough ethanol to cover all the material in the jar. Leave as little headroom as possible.

It is not necessary to sample habitats in any specified order. Keep in mind that disturbing the habitats prior to sampling will chase off the animals you are trying to capture.

Complete the sample labels. Place one label inside the sample jar and tape the other label securely to the outside of the jar. Dry the jar before attaching the outer label if necessary. In some situations, it may be necessary to collect more than one sample at a site. If you take multiple samples from the same site, clearly indicate this by using individual sample numbers, along with the total number of samples collected at the site (e.g. Sample #3 of 5 total samples).

Photograph the sampled site.

Sample Handling/Shipping

- In the field, keep collected samples cool by storing them in a cooler. Only a small amount of ice is necessary.
- Inventory all samples, preparing a list of all sites and enumerating all samples, before shipping or delivering to the laboratory.
- Deliver samples to Rhithron.

METHODS

Among other monitoring activities, aquatic invertebrate assemblages were collected at a number of mitigation wetlands throughout Montana. This report summarizes data generated from three years of collection.

The method employed to assess these wetlands is based on constructing an index using a battery of 12 bioassessment metrics or attributes (**Table 1**) tested and recommended by Stribling et al. (1995) in a report to the Montana Department of Health and Environmental Science. In that study, it was determined that some of the metrics were of limited use in some geographic regions, and for some wetland types. Despite that finding, all 12 metrics are used in this evaluation of mitigated wetlands, since detailed geographic information and wetland classifications were unavailable.

Scoring criteria for metrics were developed by generally following the tactic used by Stribling et al. Boxplots were generated and distributions, ranges, and quartiles for each metric were examined. All sites were used except Camp Creek, which was sampled in 2002 and 2003. The fauna at that site was different from that of the other sites, and suggested montane stream conditions rather than wetland conditions. The Camp Creek site was assessed using the tested metric battery developed for montane streams of Western Montana (Bollman 1998). For the wetlands, "optimal" scores were generally those that fell above the 75th percentile (for those metrics that decrease in value in response to stress) or below the 25th percentile (for metrics that respond to stress by an increase in value) of all scores. Additional scoring ranges were established by bisecting the range below the 75th percentile for decreasing scores (or above the 25th percentile for increasing scores) into "sub-optimal" and "poor" assessment categories. A score of 5, 3, or 1 was assigned to optimal, sub-optimal, and poor metric performance, respectively. In this way, metric values were translated into normalized metric scores, and scores for all metrics were summed to produce a total bioassessment score. Total bioassessment scores were classified according to a similar process, using the ranges and distributions of total scores for all sites studied.

The purpose of constructing an index from biological attributes or metrics is to provide a means of integrating information to facilitate the determination of whether management action is needed. The nature of the action needed is not determined solely by the index score, however, but by consideration of an analysis of the component metrics, the taxonomic composition of the assemblages and other issues. The diagnostic functions of the metrics and taxonomic data need more study; our understanding of the interrelationships of natural environmental factors and anthropogenic disturbances are tentative. Thus, the further interpretive remarks accompanying the raw taxonomic and metric data are offered cautiously.

Sample Processing

Aquatic invertebrate samples were collected at mitigation wetland sites in the summer months of 2001, 2002, and 2003 by personnel of Wetlands West, Inc. and/or Land & Water Consulting, Inc. Sampling procedures utilized were based on the protocols developed by the Montana Department of Environmental Quality (MDEQ).

Sampling consisted of D-frame net sweeps through emergent vegetation (when present), the water column, over the water surface, and included disturbing and scraping substrates at each sampled sites. Samples were preserved in ethanol at each wetland site and subsequently delivered to Rhithron Associates, Inc. for processing, taxonomic determinations, and data analysis.

At Rhithron's laboratory, Caton subsamplers and stereomicroscopes with 10X magnification were used to randomly select a minimum of 200 organisms, when possible, from each sample. In some cases, the entire sample contained fewer than 200 organisms; in these cases, all organisms from the sample were taken. Taxa were identified in general accordance with the taxonomic resolution standards set out in the MDEQ Standard Operating Procedures for Sampling and Sample Analysis (Bukantis 1998). Ten percent of samples were re-identified by a second taxonomist for quality assurance purposes. The identified samples have been archived at Rhithron's laboratory. Taxonomic data

and organism counts were entered into an Excel 2000 spreadsheet, and metrics were calculated and scored using spreadsheet formulae.

Bioassessment Metrics

An index based on the performance of 12 metrics was constructed, as described above. **Table 1** lists those metrics, describes their calculation and the expected response of each to increased degradation or impairment of the wetland.

In addition to the summed scores of each metric and the associated impairment classification described above, each individual metric informs the bioassessment to some degree. The four richness metrics (Total taxa, POET, Chironomidae taxa, and Crustacea taxa + Mollusca taxa) can be interpreted to express habitat complexity as well as water quality. Complex, diverse habitats consist of variable substrates, emergent vegetation, variable water depths and other factors, and are potential features of long-established stable wetlands with minimal human disturbance. In the study conducted by Stribling et al. (1995), all four richness metrics were found to be significantly associated with water quality parameters including conductance, salinity, and total dissolved solids.

Four composition metrics (%Chironomidae, %Orthocladiinae of Chironomidae, %Crustacea + %Mollusca, and Amphipoda) measure the relative contributions of certain taxonomic groups that may have significant responses to habitat and/or water quality impacts. For example, amphipods have been demonstrated to increase in abundance in alkaline conditions. Short-lived, relatively mobile taxa such as chironomids dominate ephemeral environments; any are hemoglobin-bearers capable of tolerating de-oxygenated conditions.

Two tolerance metrics (the Hilsenhoff Biotic Index and %Dominant taxon) were included in the bioassessment battery. The HBI indicates the overall invertebrate assemblage tolerance to nutrient enrichment, warm water, and/or low dissolved oxygen conditions. The percent abundance of the dominant taxon has been demonstrated to be strongly associated with pH, conductance, salinity, total organic carbon, and total dissolved solids.

Two trophic measures (%Collector-gatherers and %Filterers) may be helpful in expressing functional integrity of the invertebrate assemblage, which can be impacted by poor water quality or habitat degradation. High proportions of filtering organisms suggest nutrient and/or organic enrichment, while abundant collectors suggest more positive functional conditions and well-developed wetland morphology. These organisms graze periphyton growing on stable surfaces such as macrophytes.

RESULTS

In 2001, 29 sites were sampled statewide. Nineteen of these sites were revisited in 2002, and 13 new sites were sampled. In 2003, 17 sites that had been visited in both 2001 and 2002 were re-sampled, and 11 sites sampled for the first time in 2001 were re-visited. In addition, 2 new sites were sampled. Thus, the 2003 database contains records for 90 sampling events at 44 unique sites. **Table 2** summarizes sites and sampling dates.

Metric scoring criteria were re-developed each year as new data was added. For 2003, 88 records were utilized. Because of the addition of data, scoring criteria changed for several metrics in 2003; thus, biotic condition classifications assigned in 2002 for some sites also changed. However, ranges of individual metrics, as well as median metric values remained remarkably consistent in each of the three years.

Table 1. Aquatic invertebrate metrics employed in the MTDT mitigation wetland monitoring study, 2001- 2003.

Metric	Metric Calculation	Expected Response to Degradation or Impairment
Total taxa	Count of unique taxa identified to lowest recommended taxonomic level	Decrease
POET	Count unique Plecoptera, Trichoptera, Ephemeroptera, and Odonata taxa identified to lowest recommended taxonomic level	Decrease
Chironomidae taxa	Count unique midge taxa identified to lowest recommended taxonomic level	Decrease
Crustacea taxa + Mollusca taxa	Count unique Crustacea taxa and Mollusca taxa identified to lowest recommended taxonomic level	Decrease
% Chironomidae	Percent abundance of midges in the subsample	Increase
Orthocladiinae/Chironomidae	Number of individual midges in the sub-family Orthocladiinae / total number of midges in the subsample.	Decrease
%Amphipoda	Percent abundance of amphipods in the subsample	Increase
%Crustacea + %Mollusca	Percent abundance of crustaceans in the subsample plus percent abundance of molluscs in the subsample	Increase
HBI	Relative abundance of each taxon multiplied times that taxon's modified Hilsenhoff Biotic Index value. These numbers are summed over all taxa in the subsample.	Increase
%Dominant taxon	Percent abundance of the most abundant taxon in the subsample	Increase
%Collector-Gatherers	Percent abundance of organisms in the collector-gatherer functional group	Decrease
%Filterers	Percent abundance of organisms in the filterer functional group	Increase

LITERATURE CITED

Bollman, W. 1998. Montana Valleys and Foothill Prairies Ecoregion. Master's Thesis. (M.S.) University of Montana. Missoula, Montana.

Bukantis, R. 1998. Rapid bioassessment macroinvertebrate protocols: Sampling and sample analysis SOP's. Working draft. Montana Department of Environmental Quality. Planning Prevention and Assistance Division. Helena, Montana.

Stribling, J.B., J. Lathrop-Davis, M.T. Barbour, J.S. White, and E.W. Leppo. 1995. Evaluation of environmental indicators for the wetlands of Montana: the multimetric approach using benthic macroinvertebrates. Report to the Montana Department of Health and Environmental Science. Helena, Montana.

Table 2. Sampled MDT Mitigation Sites by Year

2001	2002	2003
Beaverhead 1	Beaverhead 1	Beaverhead 1
Beaverhead 2	Beaverhead 2	
Beaverhead 3	Beaverhead 3	
Beaverhead 4	Beaverhead 4	Beaverhead 4
Beaverhead 5	Beaverhead 5	Beaverhead 5
Beaverhead 6	Beaverhead 6	Beaverhead 6
Big Sandy 1		
Big Sandy 2		
Big Sandy 3		
Big Sandy 4		
Johnson-Valier		
VIDA		
Cow Coulee	Cow Coulee	Cow Coulee
Fourchette - Puffin	Fourchette - Puffin	Fourchette - Puffin
Fourchette – Flashlight	Fourchette – Flashlight	Fourchette – Flashlight
Fourchette – Penguin	Fourchette – Penguin	Fourchette – Penguin
Fourchette – Albatross	Fourchette – Albatross	Fourchette – Albatross
Big Spring	Big Spring	Big Spring
Vince Ames		
Ryegate		
Lavinia		
Stillwater	Stillwater	Stillwater
Roundup	Roundup	Roundup
Wigeon	Wigeon	Wigeon
Ridgeway	Ridgeway	Ridgeway
Musgrave – Rest. 1	Musgrave – Rest. 1	Musgrave – Rest. 1
Musgrave – Rest. 2	Musgrave – Rest. 2	Musgrave – Rest. 2
Musgrave – Enh. 1	Musgrave – Enh. 1	Musgrave – Enh. 1
Musgrave – Enh. 2		
	Hoskins Landing	Hoskins Landing
	Peterson - 1	Peterson – 1
	Peterson – 2	
	Peterson – 4	Peterson – 4
	Peterson – 5	Peterson – 5
	Jack Johnson - main	Jack Johnson - main
	Jack Johnson - SW	Jack Johnson - SW
	Creston	Creston
	Lawrence Park	
	Perry Ranch	
	SF Smith River	SF Smith River
	Camp Creek	Camp Creek
	Kleinschmidt	Kleinschmidt – pond
		Kleinschmidt – stream
		Ringling - Galt

Aquatic Invertebrate Taxonomic Data

Site Name HOSKINS LANDING **Date Collected** 8/ 5/2003

Order	Family	Taxon	Count	Percent	Unique	BI	FFG
Acarina							
	Acari						
		Acari	1	1.85%	Yes	5	PR
Arhynchobdellida							
	Erpobdellidae						
		Erpobdella	1	1.85%	Yes	8	PR
Basommatophora							
	Lymnaeidae						
		Stagnicola	4	7.41%	Yes	6	SC
	Physidae						
		Physidae	9	16.67%	Yes	8	SC
	Planorbidae						
		Gyraulus	11	20.37%	Yes	8	SC
		Helisoma	1	1.85%	Yes	6	SC
Coleoptera							
	Dytiscidae						
		Coptotomus	1	1.85%	Yes	5	PR
	Haliplidae						
		Haliplus	1	1.85%	Yes	5	PH
Diptera							
	Chironomidae						
		Endochironomus	2	3.70%	Yes	10	SH
		Orthocladius annectens	2	3.70%	Yes	6	CG
		Pseudochironomus	1	1.85%	Yes	5	CG
Ephemeroptera							
	Caenidae						
		Caenis	3	5.56%	Yes	7	CG
Haplotaxida							
	Naididae						
		Nais	1	1.85%	Yes	8	CG
Heteroptera							
	Corixidae						
		Sigara	1	1.85%	Yes	5	PH
	Notonectidae						
		Notonecta	10	18.52%	Yes	5	PR
Odonata							
	Libellulidae						
		Libellulidae	5	9.26%	Yes	9	PR
Grand Total			**54**				

Aquatic Invertebrate Data Summary

Project ID: MDT03LW
STORET Station ID:
Station Name: HOSKINS LANDING

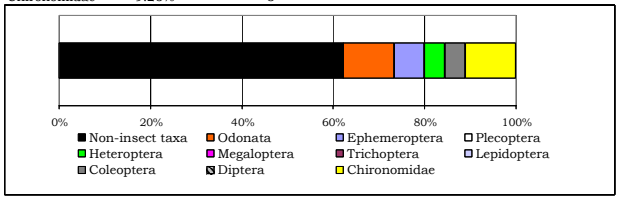
Activity ID:

Sample Date: 8/5/2003

Sample type	
SUBSAMPLE TOTAL ORGANISMS	54
Portion of sample used	100.00%
Estimated number in total sample	54
Sampling effort	
Time	
Distance	
Jabs	
Habitat type	
EPT abundance	3
Taxa richness	16
Number EPT taxa	1
Percent EPT	5.56%

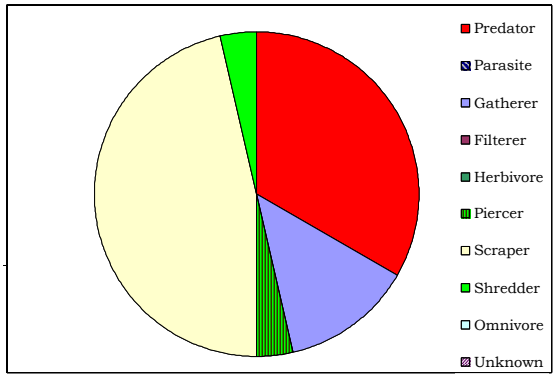
TAXONOMIC COMPOSITION

GROUP	PERCENT	#TAXA
Non-insect taxa	51.85%	7
Odonata	9.26%	1
Ephemeroptera	5.56%	1
Plecoptera	0.00%	0
Heteroptera	3.70%	2
Megaloptera	0.00%	0
Trichoptera	0.00%	0
Lepidoptera	0.00%	0
Coleoptera	3.70%	2
Diptera	0.00%	0
Chironomidae	9.26%	3



FUNCTIONAL COMPOSITION

GROUP	PERCENT	#TAXA
Predator	33.33%	5
Parasite	0.00%	0
Gatherer	12.96%	4
Filterer	0.00%	0
Herbivore	0.00%	0
Piercer	3.70%	2
Scraper	46.30%	4
Shredder	3.70%	1
Omnivore	0.00%	0
Unknown	0.00%	0



COMMUNITY TOLERANCES

Sediment tolerant taxa	2
Percent sediment tolerant	27.78%
Sediment sensitive taxa	0
Metals tolerance index (McGuire)	4.54
Cold stenotherm taxa	0
Percent cold stenotherms	0.00%

HABITUS MEASURES

Hemoglobin bearer richness	5
Percent hemoglobin bearers	46.30%
Air-breather richness	1
Percent air-breathers	1.85%
Burrower richness	1
Percent burrowers	1.85%
Swimmer richness	2
Percent swimmers	3.70%

DOMINANCE

TAXON	ABUNDANCE	PERCENT
Gyraulus	11	20.37%
Notonecta	10	18.52%
Physidae	9	16.67%
Libellulidae	5	9.26%
Stagnicola	4	7.41%
SUBTOTAL 5 DOMINANTS	39	72.22%
Caenis	3	5.56%
Endochironomus	2	3.70%
Orthocladius annectens	2	3.70%
Nais	1	1.85%
Erpobdella	1	1.85%
TOTAL DOMINANTS	48	88.89%

SAPROBITY

Hilsenhoff Biotic Index	6.63

DIVERSITY

Shannon H (loge)	3.33
Shannon H (log2)	2.31
Margalef D	3.76
Simpson D	0.11
Evenness	0.14

VOLTINISM

TYPE	# TAXA	PERCENT
Multivoltine	3	9.26%
Univoltine	10	77.78%
Semivoltine	3	12.96%

TAXA CHARACTERS

	#TAXA	PERCENT
Tolerant	7	64.81%
Intolerant	0	0.00%
Clinger	0	0.00%

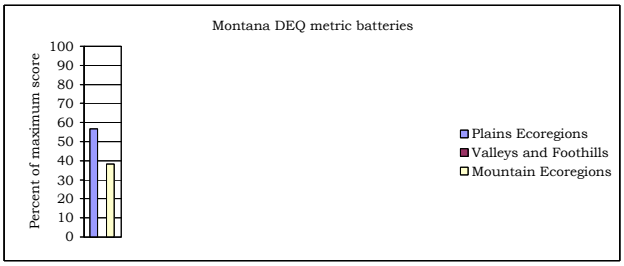
BIOASSESSMENT INDICES

B-IBI (Karr et al.)

METRIC	VALUE	SCORE	
Taxa richness	16	1	
E richness	1	1	
P richness	0	1	
T richness	0	1	
Long-lived	3	3	
Sensitive richness	0	1	
%tolerant	64.81%	1	
%predators	33.33%	3	
Clinger richness	0	1	
%dominance (3)	55.56%	3	
	TOTAL SCORE	16	32%

MONTANA DEQ METRICS (Bukantis 1998)

METRIC	VALUE	Plains Ecoregions	Valleys and Foothills	Mountain Ecoregions
Taxa richness	16	1	1	0
EPT richness	1	0	0	0
Biotic Index	6.63	1	0	0
%Dominant taxon	20.37%	3	3	3
%Collectors	12.96%	3	3	3
%EPT	5.56%	0	0	0
Shannon Diversity	2.31	1		
%Scrapers +Shredders	50.00%	3	3	2
Predator taxa	5	2		
%Multivoltine	9.26%	3		
%H of T	#DIV/0!		#DIV/0!	
TOTAL SCORES		17	#DIV/0!	8
PERCENT OF MAXIMUM		56.67	#DIV/0!	38.10
IMPAIRMENT CLASS		SLIGHT	#DIV/0!	MODERATE



Montana Plains ecoregions metrics (Bramblett and Johnson)

Riffle		*Pool*	
EPT richness	1	E richness	1
Percent EPT	5.56%	T richness	0
Percent Oligochaetes and Leeches	3.70%	Percent EPT	5.56%
Percent 2 dominants	38.89%	Percent non-insect	51.85%
Filterer richness	0	Filterer richness	0
Percent intolerant	0.00%	Univoltine richness	10
Univoltine richness	10	Percent supertolerant	53.70%
Percent clingers	0.00%		
Swimmer richness	2		

Appendix G

REVEGETATION AND SURVIVAL DATA

MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana

LAND & WATER

RIPARIAN VEGETATION ENHANCEMENT - SURVIVAL DATA FOR SPRING 2003

(Confederated Salish and Kootenai Tribes, November 2003)

Wetland Planting Areas

Created Pond

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	125	41	22	62	50%
Water Birch	175	20	76	79	55%
Aspen	75	9	19	47	37%
Total Trees	**375**	**70**	**117**	**188**	**50%**
SHRUBS					
Alder	42	7	5	30	29%
Sandbar willow	100	34	47	19	81%
R O Dogwood	400	111	68	221	45%
Total Shrubs	**542**	**152**	**120**	**270**	**50%**

Spring 2003 Cuttings					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	13	4	8	1	92%
Total Trees	**13**	**4**	**8**	**1**	92%
SHRUBS					
Sandbar willow	119	109	8	2	98%
Total Shrubs	**119**	**109**	**8**	**2**	98%

Side Channel

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	100	60	27	13	87%
Water Birch	75	15	56	4	95%
Aspen	50	29	7	14	72%
Pine	103	18	26	59	43%
Total Trees	**328**	**122**	**116**	**90**	**73%**
SHRUBS					
Alder	50	15	25	10	80%
Sandbar willow	125	60	17	48	62%
R O Dogwood	200	81	82	37	82%
Rose	50	24	15	11	78%
Service berry	25	16	4	5	80%
Total Shrubs	**450**	**196**	**143**	**111**	**75%**

Survival Data Continued…

Upland Planting Areas

Upland Islands

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	25	18	2	5	80%
Pine	100	23	29	48	52%
Total Trees	**125**	**41**	**31**	**53**	**58%**
SHRUBS					
Juniper	20	6	7	7	65%
Rose	200	136	39	23	88%
Snowberry	100	55	21	24	76%
Service berry	25	5	10	10	60%
Total Shrubs	**345**	**202**	**77**	**64**	**81%**

Access Road

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Pine	100	50	2	48	52%
Total Trees	**100**	**50**	**2**	**48**	52%
SHRUBS					
Plum	72	0	2	70	3%
Juniper	20	0	0	20	0%
Chokecherry	20	2	6	12	40%
Rose	100	5	15	80	20%
Snowberry	65	8	2	55	15%
Service berry	50	3	4	43	14%
Total Shrubs	**327**	**18**	**29**	**280**	14%

1. **Wetland Species**

Trees – 100/acre = 600 total	Need:
Populus trichocarpa (black cottonwood)	350
Populus tremuloides (quaking aspen)	150
Shrubs – 1000/acre = 6000	
Alnus incana (mountain alder)	250
Betula occidentalis (water birch)	250
Cornus stolonifera (red-osier dogwood)	2000
Salix bebbiana (Bebb willow)	1000
Salix exigua (sandbar/coyote willow)	1425

2. **Upland Species**

Trees – 100/acre = 200		
Juniperus scopulorum (Rocky Mountain juniper)	50	
Pinus ponderosa (ponderosa pine)	250	
Shrubs – 1000/acre = 2000		
Clematis ligusticifolia (western virgins-bower)	50	
Crataegus douglasii (black hawthorn)	350	
Amelanchier alnifolia (western serviceberry)	375	
Lonicera involucrata (twinberry)	350	
Prunus americana (American plum)	600	
Prunus virginiana (chokecherry)	350	
Rosa spp. (*woodsii/acicularis*) (prickly and woods rose)		500
Symporicarpos spp. (*albus/occidentalis*) (snowberry)		500

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To Bob Johnson	From Mary Price
Co.	Co.
Dept.	Phone # 675-2700 ext 7242
Fax # 523-5877 523-5879	Fax #

CSKT-Preservation Office
8/21/02

Mary;

Here are the mixes for Hoskin's Landing:

MIX 5 Joyce Lapp/Phil J, Hoskins Landing Uplands

1 ELYTRA	1.00	159,000	3.7	159,000	2.1%
2 FESOVI	1.00	680,000	15.6	680,000	8.9%
3 FESSCA	4.00	200,000	18.4	800,000	10.5%
4 ELYGLA	5.00	110,000	12.8	550,000	7.2%
5 ELYLAN	4.00	154,000	14.1	616,000	8.1%
6 POAAMP	0.50	882,000	10.1	441,000	5.8%
7 CALCAN	0.10	2,270,000	5.2	227,000	3.0%
8 CLESER	1.00	65,900	1.5	65,900	0.9%
9 ACHMIL	0.50	2,770,000	31.8	1,385,000	18.2%
10 ASTCHI	1.00	2,668,000	61.2	2,668,000	35.1%
11 LUPARG	1.00	18,300	0.4	18,300	0.2%
		DRILL SEED RATE			175

MIX 7 Joyce Lapp/Phil Johnson, Hoskins Landing Wetlands
w/ SKloetzel modifications, version 2, 8/21/02

ELYTRA					
1 pryor	3.00	159,000	11.0	477,000	2.7%
2 DESCAE	0.50	2,500,000	28.7	1,250,000	7.0%
3 CALCAN	0.50	2,270,000	26.1	1,135,000	6.3%
4 CARUTR	3.00	440,000	30.3	1,320,000	7.4%
5 CARNEB	3.00	543,100	37.4	1,629,300	9.1%
6 CARAQU	2.00	485,000	22.3	970,000	5.4%
7 JUNBAL	0.25	10,900,000	62.6	2,725,000	15.2%
8 JUNTOR	0.25	12,300,000	70.6	3,075,000	17.1%
9 ELEPAL	3.00	620,000	42.7	1,860,000	10.4%
10 SCIACU	3.00	377,600	26.0	1,132,800	6.3%
11 SCIVAL	2.00	550,000	25.3	1,100,000	6.1%
12 GLYGRA	1.00	1,280,000	29.4	1,280,000	7.1%
		Broadcast seed rate, Wetland Seed should NOT be drilled! Order seed as pre-mixed.			.412

The wetland seed will probably be somewhat subject to availability. I would suggest contacting Bill Agnew, Granite Seed, 801/768-4422. Of course all seed should be blue-

SEEDING SPECIAL PROVISIONS

Project No. STPX 45(29)
Project length NA km (miles)

Project Name Dixon – West Wetland Mitigation
CN 4144

AREA DESCRIPTIONS

Area 1	All disturbed upland areas (non-wetland) as indicated on the plan sheets. Order sufficient amount of seed to drill seed 2.1 hectares (5.2 acres). Use the seed mix specified below.
Area 2	All disturbed areas designated within the "Construction Limits for Wetland" on the plan sheets – Total area to be seeded equals 3.3 hectares (8.1 acres). Seed mix will be provided by the CS&K Tribe.
Area 3	Waste Area - 2.3 hectares (5.7 acres).

SEEDBED PREPARATION REQUIREMENTS

Condition all drill seeded areas immediately prior to seeding.

SEEDBED APPLICATION

	Method	Seeding Depth	Season of Seeding
Area 1	Drill seed	0.5-1.2 cm (0.25-0.5 in)	10/15 - 5/1
Area 2	Drill seed * Areas too wet to operate the seeding equipment may be broadcast seeded. Attempt to incorporate the seed by scarifying immediately following seeding.	0.5-1.2 cm (0.25-0.5 in)	10/15 - 5/1
Area 3	Drill seed	0.5-1.2 cm (0.25-0.5 in)	10/15 - 5/1

Small, inaccessible [upland] areas may also be broadcast seeded. Scarify (roughen) these areas immediately prior to and following broadcast seeding to incorporate the seed into the soil.

Seeding outside the designated seeding period is allowed only with prior approval from MDT's Botanist.

MULCH REQUIREMENTS

Area 1	None
Area 2	None
Area 3	None

FERTILIZER APPLICATION

Areas 1, 2 & 3. Apply "Osmocote" 17-7-12 fertilizer at a rate of 110 kg per hectare (100 lbs per acre). Apply and incorporate (disk or harrow) immediately prior to seeding. Contact Scotts Company 1-800-492-8255.

SEED MIXTURE

	Species	Seeding rate*
Area 1	Pryor slender wheatgrass	1.0 (1.0)
	Critana thickspike wheatgrass	4.5 (4.0)
	Rough fescue	4.5 (4.0)
	Blue wildrye	5.5 (5.0)
	Sheep fescue	1.0 (1.0)
	Big bluegrass	0.5 (0.5)
	Bluejoint reedgrass	0.1 (0.1)
	Rocky Mountain beeplant	1.0 (1.0)
	Western (white) yarrow	0.5 (0.5)
	Pacific aster	1.0 (1.0)
	Silverleaf lupine	1.0 (1.0)
Area 2	Seed mix will be provided by the CSKT. Seed at a rate of 11 kgs per hectare, bulk rate. This is equivalent to 10 lbs per acre, bulk rate.	
Area 3	Cimarron VR Alfalfa at 16 kg per ha (15 lbs per Acre) plus supplier-recommended inoculant.	

← Area 1 upland seed

* Kilograms of pure live seed per Hectare (and equivalent pounds per acre)

** Contact the MDT Botanist for substitute if the recommended species are not available.