MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2011

Lonepine Wetland Mitigation Project
Flathead Indian Reservation, Montana



Prepared for:

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December 2011

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MDT Project Number STPX 45(33)
Control Number 4729

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CCI Project No: MDT.004

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1. INTRODUCTION

The 2011 Lonepine Mitigation Monitoring Report summarizes the results of the fourth year of monitoring at the Lonepine mitigation site. The Lonepine project was constructed to mitigate for wetland impacts incurred by the Montana Department of Transportation (MDT) Lonepine North and East highway reconstruction project and any wetland credits developed beyond project needs will be held in reserve and applied towards future MDT projects in the watershed and Confederated Salish and Kootenai Tribes (CSKT) reservation. The project was constructed on MDT property between summer 2007 and summer 2008, concurrent with the adjacent Lower Dry Fork Reservoir dam re-construction.

The project is located at 2,840 feet above mean sea level (amsl) on the west edge of the Flathead Indian Reservation, approximately 1.5 miles west of Lonepine and south of the Lower Dry Fork Reservoir dam. The project area is shown on the Lonepine US Geologic Survey (USGS) 7.5' topographic map in the NW quarter of Section 3, Township 22 North, Range 24 West (Figure 1). Figures 2 and 3 (Appendix A) show the Monitoring Activity Locations and Mapped Site Features, respectively. Appendix B includes the MDT Montana Wetland Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms (Environmental Laboratory 1987), and the MDT Montana Wetland Assessment Forms. Representative photographs of the project area are included in Appendix C and the Project Plan Sheet is included in Appendix D.

Project goals were the development of 23.85 acres of USACE approved wetland credit and 11.86 acres of CSKT approved wetland credit at the 80-acre site. The mitigation design focused on the creation of emergent wetlands with a minor component of aquatic bed and scrub-shrub wetlands. The target wetland functions included wildlife habitat, sediment/nutrient/toxicant removal, surface water storage, and production export/food chain support.

The project encompasses a series of five excavated wetland cells. The primary water source is the Lower Dry Fork Reservoir via the Camas C Canal and the secondary water source is precipitation. A general mitigation site layout is provided in Appendix D. Project objectives are listed below.

- Maximize emergent wetland development, associated wildlife habitat, nutrient//toxicant removal functions, surface water storage functions, and production export/food chain support on the site by constructing several large, interconnected cells that flood to a maximum depth of approximately one foot.
- Restore sinuosity and connectivity to ditched and straightened segments of Dry Fork Creek, including reactivation of a cutoff meander loop.

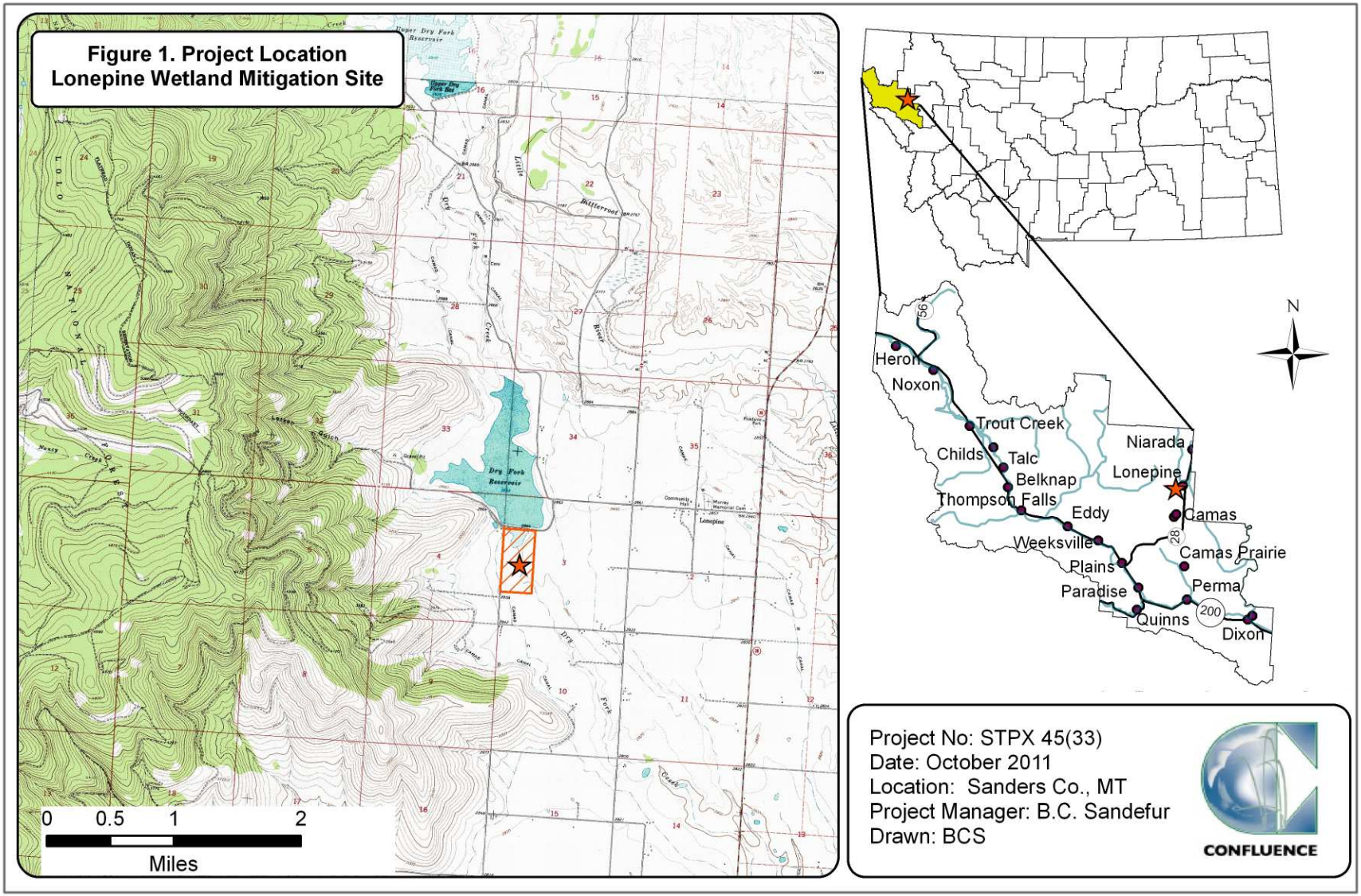


Figure 1. Project Location Lonepine Wetland Mitigation Site.

- Provide a riparian scrub-shrub component by revegetating the restored Dry Fork Creek channel margins and intercell watercourses with riparian shrub species.
- Enhance and protect uplands and existing wetlands along Dry Fork Creek by removing grazing from the site, planting upland shrubs, prohibiting development, and fencing.
- Minimize operational maintenance and promote a self-sustaining system by placing permanent spillways at all cell outlets to control water elevations.

The determination of mitigation credits for this project was coordinated between the USACE and the CSKT Shoreline Protection Office (Table 1). The final approved performance standards are listed below. The USACE stated that all created wetlands within the project corridor will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the 1987 USACE *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987).

1. **Wetland Hydrology and Open Water Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Manual. Hydrologic success will also require that constructed channels be stable in wetlands that include channel reconstruction as described below.

2. **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service [NRCS] definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Manual. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success is achieved. Soil receiving gypsum treatment will be sampled yearly during drawdown in order to monitor the effectiveness of the experimental treatment in reducing baseline slickspot conditions (pH of 10.6; 357 meq/L sodium; SAR of 500; and electrical conductivity of 23.1 mmhos/cm).

3. **Hydrophytic Vegetation Success** will be achieved in areas not receiving gypsum treatment where combined aerial cover of facultative or wetter species is greater than or equal to 80 percent and noxious weeds do not exceed 10 percent of total cover. Cattail basal coverage is not to exceed 50 percent in any cell except Cell 2.

Wetlands will be delineated as per the technical guidelines in the 1987 Manual. The following concept of "dominance", as defined in the 1987 Manual, will be employed during future routine wetland determination in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines).*"

4. **Stream Channel Restoration Success** will be evaluated in terms of revegetation success and bank stability success. Revegetation will be considered successful if noxious weeds do not exceed 10 percent cover, cuttings exhibit 50 percent survival after 3 years, and planted shrubs exhibit 75 percent survival after 5 years (or planted shrub densities are increased to accomplish the same projected net survival of individuals at a 50 percent survival rate over 5 years.

   Bank stability success will be evaluated by identifying a reference reach along an adjacent, undisturbed portion of the channel below the restoration. The percentage of eroding channel and bed elevation will be evaluated for both restoration and reference channels. For this purpose "eroding bank" will be defined as any bank greater than two feet in length that is more than 50 percent bare mineral soil and has no roots, surface vegetation, or other stabilizing structure (e.g. rock, woody debris) to inhibit erosion. Bank stability success will be achieved when, following restoration, less than 25 percent of banks are unstable or the percent stability of the restored channel is within 5 percent of the reference reach. Vertical stability success will be achieved when, following restoration, vertical movement of the new channel is not greater than 10 percent of vertical movement at the reference reach.

5. **Intercell Swale Success** will be evaluated in terms of revegetation success if wetlands do not develop. Revegetation will be considered successful if noxious weeds do not exceed 10 percent cover and planted shrubs exceed 75 percent survival after 5 years. If wetlands develop, success will be evaluated in terms of wetland hydrology, hydric soil, and hydrophytic vegetation success as described above.

6. **Secondary Restoration/Minor Rehabilitation Success** will be achieved when the site is fenced and grazing is removed from existing wetlands.

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

Table 1. Final Confederated Salish and Kootenai Tribes (CSKT) and USACE credit ratios for the Lonepine Wetland Mitigation Project.

PROPOSED MITIGATION FEATURE	TYPE OF MITIGATION USING CSKT DEFINITIONS	TYPE OF MITIGATION USING USACE DEFINITIONS[2]	MITIGATION SITE ESTABLISHED PRIOR TO IMPACTS	
			CSKT Credit Ratio Credit Acreage Credit Ratio	USACE Credit Acreage[2]
Approximately 21.35 acres (ac) of new emergent wetland / open water at five shallow wetland cells and one excavation area.	Creation	Creation	1:3.04 ratio 7.02 acres credit	1:1 ratio 21.35 acres credit (OW credit limited to 10% of total wetland area)
Approximately 0.30 ac at Dry Fork Creek stream channel and wetland/riparian fringe re-constructed through upland between the Camas C Canal and Wetland 1, and between Wetland 1 (ditched Dry Fork Creek segment) and Wetland 3 (historic meander channel).	Primary Restoration	Re-establishment	1:1.54 ratio 0.19 acre credit	1:1 ratio 0.30 acre credit
Approximately 0.04 ac of re-constructed Dry Fork Creek channel within Wetland 1 (ditched Dry Fork Creek segment).	Primary Restoration	Rehabilitation	1:1.54 ratio 0.03 acre credit	1:1.5 ratio 0.03 acre credit
Dry Fork Creek channel restoration plus restoration of hydrologic function at 0.26 ac Wetland 3 (historic meander channel).	Primary Restoration	Rehabilitation	1:1.54 ratio 0.17 acre credit	1:1.5 ratio 0.17 acre credit
Protection of and grazing removal at approximately 6.64 wetland acres that will remain on the project site following Lower Dry Fork Dam rehabilitation.	Secondary Restoration	Minor Rehabilitation	1:1.54 ratio 4.31 acres credit	1:5 ratio 1.33 acres credit
Approximately 0.43 ac of new riparian swales between wetland cells.	No Definition	No Definition	1:3.04 ratio 0.14 acre credit	1:4 ratio 0.11 acre credit
Approximately 4.45 ac of upland buffer between Wetland 1 and the farmed slope to the east of the project.	None (no planting proposed, thus, no CSKT credit)	Upland Buffer	None (no planting proposed, thus, no CSKT credit)	1:4 ratio on maximum 50-foot width (2.23 acres) 0.56 acre credit
TOTAL			**11.86 acres**	**23.85 acres**

[1] Wetland Mitigation Guidelines for the Flathead Reservation.

[2] Mitigation Ratios, Montana Regulatory Program.

2. METHODS

The site was monitored on July 31, 2011. Information collected during the field investigation has been documented on the Mitigation Monitoring Form and Wetland Data Form (Appendix B). Monitoring activity locations were mapped with a global positioning system (GPS) as illustrated on Figure 2 (Appendix A). Information collected included a wetland delineation; vegetation community mapping; vegetation transect monitoring; soil and hydrology data; bird and wildlife use documentation, photographic documentation; functional assessments; woody species survival assessment; and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as "permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season" (Environmental Laboratory 1987). The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit" (Environmental Laboratory 1987). There are 146 consecutive days in the growing season based on the available temperature data between 1918 and 1969 for the Lonepine 1 WNW meteorological station, Montana (245164) (WRCC 2010). The site would have to be inundated or saturated within 12 inches of the ground surface for 18 days to meet the wetland hydrology criteria. The weather station was closed in 1969.

The presence of hydrological indicators as outlined on the Wetland Data Form was assessed at 10 data points established within the project area. Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on the electronic Wetland Data Form (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

No groundwater monitoring wells are present on the site. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded electronically on the Wetland Data Form (Appendix B). The boundary between wetlands and uplands was mapped on the 2011 aerial photograph (Figure 3, Appendix A).

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2011 aerial photograph (Figure 3, Appendix A). The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to 10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B). Community types were named based on the predominant

vegetation species that characterized each mapped polygon (Figure 3, Appendix A).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects (Figure 2, Appendix A). Vegetation composition was assessed and recorded along two vegetation belt transects approximately 10 feet wide and 150 feet (Transect 1) and 300 feet long (Transect 2) (Figure 2, Appendix A). The transect locations were recorded with a global positioning system (GPS) unit. Spatial changes in the dominant vegetation communities were documented along the stationed transect. The percent cover of each vegetation species within the transect was estimated using the same values and cover ranges listed for the community polygons (Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field during the investigation and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "**X**", "▲", or "■" representing 0 to 0.1 acres, 0.1 to 1.0 acres, or greater than 1.0 acre in extent, respectively. Cover classes are represented by a T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively.

2.3. Soil

Soil information was obtained from the Soil Survey for *Sanders and parts of Lincoln and Flathead Counties* and *in situ* soil descriptions (NRCS 2010). Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the 1987 Wetland Manual. A description of the soil profile, including hydric indicators when present, was recorded on the Wetland Data Form for each profile (Appendix B).

Two soil samples were collected from Cells 1 and 2, the same general location as in 2008 and 2010, and analyzed for pH, electrical conductivity, calcium, magnesium, sodium, and sodium absorption ratio (SAR) from 2008 to 2011. The sample locations were mapped on Figure 2 (Appendix A) using a GPS.

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 Wetland Manual. In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 On-site Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the Wetland Data Form (Appendix B).

Consultation with the USACE determined that the 1987 Manual should continue to be used at MDT mitigation sites where baseline wetland conditions had been established prior to 2008. Consequently, the use of the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010) was not required.

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was a special aquatic site, an atypical situation, or a problem area. The wetland boundary was identified on the 2011 aerial photography (Figure 3, Appendix A). Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive list of wildlife species observed onsite from 2008 to 2011 was compiled.

2.6. Functional Assessment

The 1999 MDT Montana Wetland Assessment Method (MWAM) (Berglund 1999) was used to complete functional assessments of the site in 2003. The 2008 MWAM (Berglund and McEldowney 2008) was used from 2009 to 2011. The assessment method provides an objective means of assigning wetlands an overall rating and of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008). The 2008 revision refined ratings for some wetland functions, land management, and fish and wildlife habitat.

Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each wetland or group of wetlands (Assessment Areas-AA) (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provided supplemental information documenting wetland, upland, and vegetation transect conditions; site trends; and current land uses surrounding the site. Photographs were taken at established photo points

throughout the mitigation site during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Garmin GPSMap 76CSX GPS (Global Positioning System) unit during the 2011 monitoring season. The collected data were then transferred to a personal computer, subsequently exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph, then digitized. Site features and survey points that were mapped included fence boundaries, photographic points, transect endpoints, wetland boundaries, non-wetland plant community boundaries, and soil sample locations.

2.9. Maintenance Needs

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

3. RESULTS

3.1. Hydrology

Climate data from the Polson Kerr Dam, Montana (246640), recorded an average annual precipitation rate of 15.16 inches from March 1951 to December 2010 (WRCC 2011). The total annual precipitation rate recorded in 2010 was 22.79 inches. From January to June 2011, a total of 12.07 inches of precipitation was recorded at Pleasant Valley 5SE, Montana (246576) (NCDC 2011).

Water for the project is supplied primarily by the Lower Dry Fork Reservoir via the Camas C Canal. Approximately 5 percent of the mitigation site was inundated during the 2011 investigation. The average surface water depth across the site was 1 foot and the range was 0 to 3 feet. Areas delineated as wetlands that were not inundated exhibited saturation within one foot of the ground surface, water marks, drift lines, drainage patterns, the FAC-neutral test, and/or water-stained leaves based on 2011 test pit data. Water-stained leaves and the FAC-neutral test are secondary indicators.

Two corresponding data points, one in upland and one in wetland, were established at five locations to determine the upland and wetland boundaries (Wetland Data Forms, Appendix B). The data point locations are shown on Figure 2 in Appendix A. The ten data points were named Cell (1 to 5) WDdry (cell 1, dry) and Cell (1 to 5) WDwet (cell 1, wet). There were no wetland hydrology indicators present at the data points located in uplands. The wetland data points were located in areas that met the three wetland criteria. All five of the wetland data points were inundated with surface water ranging from three to thirteen inches deep.

3.2. Vegetation

A list of 114 vegetation species identified from 2008 to 2011 is presented in Table 2 (Monitoring Form, Appendix B). Eleven community types, nine wetland and two upland, were identified at the mitigation site in 2011 (Figure 3, Appendix A). A review of the 2009 to 2011 photographs included in Appendix C shows a notable increase in vegetation cover in the constructed cells site wide.

The community types were Type 6 – *Kochia scoparia* Upland, Type 7: *Phalaris arundinacea/Salix* spp Wetland, Type 8 – *Typha latifolia/Scirpus* spp. Wetland, Type 10 – Aquatic Macrophytes/Open Water Wetland, Type 11 – *Distichlis spicata*/*Kochia scoparia* Wetland; Type 12 – *Puccinellia nuttalliana* Wetland, Type 13 – *Alopecurus pratensis*/*Phalaris arundinacea* Wetland, Type 14 – *Typha latifolia/Phalaris arundinacea* Wetland, Type 15 – *Scirpus maritimus/Typha latifolia* Wetland, Type 16 – *Elymus varnensis/Agropyron repens* Upland, and Type 17 – *Alopecurus pratensis/Beckmannia syzigachne* Wetland. The dominant species for each community are presented below in descending order of abundance.

Upland Type 6 – *Kochia scoparia* covered the large sandy areas on the perimeter of the wetland cells where the vegetation cover was low. The vegetation was dominated by Mexican summer cypress (*Kochia scoparia*), tall wheatgrass (*Elymus varnensis*), clasping peppergrass (*Lepidium perfoliatum*) Nuttall's alkaligrass (*Puccinellia nuttalliana*), and pursh seepweed (*Suaeda depressa*). Areas that were seasonally ponded within the community were vegetated with seashore saltgrass (*Distichlis spicata).*

Wetland Type 7 – *Phalaris arundinacea/Salix* spp. was identified in an isolated narrow strip of wetland adjacent to the riparian corridor. The herbaceous cover was dominated by reed canary grass (*Phalaris arundinacea*), muskgrass (*Chara* sp.), meadow foxtail (*Alopecurus pratensis*), and Canada thistle (*Cirsium* arvense). The wetland was planted with willow and other woody shrub species including sandbar willow (*Salix exigua*), golden currant (*Ribes aureum*), Pacific willow (*Salix lasiandra*), Douglas hawthorn (*Crataegus douglasii*), Wood's rose (*Rosa woodsii*), and yellow willow (*Salix lutea*).

Wetland Type 8 – *Typha latifolia/Scirpus* spp. was merged with 2010 Community 2 – *Scirpus* spp*./Beckmannia syzigachne* in 2011. The community is located within the constructed wetland cells. Broad-leaf cattail (*Typha latifolia*), hard-stem bulrush (*Scirpus acutus*), saltmarsh bulrush (*Scirpus maritimus*), small-fruited bulrush (*Scirpus microcarpus*), green algae, and lesser duckweed (*Lemna minor*) dominated the community. There were 25 additional species identified within the wetland type.

Wetland Type 10 –Aquatic Macrophytes/Open water characterized several, inundated depressions located throughout the site. The areas were classified as aquatic bed habitats in 2011, generally defined as a wetland vegetation class

dominated by plants "that grow principally on or below the surface of the water for most of the growing season in almost all years (Cowardin et al. 1979)." The Montana Natural Heritage Program (MTNHP) website further defines the Palustrine Aquatic Bed Class (PAB) as having aquatic plants at greater than 30 percent cover and water depths of greater than 0.5 m (and less than 2 meters) (MTNHP 2011). Dominant species included common hornwort (*Ceratophyllum demersum*), hardstem bulrush, broad-leaf cattail, and minor duckweed. Brown and green algae (protist kingdom) were also observed on the water surface.

Wetland Type 11 – *Distichlis spicata*/*Kochia scoparia* was located in a small, isolated, inundated wetland area located near the north boundary. The area was dry in 2010 and categorized as upland. Mexican summer cypress, seashore saltgrass, saltlover (*Halogeton glomeratus*), and pursh seepweed dominated the vegetation cover.

Wetland Type 12 – *Puccinellia nuttalliana* was identified in the designed outlet channel located near the south boundary. The area was wet in the spring and dry during the July site visit. The cover was dominated by Nuttall's alkali grass with less than five percent slender wheatgrass (*Agropyron trachycaulum*), pursh seepweed, meadow foxtail, tall wheatgrass, and broad-leaf cattail.

Wetland Type 13 – *Alopecurus pratensis*/*Phalaris arundinacea* was newly defined in 2011 to describe areas dominated by aggressive wetland grasses, specifically meadow foxtail. Meadow foxtail, reed canary grass, coast-blite goosefoot (*Chenopodium rubrum*), and smooth brome dominated the cover.

Wetland Type 14 – *Typha latifolia/Phalaris arundinacea* is similar to Type 8 except that there was no hard-stem bulrush within the community. The dominant species are broad-leaf cattail, reed canary grass, meadow foxtail, American sloughgrass (*Beckmannia syzicachne*), awlfruit sedge (*Carex stipata*), Canada thistle, Douglas hawthorn, and Wood's rose.

Wetland Type 15 – *Scirpus maritimus/Typha latifolia* was called Type 4 – *Agropyron trachycaulum* in 2010. The vegetation shifted to a dominance of hydrophytic species with a FACW and OBL indicator status in response to higher levels of inundation. Saltmarsh bulrush, quackgrass (*Agropyron repens*), meadow foxtail, broad-leaf cattail, and Nuttall's alkali grass dominated the community.

Upland Type 16 – *Elymus varnensis/Agropyron repens* was renamed in 2011 based on the increase in tall wheatgrass and quackgrass and decrease in

Table 2. Vegetation species identified at Lonepine Wetland Mitigation Site from 2008 to 2011.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS[1]
Achillea millefolium	yarrow,common	FACU
Agropyron cristatum	crested wheatgrass	NL
Agropyron dasystachyum	wheatgrass,thick-spike	FACU-
Agropyron repens	quackgrass	FACU
Agropyron smithii	wheatgrass,western	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Algae, brown	algae, brown	NL
Algae, green	algae, green	NL
Alisma plantago-aquatica	water-plantain,broad-leaf	OBL
Alopecurus pratensis	foxtail,meadow	FACW
Amelanchier alnifolia	service-berry,Saskatoon	FACU
Anthemis cotula	mayweed	FACU
Aquatic macrophytes	aquatic macrophytes	NL
Artemisia frigida	prairie sagewort	NL
Aster sp.		NL
Bassia hyssopifolia	smother-weed,five-horn	FACW
Beckmannia syzigachne	sloughgrass,American	OBL
Bidens cernua	beggar-ticks,nodding	FACW+
Brassica sp.		NL
Bromus inermis	smooth brome	NL
Bromus tectorum	cheatgrass	NL
Camelina microcarpa	**littlepod false flax**	**NI**
Capsella bursa-pastoris	purse,common shepherd's	FAC-
Cardaria chalepensis	lenspod whitetop	NL
Cardaria draba	**hoary cress**	**NL**
Carex lanuginosa	sedge,woolly	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex stipata	awlfruit sedge	NL
*Carex utriculata**	beaked sedge	OBL
Carex vulpinoidea	sedge,fox	OBL
Centaurea maculosa	spotted knapweed	NL
Ceratophyllum demersum	**hornwort,common**	**OBL**
Chara sp.		NL
Chenopodium album	goosefoot,white	FAC
Chenopodium rubrum	goosefoot,coast-blite	FACW+
Chrysothamnus nauseousus	rubber rabbitbrush	NL
Cichorium intybus	chicory	NL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2011 are listed in **bold** type.
*Commonly accepted name not included on 1988 list.

Table 2 (Continued). Vegetation species observed at Lonepine Wetland Mitigation Site from 2008 to 2011.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS[1]
Cirsium arvense	thistle,Canada	FACU+
Cirsium vulgare	thistle,bull	FACU
Crataegus douglasii	hawthorn,Douglas'	FAC
Deschampsia cespitosa	hairgrass,tufted	FACW
Descurainia sophia	common tansy mustard	NL
Distichlis spicata	saltgrass,seashore	FAC+
Eleocharis palustris	spikerush,creeping	OBL
Elymus cinereus	wild-rye,Basin	NI
Elymus triticoides	wild-rye,creeping	FAC
Elymus varnensis	tall wheatgrass	NL
Epilobium brachycarpum	**willow-herb,panicled**	**UPL**
Epilobium palustre	willow-herb,marsh	OBL
Festuca pratensis	**fescue,meadow**	**FACU+**
Festuca sp.		NL
Glyceria grandis	American mannagrass	NL
Glyceria maxima	meadowgrass,reed	OBL
Glyceria striata	grass,fowl manna	OBL
Glycyrrhiza lepidota	licorice,American	FAC+
Grindelia squarrosa	gumweed,curly-cup	FACU
Halogeton glomeratus	saltlover	NL
Hordeum brachyantherum	barley,meadow	FACW
Hordeum jubatum	barley,fox-tail	FAC+
Juncus balticus	rush,Baltic	OBL
Kochia scoparia	summer-cypress,Mexican	FAC
Lactuca serriola	lettuce,prickly	FAC-
Lemna minor	duckweed,lesser	OBL
Lepidium densiflorum	pepper-grass,dense-flower	FAC-
Lepidium perfoliatum	pepper-grass,clasping	FACU+
Malva neglecta	common mallow	NL
Matricaria perforata	mayweed,scentless	NI
Medicago lupulina	medic,black	FAC
Medicagoa sp.		NL
Melilotus alba	sweetclover,white	FACU
Melilotus officinalis	sweetclover,yellow	FACU
Monolepis nuttalliana	poverty-weed,Nuttall's	FAC-
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy	FACU
Poa juncifolia	bluegrass,alkali	FACU+
Poa palustris	bluegrass,fowl	FAC
Poa pratensis	bluegrass,Kentucky	FACU+
Polygonum amphibium	smartweed,water	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2011 are listed in **bold** type.

Table 2 (Continued). Vegetation species observed at Lonepine Wetland Mitigation Site from 2008 to 2011.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS[1]
Polygonum lapathifolium	willow-weed	FACW+
Polygonum sp.		NL
Polypogon monspeliensis	grass,annual rabbit-foot	FACW+
Populus deltoides	cotton-wood,eastern	FAC
*Populus trichocarpa**	black cottonwood	FAC
Potentilla fruticosa	cinquefoil,shrubby	FAC-
Puccinellia nuttalliana	grass,Nuttall's alkali	OBL
Ribes aureum	currant,golden	FAC+
Ribes sp.		NL
Rosa sp.		NL
Rosa woodsii	rose,Woods	FACU
Rumex crispus	dock,curly	FACW
Rumex maritimus	**dock,golden**	**FACW+**
Salix alba	willow,white	FACW
Salix amygdaloides	willow,peach-leaf	FACW
Salix bebbiana	willow,Bebb	FACW
Salix exigua	willow,sandbar	OBL
Salix lasiandra	**willow, Pacific**	**FACW+**
Salix lutea	willow,yellow	OBL
Sarcobatus vermiculatus	greasewood,black	FACU+
Scirpus acutus	bulrush,hard-stem	OBL
Scirpus americanus	bulrush,Olney's	OBL
Scirpus maritimus	bulrush,saltmarsh	OBL
Sisymbrium altissimum	mustard,tall tumble	FACU-
Solanum dulcamara	nightshade,climbing	FAC
Solidago sp.		NL
Sonchus arvensis	sowthistle,field	FACU+
Sparganium emersum	burreed,narrow-leaf	OBL
Suaeda depressa	seepweed,pursh	FACW-
Symphoricarpos occidentalis	snowberry,western	NL
Symphoricarpos sp.		NL
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Tragopogon dubius	yellow salsify	NL
Trifolium hybridum	**clover,alsike**	**FACU+**
Trifolium repens	clover,white	FACU+
Typha latifolia	cattail,broad-leaf	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2011 are listed in **bold** type.
*Commonly accepted name not included on 1988 list.

slender wheatgrass and creeping wildrye (*Elymus triticoides* – 2010 Community 5). In addition to tall wheatgrass and quackgrass, the community was dominated by Mexican summer cypress, coast-blite goosefoot, clasping peppergrass, pursh

seepweed, and slender wheatgrass. A trace amount of whitetop (*Cardaria draba*) was noted in this community.

Wetland Type 17 – *Alopecurus pratensis*/*Beckmannia syzigachne* characterized an isolated area adjacent to the reconstructed channel that was named *Beckmannia syzigachne/Glyceria striata* (fowl mannagrass) in 2010. Meadow foxtail, American sloughgrass, creeping spikerush, reed canary grass, and Nuttall's alkali grass dominated the herbaceous cover.

Vegetation community data were collected from two 10-foot wide belt transects (Monitoring Forms, Appendix B) in 2011. The data for Transect 1 are summarized in Table 3 and Charts 1 and 2. The transect locations are shown on Figure 2 (Appendix A) and photographs of the transect endpoints are included on page C-11 of Appendix C.

Two vegetation communities intersected the 150-foot Transect 1 in 2011, wetland Type 8 – *Typha latifolia*/*Scirpus* spp. and wetland Type 10 – Aquatic Macrophytes/Open water. The cover of American sloughgrass decreased slightly in 2011 while the cover of broad-leaf cattail displayed an increase, possibly the result of prolonged periods of inundation along transect. The inundation levels in the constructed ponds also increased in 2011. Hydrophytic species encompassed one hundred percent of the transect intervals.

Table 3. Transect 1 data summary for 2008 to 2011.

Monitoring Year	**2008**	**2009**	**2010**	**2011**
Transect Length (feet)	150	150	150	150
Vegetation Community Transitions along Transect	0	0	0	3
Vegetation Communities along Transect	1	1	1	2
Hydrophytic Vegetation Communities along Transect	0	1	1	2
Total Vegetative Species	2	5	14	16
Total Hydrophytic Species	2	5	12	13
Total Upland Species	0	0	2	3
Estimated % Total Vegetative Cover	1	75	90	90
% Transect Length Comprising Hydrophytic Vegetation Communities	0	100	100	100
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0
% Transect Length Comprising Unvegetated Open Water	100	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0	0

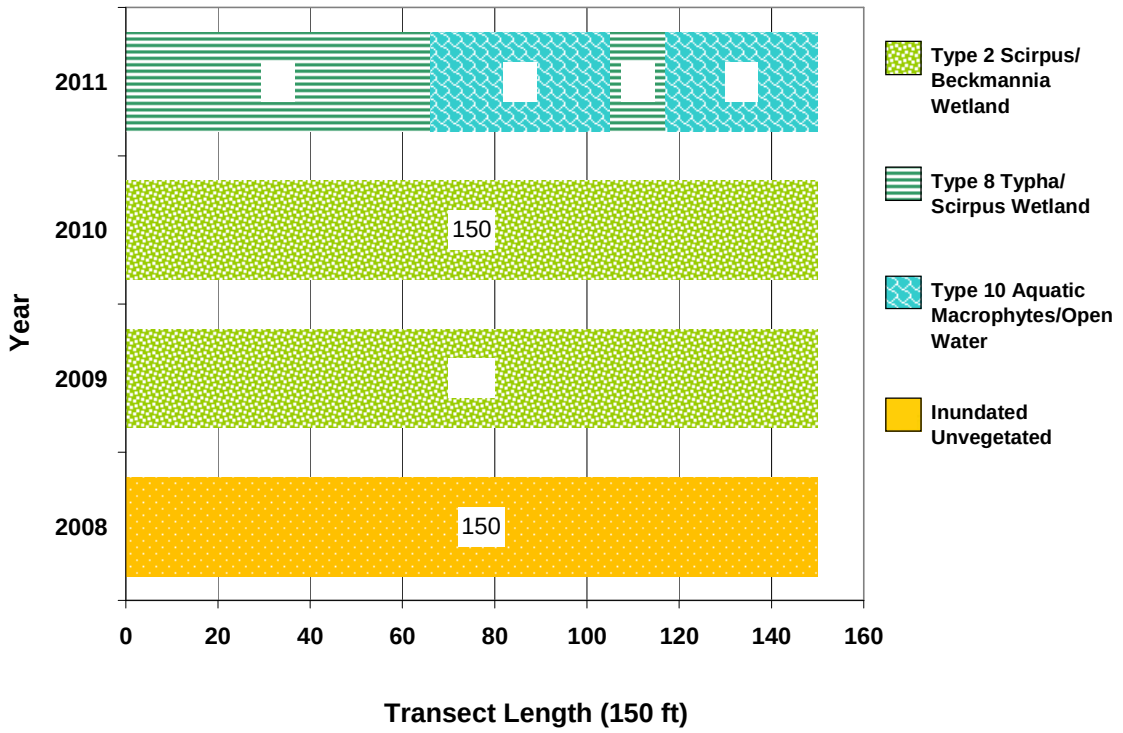


Chart 1. Transect 1 maps showing vegetation types in 2008 to 2011 from the start (0 feet) to finish (150 feet) of the transect.

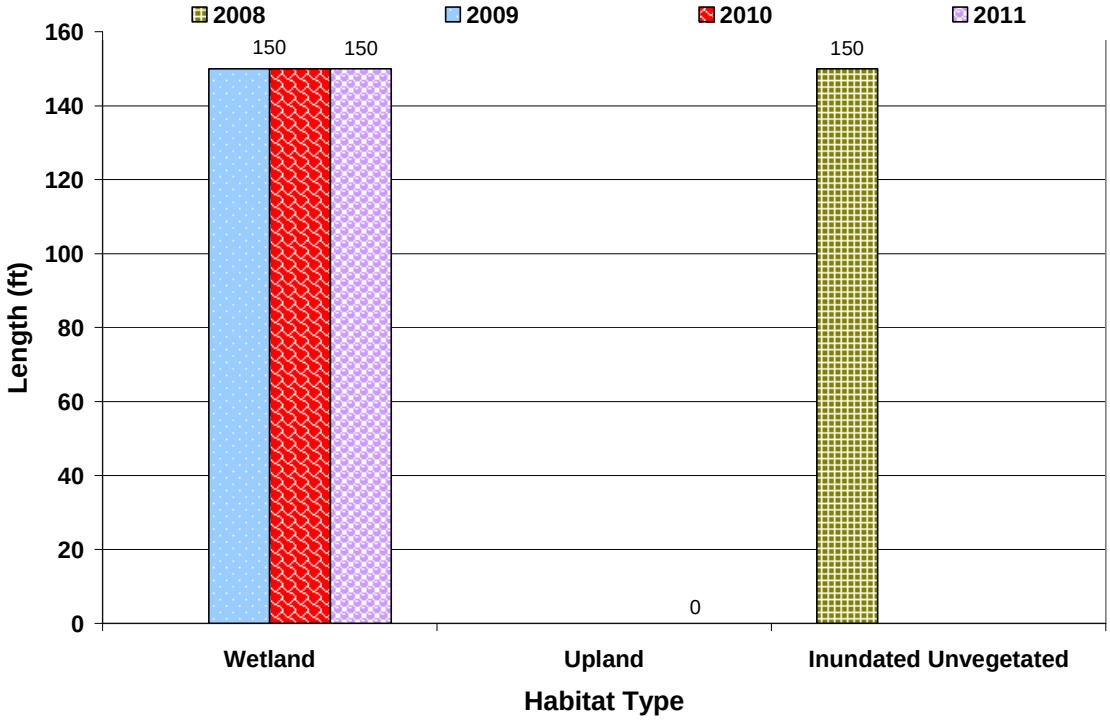


Chart 2. Length of vegetation communities within Transect 1 from 2008 to 2011.

A summary of the data collected on Transect 2 is presented in Table 4 and Charts 3 and 4 (Monitoring Form, Appendix B). Photographs of the transect end points are shown on page C-12 of Appendix C. The transect was established 10 feet adjacent to the dike to document erosion along the dike face and vegetation establishment. The east side of the transect is in upland habitat and the west side is in wetland habitat. Plants observed on the west side of the transect were recorded. One vegetation community, Type 8 – *Typha latifolia/Scirpus* spp., was identified on Transect 2 in 2011, the same community observed in 2010. Hydrophytic species dominated 100 percent of the transect intervals.

Table 4. Transect 2 data summary for 2008 to 2011.

Vegetation Community Transitions along Transect	2	2	0	0
Vegetation Communities along Transect	3	3	1	1
Hydrophytic Vegetation Communities along Transect	0	2	1	1
Total Vegetative Species	3	11	11	11
Total Hydrophytic Species	2	7	11	10
Total Upland Species	1	4	0	1
Estimated % Total Vegetative Cover	9	75	85	90
% Transect Length Comprising Hydrophytic Vegetation Communities	0	93	100	100
% Transect Length Comprising Upland Vegetation Communities	34	7	0	0
% Transect Length Comprising Unvegetated Open Water	66	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0	0

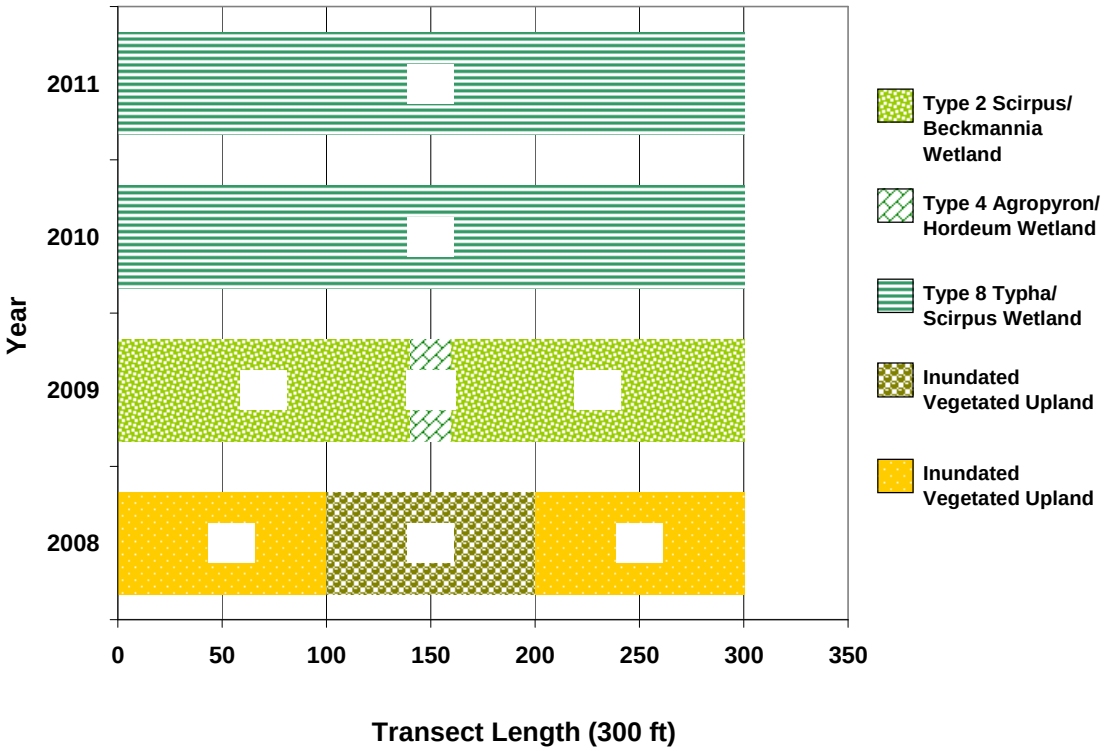


Chart 3. Transect 2 maps showing vegetation types from the start (0 feet) to the finish (300 feet) of transect in 2008 to 2011.

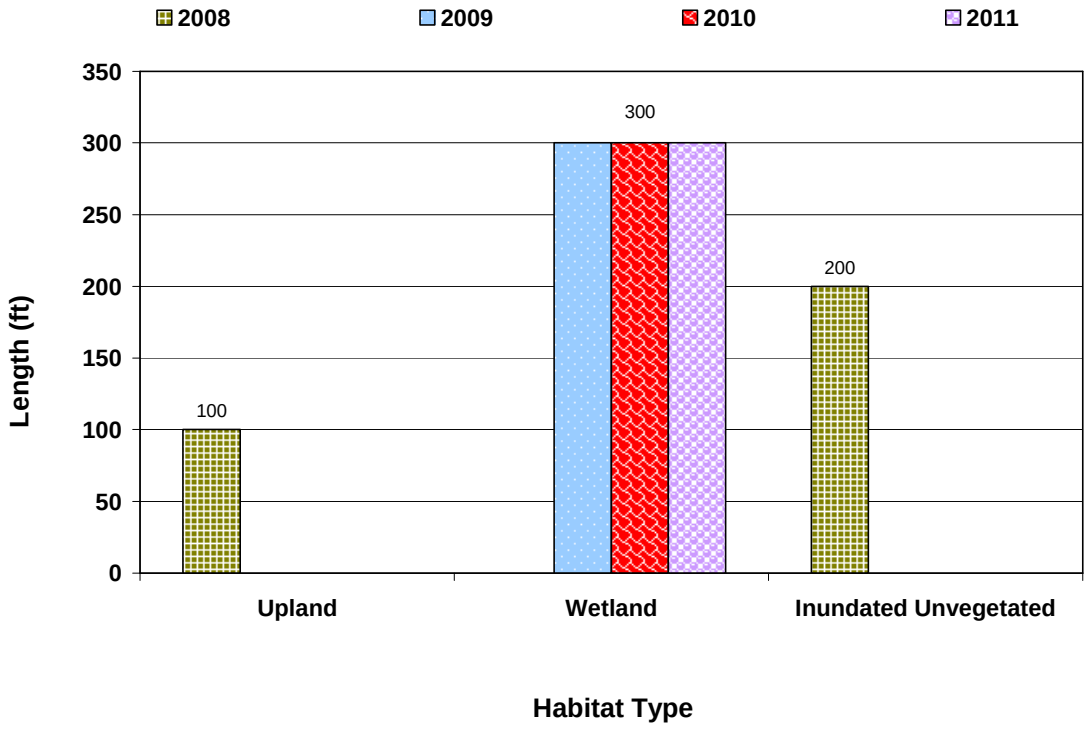


Chart 4. Length of vegetation communities within Transect 2 from 2008 to 2011.

The locations of infestations of Canada thistle and spotted knapweed (*Centaurea maculosa*), Priority 2B noxious weeds, were shown on Figure 3 (Appendix A). Canada thistle was identified primarily within the upland perimeter of the west half of the site and within the riparian corridor. The size ranged from less than 0.1 acre to between 0.1 and 1.0 acre. The cover class ranged from low (1 to 5 percent) to moderate (5 to 25 percent). Two infestations of spotted knapweed were observed near the southwest corner of the site. The size was less than 0.1 acres and the cover was low. Whitetop was noted at a trace amount in one location less than 0.1 acre in size near the southwest corner of the site. Two acres of Canada thistle and knapweed were sprayed by MDT in 2011.

The original revegetation design specified planting 580 woody shrubs and 500 willow cuttings. Approximately 270 dead willow cuttings were replaced along Dry Fork Creek in November 2008. Approximately 225 live woody plants, including 210 sandbar cuttings, were observed along the reconstructed banks of Dry Fork Creek in 2011. Numerous new sandbar willow shoots are propagating from the planted cuttings. The overall survival rate of the woody plants based on the 2011 observations is 36 percent. Approximately 42 percent of the sandbar willow cuttings have survived. Many of the woody species may not have been counted as a result of obscuration.

3.3. Soil

The project site is mapped in the Sanders County Soil Survey (USDA 2010) as the Dry Fork-Selow silt loam and the White Earth silt loam, both found on 0 to 4

percent slopes. The Dry Fork-Selow soils were formed from lacustrine deposits on lake plains and terraces. The White Earth soils are predominantly alluvium and are found on alluvial fans and stream terraces. These soils are not included on the Montana Hydric Soil List. The existing soil structure was disturbed during 2008 construction. The soil map units were generally not confirmed by the test pit soils.

Two soil samples (SS-1-Cell 1 and SS-2-Cell 2) were collected and analyzed for pH, electrical conductivity (EC), calcium, magnesium, sodium, and sodium adsorption ratio (SAR) in 2008, 2010, and 2011. The soil sample collection points are shown on Figure 2 (Appendix A). Results from the 2009 sampling were erroneous and, therefore, were not included in the 2009 report.

Table 5. Soil sample results measuring pH, EC, Ca, Mg, Na, and SAR.

Year and Soil Sample	pH (s.u.)	Electrical Conductivity (mmhos/cm)	Calcium (meq/L)	Magnesium (meq/L)	Sodium (meq/L)	SAR (unitless)
2003 Baseline-Cell 2	10.6	23.1	0.8	0.22	357	500
2008 SS-1	7.6	4.87	25.5	14.4	28.3	6.34
2010 SS-1	7.5	4.3	18.8	6.8	22.4	6.3
2011 SS-1	8.9	<0.005	1.2	0.96	34	32.5
2008 SS-2	7.7	5.24	26.9	10.5	36.5	8.43
2010 SS-2	8	0.87	1.9	1.1	4.6	3.8
2011 SS-2	9.9	0.039	1.7	0.41	487	400

The EC levels have decreased measurably at both sample locations since baseline samples were analyzed in 2003. The EC measured in SS-1 decreased from 4.87 mmhos/cm in 2008 to <0.005 mmhos/cm in 2011. The EC at SS-2 decreased from 5.24 mmhos/cm in 2008 to 0.0.039 mmhos/cm in 2011. Calcium and magnesium levels in both samples decreased from 2010 to 2011. The sodium measured at SS-1 increased from 22.4 meq/L to 34 meq/L from 2010 to 2011 and from 4.6 meq/L to 487 meq/L at SS-2 during the same time period. Sample SS-2 was collected from a bare area that exhibited a salt crust on the ground surface. The SAR also increased from 2010 to 2011 at both locations. The performance standards for hydric soil specified the following maximum limits for the treated slickspot areas: pH of 10.6, 357 meq/L of sodium, SAR of 500, and EC of 23.1 mmhos/cm. The 2011 soil sample results at both locations were several times less than the specified limits, with the exception of sodium at the SS-2 sample location.

Ten test pits were excavated at the Lonepine monitoring site. Data points Cell1WDdry to Cell5WDdry were located in upland areas and Cell1WDwet to Cell5WDwet were located in wetland areas. Upland test pits for Cells 1 and 2 revealed dark grayish brown (10YR 4/3), silty clay loam soils with no redoximorphic features. The upland test pit for cell 3 revealed a grayish brown (2.5Y 5/2), silty clay soil with no redox features. Upland test pit 4 revealed a very dark gray brown (10YR 2/2) clay loam soil with no redox features. The matrix

color at upland test pit 5 was the same as 4 and the soil texture was identified as a silty clay loam. The soil profile at Cell1WDwet was a dark brown (10YR 4/3) silty clay soil without redox features. The soil was assumed to be problematic as a result of relatively recent development and considered hydric based on the presence of wetland vegetation and hydrology indicators. Cell 1 had 2 centimeters of muck at the surface although no other hydric soil indicators had developed. Cell2WDwet was a black (10YR 3/1) silty clay without redox features. The low chroma was a hydric soil indicator. Cell3WDwet was a dark grey silty clay without redox features. A sulfidic odor and low chroma were hydric soil indicators. Soil profile Cell4WDwet exhibited a black muck without redox features. The sulfidic odor and low chroma were positive indicators of hydric soil. Test pit Cell5WDwet was a dark gray silty clay soil with a low chroma.

3.4. Wetland Delineation

Ten data points were used to determine the wetland and upland boundaries shown on Figure 3 (Appendix A). The Wetland Data Forms are included in Appendix B. The total area of wetland habitat delineated in 2011 encompassed 34.60 acres. The acreage includes 7.13 acres of pre-existing wetland. The open water acreage from 2010 (2.33 acres) was reclassified as aquatic bed habitat in 2011. The overall wetland acreage increased by 2.52 acres from 2010 to 2011 as a result of a transition in some areas from upland to wetland vegetation communities.

Table 6. Wetland acreage identified from 2009 to 2011.

WETLAND HABITAT	2009	2010	2011
Pre-existing Wetlands (acres)	7.1	7.13	7.13
Open Water (acres)*	--	2.33	--
Net Wetlands (acres)	--	22.61	27.47
Total Wetland Habitat (acres)	21.74	32.07	34.60

*Open water category incorporated into wetland category in 2009.

3.5. Wildlife

The Lonepine wetland complex provides emergent marsh, aquatic bed, wet meadow, and upland habitat for several bird guilds and wildlife species. The MDT wetland staff observed 15 bird species in spring 2009 and three mammal and four bird species in August 2009. Animal species observed directly and indirectly in 2011 included a deer sp., juvenile fish, coyote (*Canis latran*s), and red fox (*Vulpes vulpes*). Thirteen bird species were observed in 2011 including an American coot (*Fulica americana*), barn swallow (*Riparia riparia*), brown-headed cowbird (*Molothrus ater*), Canada goose (*Branta canadensis*), common tern (*Stirna hirundo*), great blue heron (*Ardea herodias*), greater yellowlegs

(*Tringa melanoleuca*), killdeer (*Charadrius vociferus*), mallard (*Anas platyrhynchos*), northern harrier (*Circus cyaneus*), ring-necked pheasant (*Phasianus colchicus*), spotted sandpiper (*Actitis macularius*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

Table 7. Wildlife species observed at the Lonepine Wetland Mitigation Site from 2008 to 2011.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Frog sp.	
MAMMAL	
Coyote	***Canis latrans***
Deer Sp.	
Meadow Vole	*Microtus pennsylvanicus*
Red Fox*	***Vulpes vulpes***
White-tailed Deer*	*Odocoileus virginianus*
FISH	
Juvenile fish	
BIRD	
American Coot	**Fulica americana**
American White Pelican	*Pelecanus erythrorhynchos*
American Wigeon	*Anas americana*
Bald Eagle*	*Haliaeetus leucocephalus*
Bank Swallow	***Riparia riparia***
Barn Swallow	*Hirundo rustica*
Black-billed Magpie	*Pica hudsonia*
Blue-winged Teal	*Anas discors*
Brown-headed Cowbird	***Molothrus ater***
Canada Goose	***Branta canadensis***
Cinnamon Teal*	*Anas cyanoptera*
Common Nighthawk	*Chordeiles minor*
Common Tern	***Sterna hirundo***
Great Blue Heron	***Ardea herodias***
Greater Yellowlegs	***Tringa melanoleuca***
Green-winged Teal	*Anas crecca*
Killdeer	***Charadrius vociferus***
Long-billed Curlew*	*Numenius americanus*
Mallard	***Anas platyrhynchos***
Northern Harrier	***Circus cyaneus***
Northern Shoveler*	*Anas clypeata*
Red-winged Blackbird*	*Agelaius phoeniceus*
Red-tailed Hawk*	*Buteo jamaicensis*
Ring-necked Pheasant	***Phasianus colchicus***
Short-eared Owl*	*Asio flammeus*
Spotted Sandpiper	***Actitis macularius***
Wilson's Snipe*	*Gallinago delicata*
Yellow-headed Blackbird	**Xanthocephalus xanthocephalus**

Species identified in 2011 are listed in **bold** type.

*Species identified in 2011 by MDT.

3.6. Functional Assessment

The baseline assessment completed in 2003 was assessed using the 1999 MWAM. The 2008 MWAM was used to complete the functional assessments from 2008 to 2011. The site was separated into two AAs, the five constructed cells and the Dry Fork Creek riparian area. The respective areas were 23.73 acres and 10.88 acres. Table 8 summarizes the results of the 2003 (Baseline) and 2010 and 2011 functional assessments. The 2011 assessment forms are included in Appendix B.

The percent possible points for the Dry Creek riparian area increased from 70 percent in 2010 to 71.82 percent in 2011 with point increases in general wildlife habitat and short and long term surface water storage. The Dry Creek riparian corridor provided documented secondary habitat for the great blue heron and the bald eagle, suspected secondary habitat for the long-billed curlew and wester toad, and incidental habitat for the American white pelican. The functional units increased from 65.22 to 85.87 reflecting continued wetland development at the site.

The constructed wetland cells (Cells 1 to 5) received 73.0 percent of the total points possible in 2011, an increase of 0.78 percentage points from 2010. Ratings were excellent for general wildlife habitat and production export/food chain support and high for short and long term surface water storage, sediment/nutrient/toxicant removal, groundwater discharge/recharge, and recreation/education potential (bonus points). The rating for general wildlife habitat improved as a direct result of increased observations of wildlife use during the investigation. The ratings for sediment/nutrient/toxicant removal and sediment/shoreline stabilization increased as a result of the increase in vegetation cover.

The net acreage gain across the site since 2003 was 27.42 acres. The total functional units achieved at the site in 2011 were 259.03, a net functional unit gain for both assessment areas of 224.09 compared to the 2003 baseline conditions.

3.7. Photo Documentation

Representative photographs of the project site taken of photo points PP1 through PP15 from 2009 to 2011 are shown on pages C-1 through C-14 of Appendix C. The transect end points are shown on pages C-10 and C-11 of Appendix C. The photos illustrate the increase in wetland and vegetation cover development over time.

Table 8. Summary of the 2003 Baseline and 2009 to 2011 wetland function/value ratings and functional points at the Lonepine Wetland Mitigation Site.

Function and Value Parameters from the MDT Montana Wetland Assessment Method	2003[1] Baseline Dry Fork Creek	2003[1] Baseline Isolated Wetlands	2010[2] Dry Fork Creek	2010[2] Cells 1-5	2011[2] Dry Fork Creek	2011[2] Cells 1-5
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Low (0.3)	Low (0.1)	High (0.9)	High (0.9)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	Mod (0.4)	NA	Mod (0.5)	NA	Mod (0.4)	Low (0.3)
Flood Attenuation	Mod (0.5)	NA	Mod (0.6)	NA	Mod (0.6)	NA
Short and Long Term Surface Water Storage	Mod (0.6)	Low (0.3)	High (0.8)	High (1.0)	High (1.0)	High (0.9)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	NA	High (1.0)	Mod (0.7)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	NA	Mod (0.7)	Mod (0.7)	Mod (0.7)	High (0.9)
Production Export/ Food Chain Support	High (0.8)	Low (0.1)	High (1.0)	High (1.0)	Exc. (1.0)	Exc. (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.1)	Low (0.1)	High (0.2)	High (0.2)	High (0.2)	High (0.2)
Actual Points / Possible Points	**5.0 / 12**	**1.9 / 8**	**7.7 / 11**	**6.5 / 9**	**7.9 / 11**	**7.3 / 10**
% of Possible Score Achieved	**47%**	**24%**	**70%**	**72%**	**72%**	**73%**
Overall Category	**III**	**IV**	**II**	**II**	**II**	**II**
Acreage of Assessed Aquatic Habitats within Easement (ac)	**6.87**	**0.31**	**8.47**	**23.60**	**10.87**	**23.73**
Functional Units (acreage x actual points) **(f[1]-)**	**34.35**	**0.59**	**65.22**	**153.40**	**85.87**	**173.23**
Net Acreage Gain (ac)	NA		**24.89**		**27.41**	
Net Functional Unit Gain (fu)	NA		**183.68**		**224.10**	

[1]Berglund 1999
[2]Berglund and McEldowney 2008

3.8. Maintenance Needs

There were no maintenance needs identified for the ditches, inlet, or outlet structures within the mitigation site. The locations of infestations of Canada thistle, whitetop, and spotted knapweed (*Centaurea maculosa*), Priority 2B noxious weeds, were shown on Figure 3 (Appendix A). Canada thistle was identified primarily within the upland perimeter of the west half of the site and within the riparian corridor. The size ranged from less than 0.1 acre to between 0.1 and 1.0 acre. The cover class ranged from low (1 to 5 percent) to moderate (5 to 25 percent). Two infestations of spotted knapweed were observed near the southwest corner of the site. The size was less than 0.1 acres and the cover was low. Whitetop was noted at a trace amount in one location less than 0.1 acre in size near the southwest corner of the site.. Two acres of Canada thistle and spotted knapweed were sprayed by MDT in 2011.

3.9. Current Credit Summary

The total area of wetland habitat delineated in 2011 encompassed 34.59 acres. The acreage included 7.13 acres of pre-existing wetland. The overall wetland acreage increased by 2.52 acres from 2010 to 2011.

Table 9 summarizes the estimated credit acreages for 2010 and 2011. The CSKT and USACE will authorize the final mitigation credits earned at the site. The credit estimate calculated in 2011 totaled 14.25 credit acres based on the CSKT credit ratios, an increase of 0.82 acres since 2010. The USACE 2011 credit estimate was 29.01 credit acres, an increase of 2.2 credit acres since 2010. Full credit was applied to the constructed Dry Fork channel based on the percent survival (210 live cuttings observed) and continued propagation of sandbar willow cuttings. The USACE credit for the riparian intercell swales was reduced to 0.0 acres to address the lack of shrub planting success (less than 12 percent) in this area. The mitigation areas were compared to the performance standards. A majority of the performance standards have been met except for the standard addressing the planted shrub densities. Woody species survival was less than the 75 percent target. The cover of Canada thistle in the upland areas located in the west half of the site increased from 2010 to 2011. The thistle and spotted knapweed were sprayed by MDT in 2011. Overall noxious weed cover was less than 10 percent, meeting the success criteria.

Table 9. The 2010 and 2011 Tribal (CSKT) and USACE estimated credit acreages at the Lonepine Wetland Mitigation Site.

PROPOSED FEATURE	CSKT CREDIT RATIOS	CSKT CREDIT TARGET (ACRES)	USACE CREDIT RATIOS	USACE CREDIT TARGET	2010 DELINEATED ACRES	2010 ESTIMATED CSKT CREDIT ACRES	USACE 2010 ESTIMATED CREDIT ACRES	2011 DELINEATED WETLAND ACRES	2011 ESTIMATED CSKT CREDIT ACRES	USACE 2011 ESTIMATED CREDIT ACRES*	2011 PERFORMANCE STANDARD COMMENTS
Wetland cells, wetland excavation, and designed intercell swales that have developed into wetlands	1:3.04	7.02	1:1 (OW limited to 10% of wetlands)	21.35	22.86	7.68	22.86	25.38	8.35	25.38	Wetland Hydrology: Satisfied Hydric Soil: Satisfied Noxious Weed Cover: Satisfied Hydrophytic Veg Cover in Gypsum-Treated Areas: Satisfied Hydrophytic Veg Cover in Untreated Areas: Meeting target exc.Na
New Dry Fork channel and wetland fringe along dam face	1:1.54	0.19	1:1	0.3	1.54	0.84	1.38*	1.54	1.00	1.54	Bank Stability: Satisfied Noxious Weed Cover: Satisfied Cutting Survival: On target Shrub Survival: Below target
New Dry Fork Creek channel in pre-existing Wetland 1	1:1.54	0.03	1:1.5	0.03	0.04	0.03	0.03	0.04	0.03	0.03	Bank Stability: Satisfied
Dry Fork Creek meander re-activation	1:1.54	0.17	1:1.5	0.17	0.26	0.17	0.17	0.26	0.17	0.17	Bank Stability: Satisfied Noxious Weed Cover: Satisfied Cutting Survival: On target
Protection / grazing removal at pre-existing wetlands	1:1.54	4.31	1:5	1.33	7.13	4.63	1.43	7.13	4.63	1.43	Fencing and Grazing Exclusion: Satisfied
Riparian intercell swales	1:3.04	0.14	1:4	0.11	0.24	0.08	0.00**	0.24	0.08	0.00	Noxious Weed Cover: Satisfied Shrub Survival: Below target
Upland buffer	None (no planting proposed)	0.00	1:4 (max. 50 ft width)	0.56	2.23	0.00	0.56	2.23	0.00	0.56	Fencing: Satisfied Noxious Weed Cover: Marginal Vegetation Cover: Satisfied
TOTAL		**11.86**		**23.85**	**32.07**	**13.43**	**26.90**	**34.59**	**14.26**	**29.11**	

*The estimated credit acreage of the New Dry Fork channel was reduced by 0.16 acres in 2010 to account for poor woody species survival. The acreage associated with the riparian intercell swales was not included in the credit acre estimate as a result of poor (less than 12 percent) shrub survival.

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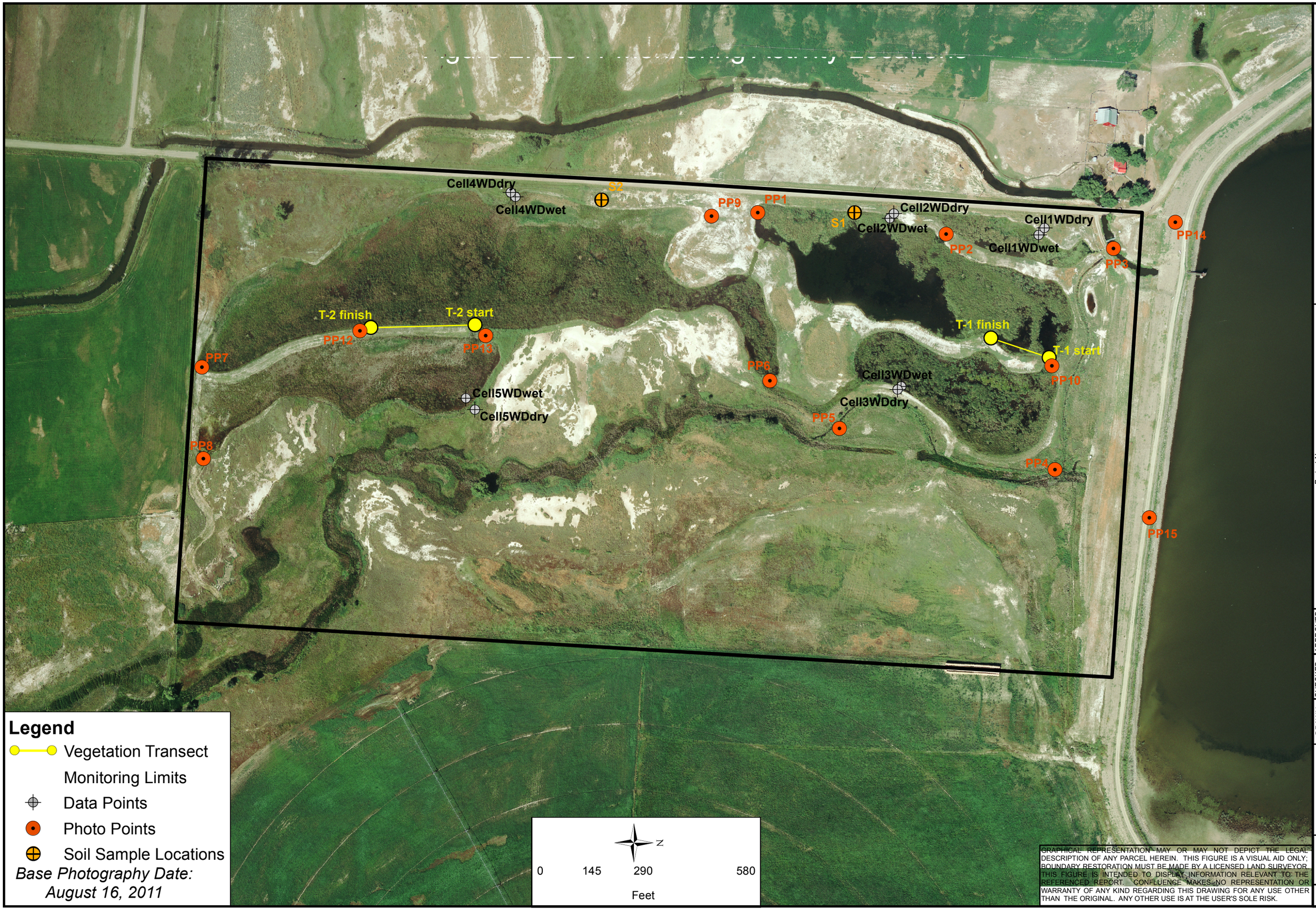
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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Lonepine Wetland Mitigation Project
Flathead Indian Reservation, Montana



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

LOCATION: Sanders Co., MT

PROJECT NO: STPX 45(33)

FILE: LonePine/Monitor2011.mxd

Project Name
Lone Pine Wetland Mitigation Site

Drawing Title
2011 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 21, 2011

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure
2

REV -

Figure 3: 2011 Mapped Site Features

Acreages

Project Area	79.49 acres
Gross Wetlands	34.60 acres
Pre-existing Wetlands	7.13 acres
Net Wetlands	27.47 acres
Uplands	44.89 acres

Vegetation Community Types

6 Kochia scoparia
7 Phalaris arundinacea/Salix spp.
8 Typha latifolia/Scirpus spp.
10 Aquatic Macrophytes/Open Water
11 Distichlis spicata/Kochia scoparia
12 Puccinellia nuttalliana
13 Alopecurus pratensis/Phalaris arundinacea
14 Typha latifolia/Phalaris arundinacea
15 Scirpus maritimus/Typha latifolia
16 Elymus varnensis/Agropyron repens
17 Alopecurus pratensis/Beckmannia syzigachne

Noxious Weeds
Centaurea maculosa
Cirsium arvense
Infestation SIze
X = <0.1 acre
▲ = 0.1 to 1 acre
■ = 1 to 5 acre

Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (5-25% cover)
H = High (25-100% cover)

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities

Base Photography Date: August 16, 2011

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

LOCATION: Sanders Co., MT
PROJECT NO: STPX 45(33)
FILE: LonePine/Veg2011.mxd

Project Name: Lone Pine Wetland Mitigation Site
Drawing Title: 2011 Mapped Site Features

DRAWN BCS | CHECKED BV | APPROVED JJ
SCALE: Noted
Drawn: September 21, 2011
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

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

MDT Wetland Mitigation Monitoring
Lonepine Wetland Mitigation Project
Flathead Indian Reservation, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Lonepine Assessment Date/Time 7/31/2011

Person(s) conducting the assessment: J. Asebrook, J. Hintz

Weather: Sunny, hot Location: Lonepine, MT

MDT District: Missoula Milepost:

Legal Description: T 22N R 24W Section(s) 3

Initial Evaluation Date: 7/25/2008 Monitoring Year: 4 #Visits in Year: 1

Size of Evaluation Area: 80 (acres)

Land use surrounding wetland:

agriculture, reservoir

HYDROLOGY

Surface Water Source: Lower Dry Fork Reservoir via Camas C canal

Inundation: ☑ Average Depth: 1 **(ft)** Range of Depths: 0-3 **(ft)**

Percent of assessment area under inundation: 5 %

Depth at emergent vegetation-open water boundary: 1 **(ft)**

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

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

Soil cracks present in areas of Distichlis spicata, which were wet in the spring. Hydrological indicators included water marks, water-stained leaves, FAC-neutral, drift lines, drainage patterns.

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
No Wells	

Additional Activities Checklist:

☐ Map emergent vegetation-open water boundary on aerial photograph.

☐ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

Some wetland areas did not have standing water but were saturated at or near the surface with the water table near the surface as well.

VEGETATION COMMUNITIES

Site Lonepine

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

* Indicates accepted spp name not on '88 list.

Community # 6 **Community Type:** Kochia scoparia / **Acres:** 13.92

Species	Cover class	Species	Cover class
Agropyron repens	1	Agropyron trachycaulum	1
Bromus tectorum	0	Chenopodium rubrum	0
Cirsium arvense	0	Distichlis spicata	1
Elymus cinereus	0	Elymus triticoides	0
Elymus varnensis	2	Halogeton glomeratus	1
Hordeum jubatum	0	Kochia scoparia	4
Lepidium perfoliatum	2	Melilotus alba	0
Puccinellia nuttalliana	2	Rumex crispus	0
Sonchus arvensis	0	Suaeda depressa	2

Comments:

This upland area remains with sandy, open areas that often have low vegetation cover. A few areas within community appear have had standing water in the spring where DISSPI is present.

Community # 7 **Community Type:** Phalaris arundinacea / Salix spp. **Acres:** 0.92

Species	Cover class	Species	Cover class
Agrostis alba	0	Alopecurus pratensis	2
Beckmannia syzigachne	0	Carex lanuginosa	0
Chara spp.	3	Cirsium arvense	2
Cirsium vulgare	0	Crataegus douglasii	0
Elymus varnensis	1	Epilobium palustre	0
Glyceria grandis	0	Glyceria striata	0
Hordeum jubatum	0	Juncus balticus	0
Phalaris arundinacea	4	Puccinellia nuttalliana	0
Ribes aureum	0	Rosa woodsii	0
Rumex maritimus	0	Salix exigua	2
Salix lasiandra	0	Salix lutea	0
Scirpus acutus	0	Scirpus maritimus	0
Solanum dulcamara	0	Sonchus arvensis	0
Typha latifolia	0		

Comments:

Thin wetland strip along creek that has been planted with willow and other shrub species.

Community # 8 **Community Type:** Typha latifolia / Scirpus spp. **Acres:** 16.16

Species	Cover class	Species	Cover class
Agropyron repens	0	Agropyron trachycaulum	1
Algae, brown	0	Algae, green	3
Alisma plantago-aquatica	0	Alopecurus pratensis	1
Beckmannia syzigachne	1	Carex utriculata*	0
Chara spp.	1	Cirsium arvense	0
Eleocharis palustris	1	Elymus varnensis	0
Epilobium palustre	0	Hordeum jubatum	0
Juncus balticus	0	Kochia scoparia	0
Lemna minor	2	Lepidium perfoliatum	0
Phalaris arundinacea	0	Polygonum amphibium	0
Polypogon monspeliensis	0	Puccinellia nuttalliana	1
Rumex crispus	0	Rumex maritimus	0
Scirpus acutus	4	Scirpus maritimus	2
Scirpus microcarpus	0	Suaeda depressa	0
Trifolium hybridum	0	Typha latifolia	4

Comments:

This community was merged with community 2 in 2010.

Community # 10 **Community Type:** Aquatic Macrophytes / Open Water **Acres:** 2.5

Species	Cover class	Species	Cover class
Algae, brown	2	Algae, green	2
Alisma plantago-aquatica	0	Alopecurus pratensis	0
Beckmannia syzigachne	0	Ceratophyllum demersum	4
Chara spp.	0	Elymus varnensis	0
Glyceria striata	0	Lemna minor	1
Open water	5	Polygonum amphibium	0
Scirpus acutus	1	Scirpus maritimus	0
Typha latifolia	1		

Comments:

This community consists of an aquatic bed and is mostly inundated.

Community # 11 **Community Type:** Distichlis spicata / Kochia scoparia **Acres:** 0.21

Species	Cover class	Species	Cover class
Chenopodium rubrum	0	Distichlis spicata	3
Elymus varnensis	0	Halogeton glomeratus	2
Hordeum jubatum	0	Kochia scoparia	4
Puccinellia nuttalliana	1	Suaeda depressa	2

Comments:

This area had standing water this year. Dry in 2010 at the time of monitoring. Very small wet area fueled by dam seepage at north end of property that is clearly dominated by DISSPI and KOCSCO.

Community # 12 **Community Type:** Puccinellia nuttalliana / **Acres:** 0.45

Species	Cover class	Species	Cover class
Agropyron trachycaulum	1	Alopecurus pratensis	1
Beckmannia syzigachne	0	Elymus varnensis	1
Hordeum jubatum	0	Puccinellia nuttalliana	4
Rosa woodsii	0	Scirpus maritimus	0
Suaeda depressa	1	Typha latifolia	1

Comments:

A small wetland type that occupies constructed outlet channel at the south end of the property. Was wetter in the spring - dry during site visit.

Community # 13 **Community Type:** Alopecurus pratensis / Phalaris arundinacea **Acres:** 1.15

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron repens	3
Alopecurus pratensis	4	Bromus inermis	2
Carex lanuginosa	0	Carex stipata	0
Chenopodium rubrum	2	Cirsium arvense	1
Elymus varnensis	1	Juncus balticus	0
Lactuca serriola	0	Lepidium perfoliatum	1
Phalaris arundinacea	3	Poa palustris	0
Poa pratensis	0	Rumex crispus	0
Sonchus arvensis	0	Symphoricarpos occidentali	0
Taraxacum officinale	0		

Comments:

New community delineated in 2011 to better describe patches of vegetation that are dominated by aggressive wetland grasses, particularly ALOPRA. Adjacent to community 14 that has high groundwater and supports cattail and reed canarygrass.

Community # 14 **Community Type:** Typha latifolia / Phalaris arundinacea **Acres:** 9.04

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Anthemis cotula	0
Beckmannia syzigachne	1	Carex lanuginosa	0
Carex stipata	1	Carex utriculata*	0
Cirsium arvense	1	Crataegus douglasii	1
Epilobium palustre	0	Glyceria grandis	0
Phalaris arundinacea	2	Poa palustris	0
Polygonum lapathifolium	0	Rosa woodsii	1
Salix alba	0	Scirpus microcarpus	0
Sparganium emersum	0	Typha latifolia	5

Comments:

This is new community defined in 2011 to better describe a type that is similar to community 8 except that there is no Scirpus acutus. There is a high cover of Phalaris arundinacea, Alopecurus pratensis, Crataegus douglasii and weedy grasses.

Community # 15 **Community Type:** Scirpus maritimus / Typha latifolia **Acres:** 3.79

Species	Cover class	Species	Cover class
Agropyron repens	3	Agropyron trachycaulum	1
Algae, brown	1	Algae, green	1
Alopecurus pratensis	3	Anthemis cotula	0
Beckmannia syzigachne	2	Carex utriculata*	1
Cirsium arvense	0	Cirsium vulgare	1
Distichlis spicata	1	Eleocharis palustris	1
Elymus varnensis	0	Hordeum brachyantherum	0
Hordeum jubatum	1	Juncus balticus	1
Lemna minor	1	Lepidium perfoliatum	0
Poa juncifolia	0	Puccinellia nuttalliana	2
Rumex crispus	0	Scirpus acutus	1
Scirpus maritimus	4	Sonchus arvensis	0
Suaeda depressa	0	Typha latifolia	3

Comments:

This type was called Agropyron trachycaulum last year but the vegetation is changing to more typical wetland vegetation due to inundation here. This may eventually become like community 8 (Scirpus acutus/Typha latifolia). This community already merged comm 4 and comm 1 from 2009.

Community # 16 Community Type: Elymus varnensis / Agropyron repens **Acres:** 30.97

Species	Cover class	Species	Cover class
Agropyron repens	3	Agropyron trachycaulum	2
Alopecurus pratensis	0	Anthemis cotula	0
Bromus inermis	1	Camelina microcarpa	0
Cardaria draba	0	Centaurea maculosa	0
Chenopodium rubrum	2	Cichorium intybus	0
Cirsium arvense	0	Cirsium vulgare	0
Descurainia sophia	0	Distichlis spicata	0
Elymus cinereus	0	Elymus triticoides	1
Elymus varnensis	4	Epilobium brachycarpum	0
Festuca pratensis	0	Glycyrrhiza lepidota	0
Grindelia squarrosa	0	Halogeton glomeratus	0
Hordeum brachyantherum	0	Hordeum jubatum	1
Kochia scoparia	3	Lactuca serriola	1
Lepidium perfoliatum	2	Medicago lupulina	0
Melilotus alba	0	Melilotus officinalis	0
Poa juncifolia	0	Poa pratensis	0
Polygonum lapathifolium	0	Populus deltoides	0
Puccinellia nuttalliana	1	Rumex crispus	0
Sisymbrium altissimum	0	Sonchus arvensis	0
Suaeda depressa	2	Thlaspi arvense	0
Tragopogon dubius	0		

Comments:

This community was Agropyron trachycaulum/Elymus triticoides (Com 5) in 2010. Both those grasses are still present but in much lower amounts. In 2011, Elymus varnensis and Agropyron repens are now dominant.

Community # 17 Community Type: Alopecurus pratensis / Beckmannia syzigachne **Acres:** 0.38

Species	Cover class	Species	Cover class
Agropyron repens	0	Alopecurus pratensis	5
Beckmannia syzigachne	2	Cirsium arvense	0
Eleocharis palustris	2	Elymus triticoides	0
Elymus varnensis	0	Hordeum jubatum	0
Phalaris arundinacea	2	Puccinellia nuttalliana	1
Scirpus acutus	0	Scirpus maritimus	0
Scirpus microcarpus	0	Sonchus arvensis	0

Comments:

This small type was called Beckmannia syzigachne/Glyceria striata in 2010. Due to the increase in ALOPRA, it was called Alopecurus pratensis/Beckmannia syzigachne. This is located just south of the planted creek area.

Total Vegetation Community Acreage **79.49**

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

VEGETATION TRANSECTS

Site: Lonepine Date: 7/31/2011

Transect Number: 1 **Compass Direction from Start:** 196

Interval Data:

Ending Station 66 **Community Type:** Typha latifolia / Scirpus spp.

Species	Cover class	Species	Cover class
Algae, brown	4	Algae, green	1
Alisma plantago-aquatica	0	Alopecurus pratensis	1
Aquatic macrophytes	4	Beckmannia syzigachne	0
Eleocharis palustris	0	Kochia scoparia	1
Lemna minor	4	Open water	1
Puccinellia nuttalliana	0	Rumex maritimus	0
Scirpus acutus	5	Scirpus maritimus	1
Suaeda depressa	1	Typha latifolia	2

Ending Station 105 **Community Type:** Aquatic Macrophytes / Open Water

Species	Cover class	Species	Cover class
Algae, brown	4	Aquatic macrophytes	1
Lemna minor	1	Open water	5
Polygonum amphibium	0	Scirpus acutus	2

Ending Station 117 **Community Type:** Typha latifolia / Scirpus spp.

Species	Cover class	Species	Cover class
Algae, green	2	Alisma plantago-aquatica	1
Lemna minor	4	Open water	4
Scirpus acutus	4	Typha latifolia	1

Ending Station 150 **Community Type:** Aquatic Macrophytes / Open Water

Species	Cover class	Species	Cover class
Algae, green	5	Alisma plantago-aquatica	0
Lemna minor	2	Open water	5
Scirpus acutus	2	Typha latifolia	1

Transect Notes:

150 foot transect.

Transect Number: 2 **Compass Direction from Start:** 180

Interval Data:

Ending Station 300 **Community Type:** Typha latifolia / Scirpus spp.

Species	Cover class	Species	Cover class
Agropyron repens	0	Alopecurus pratensis	2
Beckmannia syzigachne	2	Eleocharis palustris	0
Hordeum jubatum	0	Phalaris arundinacea	0
Puccinellia nuttalliana	0	Rumex crispus	0
Scirpus acutus	4	Scirpus maritimus	3
Typha latifolia	5		

Transect Notes:

300 foot transect. Transect was initially established to run adjacent to dike area to monitor eroding dike face and prevent 'quick sand issues' during monitoring. East side of line is in upland habitat and west side of line is in wetland habitat. Entered plants on wetland side of transect.

PLANTED WOODY VEGETATION SURVIVAL

Lonepine

Planting Type	#Planted	#Alive	Notes
Ribes aureum	70	3	3 living stems in vegetation community 7
Salix exigua	500	210	Observed within veg community 7
Salix lasiandra	60	11	Observed within veg community 7
Salix lutea		1	Observed within veg community 7

Comments

New sprouts of SALEXI are occurring so some individuals counted may not have been planted. Some SALEXI are standing dead - uncertain if mortality occurred in 2010 or 2011 or earlier. Live woody vegetation observed along Dry Fork Creek meander.

Lonepine

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Coot	15	F, FO	MA, OW
Bank Swallow	25	FO	
Brown-headed Cowbird	20	F	MA
Canada Goose	44	FO	
Common Tern	8	FO	
Great Blue Heron	2	FO	
Greater Yellowlegs	7	F	MA, OW
Killdeer	5	F	MF, OW
Mallard	2	FO, L	MA, OW
Northern Harrier	1	F	UP
Ring-necked Pheasant	1	F	MF
Spotted Sandpiper	1	FO	
Yellow-headed Blackbird	6	FO, L	MA

Bird Comments

There were several other species of waterfowl (ducks primarily) not identified. A lot of bird activity within these wetland cells.

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Coyote		Yes	No	No	
Deer Spp.		Yes	Yes	No	
Juvenile fish	200	No	No	No	
Red Fox		Yes	No	No	

Wildlife Comments:

Lonepine

PHOTOGRAPHS

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

Photograph Checklist:

☐ One photograph for each of the four cardinal directions surrounding the wetland.

☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☐ At least one photograph showing the buffer surrounding the wetland.

☐ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
543-547	47.69947473	-114.66554021	180	PP15: view looking south
548-553	47.69960817	-114.6686369	180	PP14: view looking south
551-553	47.69779617	-114.66873136	90	PP2: view looking east; has series of stakes
554	47.6959555	-114.66876791	180	PP9: view looking south
555-557	47.69633478	-114.66879381	90	PP1: view looking east; has stake
561-563			90	PP2
565-570	47.6990636	-114.66864109	180	PP3: view looking south
573	47.69865096	-114.66735438	180	PP10: looking south along start of T1
576-582	47.69881801	-114.66612266	270	PP4: view looking west (retook one photo with stomped down PHAARU)
583-586	47.69649471	-114.66687025	270	PP6: view looking west
587	47.69718949	-114.66661418	62	PP5: view looking NE along Dry Fork Creek
591	47.69423705	-114.66730996	0	PP12: looking north along start of T2
592	47.69339458	-114.66722346	180	PP13: looking south along end of T2
593-595	47.6921326	-114.66663999	315	PP7: view looking NW
596-599	47.6921782	-114.66561757	90	PP8: view looking east
596-599			315	PP8
600-602	47.6921782	-114.66561757	90	PP8
603-607	47.69633478	-114.66879381	0	PP1: view looking north

Comments:

Lonepine

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Functional Assessments

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

Functional Assessment Comments:

Maintenance

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

If yes, do they need to be repaired?

If yes, describe the problems below and indicate if any actions were taken to remedy the problems

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell1WDdry

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.698554 | Long: -114.668828 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an upland companion plot to Cell1WDwet. There is no hydrophytic vegetation, no hydric soil, and no wetland hydrology. It is not within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Elymus varnensis	25	☑	NI
2. Lepidium perfoliatum	25	☑	FACU
3. Kochia scoparia	10	☐	FAC
4. Agropyron trachycaulum	10	☐	FAC
5. Puccinellia nuttalliana	2	☐	FACW
6. Suaeda depressa	1	☐	FACW
7. Poa bulbosa	1	☐	NI
8. Hordeum jubatum	1	☐	FAC
9. Polygonum lapathifolium	1	☐	FACW
10.	0	☐	
11.	0	☐	
	76 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:
Does not meet any hydrophytic vegetation criteria. Does not pass the Dom Test or the Prev Index.

SOIL

Sampling Point: Cell1WDdr

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/3	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine mixed superactive, frigid, Typic Natrixeralfs

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:
No hydric soil criteria present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell1WDwet

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.698545 | Long: -114.668776 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is a wetland companion plot to Cell1WDdry. There is hydrophytic vegetation, hydric soil, and wetland hydrology. It is within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Scirpus maritimus	70	☑	OBL
2. Typha latifolia	10	☐	OBL
3. Scirpus acutus	5	☐	OBL
4. Puccinellia nuttalliana	5	☐	FACW
5. Distichlis spicata	2	☐	FAC
6. Hordeum jubatum	2	☐	FAC
7. Eleocharis palustris	2	☐	OBL
8. Agropyron repens	10	☐	FAC
9. Alopecurus pratensis	1	☐	FACW
10. Beckmannia syzigachne	1	☐	OBL
11. Agropyron trachycaulum	1	☐	FAC
	109 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Area of Cell 1 is dominated by hydrophytic vegetation - passes Dom Test. Also present: green algae (20%) and Elymus varnensis (NI - 1%).

SOIL

Sampling Point: Cell1WDwe

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	GLEY1 2.5N	100					Muck	
2-18	10YR 4/3	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☑ Other (explain in remarks)

Taxonomy Subgroup: Fine mixed superactive, frigid, Typic Natrixeralfs

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Problematic soil as a result of recent development. Indicators for wetland vegetation and hydrology (100% inundated in Cell 1) present. Determined to be a hydric soil. This cell has 2 cm of muck at the surface but other hydric soil indicators have not yet developed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☑ Innundated
- ☑ Saturated in upper 12 inches
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☑ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☑ No ☐	Depth (inches):	8
Water Table Present?	Yes ☑ No ☐	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ☑ No ☐	Depth (inches):	0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Cell 1 is 100% inundated. Water ranges from 1- 24 inches.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell2WDdry

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.697415 | Long: -114.668866 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an upland companion plot to Cell2WDwet. Although this area has hydrophytic vegetation, no hydric soil and no wetland hydrology are present. It is not within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Suaeda depressa	60	☑	FACW
2. Kochia scoparia	5	☐	FAC
3. Lepidium perfoliatum	2	☐	FACU
4. Puccinellia nuttalliana	1	☐	FACW
5. Elymus varnensis	1	☐	NI
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	69 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Vegetation is hydrophytic - passes the Dom Test.

SOIL

Sampling Point: Cell2WDdr

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	100					Silty Clay	
5-20	10YR 4/3	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine mixed superactive, frigid, Typic Natrixeralfs

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil criteria present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No wetland hydrology indicators present

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell2WDwet

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.697408 | Long: -114.668827 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an wetland companion plot to Cell2WDdry. There is hydrophytic vegetation, hydric soil, and wetland hydrology. It is within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Scirpus acutus	40	☑	OBL
2. Typha latifolia	30	☑	OBL
3. Scirpus maritimus	10	☐	OBL
4. Alopecurus pratensis	3	☐	FACW
5. Beckmannia syzigachne	1	☐	OBL
6. Hordeum jubatum	1	☐	FAC
7. Polypogon monspeliensis	1	☐	FACW
8. Elymus varnensis	1	☐	NI
9. Hordeum brachyantherum	1	☐	FACW
10.	0	☐	
11.	0	☐	
	88 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Area is dominated by hydrophytic vegetation - passes Dom Test.

SOIL

Sampling Point: Cell2WDwe

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine mixed superactive, frigid, Typic Natrixeralfs

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Inundated 100% in Cell 2. Low chroma color w/o redox features.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☑ Innundated
- ☑ Saturated in upper 12 inches
- ☑ Water Marks
- ☑ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☑ No ☐	Depth (inches):	3
Water Table Present?	Yes ☑ No ☐	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ☑ No ☐	Depth (inches):	0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Several primary indicators of wetland hydrology present. Meets wetland hydrology criteria.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell3WDdry

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.697536 | Long: -114.666856 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an upland companion plot to Cell3WDwet. The vegetation is hydrophytic but there is no evidence of hydric soil or wetland hydrology. It is not within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Elymus varnensis	30	☑	NI
2. Kochia scoparia	25	☑	FAC
3. Agropyron repens	10	☐	FACU
4. Agropyron trachycaulum	2	☐	FAC
5. Puccinellia nuttalliana	2	☐	FACW
6. Melilotus alba	2	☐	FACU
7. Lepidium perfoliatum	2	☐	FACU
8. Chenopodium rubrum	1	☐	FACW
9. Hordeum jubatum	1	☐	FAC
10. Grindelia squarrosa	1	☐	FACU
11.	0	☐	
	76 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:
Does not pass Dom Test, community non-hydrophytic.

SOIL

Sampling Point: Cell3WDdr

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y 5/2	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine, mixed, superactive, frigid Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:
No hydric soil criteria present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No wetland hydrology indicators present

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell3WDwet

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.697561 | Long: -114.666897 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an wetland companion plot to Cell3WDdry. There is hydrophytic vegetation, hydric soil, and wetland hydrology. It is within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Scirpus acutus	60	☑	OBL
2. Beckmannia syzigachne	3	☐	OBL
3. Typha latifolia	2	☐	OBL
4. Alopecurus pratensis	1	☐	FACW
5. Puccinellia nuttalliana	1	☐	FACW
6. Hordeum jubatum	1	☐	FAC
7. Elymus varnensis	1	☐	NI
8. Chara spp.	15	☐	
9. Lemna minor	5	☐	
10.	0	☐	
11.	0	☐	
	89 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Area is dominated by hydrophytic vegetation - passes Dom Test.

SOIL

Sampling Point: Cell3WDwe

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	GLEY1 2.5N	100					Silty Clay	
1-2	GLEY1 10Y/4	100					Silty Clay	
2-16	10YR 4/1	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☑ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine, mixed, superactive, frigid Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Area has depleted matrix with gleyed surface soil. Also has sulfidic odor. Meets hydric soil criteria. Marklepass: fine, mixed, superactive, frigid Typic Natrixeralfs. Dry Fork: coarse-silty, mixed, active, frigid Calcic Haploxerepts. Whitearth: fine, silty, mixed, superactive frigid Typic Natrixeralfs.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☑ Innundated
- ☑ Saturated in upper 12 inches
- ☑ Water Marks
- ☑ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): 13

Water Table Present? Yes ☑ No ☐ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Meets several wetland hydrology indicators. Has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell4WDdry

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.694452 | Long: -114.668816 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an upland companion plot to Cell4WDwet. Although vegetation is hydrophytic vegetation (based on 2 weedy grass species that are FAC), there is no evidence of hydric soil or wetland hydrology. It is not within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Agropyron repens	70	☑	FACU
2. Poa pratensis	20	☐	FACU+
3. Alopecurus pratensis	10	☐	FACW
4. Carex praegracilis	2	☐	FACW
5. Sonchus arvensis	1	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	103 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Area does not pass Dom Test.

SOIL

Sampling Point: Cell4WDdr

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Clay Loam	
2-18	10YR 2/2	100					Clay Loam	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine, mixed, superactive, frigid Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil criteria are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No wetland hydrology indicators present

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell4WDwet

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.694467 | Long: -114.668795 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an wetland companion plot to Cell4WDdry. There is hydrophytic vegetation, hydric soil, and wetland hydrology. It is within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Alopecurus pratensis	35	☑	FACW
2. Typha latifolia	25	☑	OBL
3. Agropyron trachycaulum	20	☑	FAC
4. Eleocharis palustris	3	☐	OBL
5. Scirpus maritimus	3	☐	OBL
6. Scirpus acutus	3	☐	OBL
7. Beckmannia syzigachne	1	☐	OBL
8. Hordeum jubatum	1	☐	FAC
9. Poa juncifolia	1	☐	FACU
10. Agropyron repens	5	☐	FAC
11. Scirpus americanus	1	☐	OBL
	98 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Area is dominated by hydrophytic vegetation - passes Dom Test. Also present: Agrostis stolonifera (1% - FAC) and aquatics Ceratophyllum demersum (5%) and green algae (40%).

SOIL

Sampling Point: Cell4WDwe

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100					Muck	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☑ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☑ Other (explain in remarks)

Taxonomy Subgroup: Fine, mixed, superactive, frigid Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Muck with low chroma and sulfidic odor, which meet hydric soil criteria. .

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☑ Innundated
- ☑ Saturated in upper 12 inches
- ☑ Water Marks
- ☑ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☑ No ☐	Depth (inches):	4
Water Table Present?	Yes ☑ No ☐	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ☑ No ☐	Depth (inches):	0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Meets several wetland hydrology criteria. Has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell5WDdry

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.694285 | Long: -114.666318 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an upland companion plot to Cell5WDwet. Although vegetation is hydrophytic vegetation (based on 2 weedy grass species that are FAC), there is no evidence of hydric soil or wetland hydrology. It is not within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Agropyron repens	45	☑	FACU
2. Poa pratensis	30	☑	FACU+
3. Melilotus alba	10	☐	FACU
4. Bromus inermis	5	☐	NI
5. Elymus triticoides	3	☐	FAC
6. Chenopodium rubrum	3	☐	FACW
7. Cirsium arvense	2	☐	FACU
8. Sisymbrium altissimum	2	☐	FACU
9. Lactuca serriola	2	☐	FACU
10. Lepidium perfoliatum	1	☐	FACU
11. Kochia scoparia	1	☐	FAC
	104 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:
Area does not have hydrophytic vegetation.

SOIL

Sampling Point: Cell5WDdr

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Silty Clay Loam	
3-16	10YR 2/2	100					Silty Clay Loam	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine, mixed, superactive, frigid Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil criteria are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No wetland hydrology indicators present

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Lonepine | City/County: Sanders | Sampling Date: 7/31/2011

Applicant/Owner: MDT | State: MT | Sampling Point: Cell5WDwet

Investigator(s): J. Asebrook, J. Hintz | Section, Township, Range: S 3 T 22N R 24W

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

Subregion (LRR): LRR E | Lat: 47.694256 | Long: -114.666362 | Datum: NAD83

Soil Map Unit Name: Marklepass, Dry Fork, Whitearth

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
This plot is an wetland companion plot to Cell5WDdry. There is hydrophytic vegetation, hydric soil, and wetland hydrology. It is within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Typha latifolia	10	☑	OBL
2. Scirpus acutus	10	☑	OBL
3. Eleocharis palustris	5	☐	OBL
4. Beckmannia syzigachne	3	☐	OBL
5. Alopecurus pratensis	2	☐	FACW
6. Alisma plantago-aquatica	1	☐	OBL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	31 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Area is dominated by hydrophytic vegetation - passes Dom Test. Aquatics present include brown algae (25%) and Chara spp. (10%). High cover of open water here.

SOIL

Sampling Point: Cell5WDwe

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					Silty Clay	
1-16	10YR 4/1	100					Silty Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fine, mixed, superactive, frigid Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Depleted matrix meets hydric soil criteria in cell 5.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☑ Innundated
- ☑ Saturated in upper 12 inches
- ☑ Water Marks
- ☑ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): 6

Water Table Present? Yes ☑ No ☐ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Meets wetland hydrology criteria.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Lonepine wetland mitigation **2. MDT project#** STPX (45)33 **Control#** 4729

3. Evaluation Date 7/31/2011 **4. Evaluators** J. Asebrook, J. Hintz **5. Wetland/Site# (s)** Cells 1-5

6. Wetland Location(s): T 22N **R** 24W **Sec1** 3 **T** **R** **Sec2**

Approx Stationing or Mileposts East of Lonepine, below Lower Dry Fork Reservoir

Watershed 17010212 **Watershed/County** Lower Clark Fork Watershed/Sanders County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 23.73

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 23.73

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland		Seasonal/Intermittant	20
Depressional	Aquatic Bed		Seasonal/Intermittant	80

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Adjacent lands subject to livestock grazing and cultivation. A few roads and buildings.

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

moderate Cirsium arvense; some Centaurea maculosa; many non-native grasses

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

AA includes five cells that have moderate to shallow surface water inundation dominated by emergent vegetation with some aquatic vegetation.

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

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

Comments: Wetland vegetation includes emergent and aquatic bed

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	○ D ○ S	
No usable habitat	☑ S	

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

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

Sources for documented use observation, MNHP

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	◉ D ○ S	bald eagle, great blue heron, long-billed curlew, western toad
Incidental habitat (list species)	◉ D ○ S	American white pelican, Bobolink
No usable habitat	☐ S	

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

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

Sources for documented use Field observations and MNHP list.

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments Wildlife in this area continues to increase with evidence of deer, waterfowl, hawks and great blue heron. Periodic use by bald eagle, American white pelican, and long-billed curlew, all species of concern.

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

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

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

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

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◉ **N** ○ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .3L

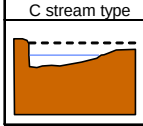
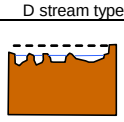
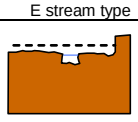
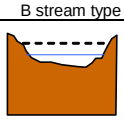
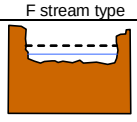
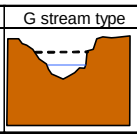
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating .3L

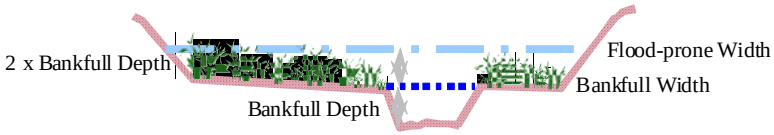
iii. Final Score and Rating: .3 L **Comments:** Three schools of juvenile fish were observed within cell 2. Fish use restricted. Rated fish species as FWP Tier IV.

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

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

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

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



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

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

Comments:

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

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: The constructed cells provide up to 40 AF of water storage capacity (20 acres x 2 feet deep).

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

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

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

Comments: Increase in vegetation cover led to increase in score for this parameter in 2011.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Open water subject to wave action, well vegetated with cattails, bulrush, and other deep-rooted vegetation.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ◉ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

Comments: The biological activity level was high, the AA contains a surface outlet, and the water regime is S/I.

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

i. Discharge Indicators

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

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

Known bird watching, hunting

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Cells 1-5

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	14.238	☐
C. General Wildlife Habitat	E	1	1	23.73	☑
D. General Fish Habitat	L	.3	1	7.119	☐
E. Flood Attenuation	NA	0	0	0	☐
F. Short and Long Term Surface Water Storage	H	.9	1	21.357	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	23.73	☑
H. Sediment/Shoreline Stabilization	H	.9	1	21.357	☐
I. Production Export/Food Chain Support	E	1	1	23.73	☐
J. Groundwater Discharge/Recharge	H	1	1	23.73	☑
K. Uniqueness	M	.4	1	9.492	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	4.746	☐
Totals:		7.3	10	173.229	
Percent of Possible Score			**73** %		

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

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

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

☐

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Lonepine wetland mitigation **2. MDT project#** STPX (45)33 **Control#** 4729

3. Evaluation Date 7/31/2011 **4. Evaluators** J. Asebrook, J. Hintz **5. Wetland/Site# (s)** Dry Fork Creek

6. Wetland Location(s): T 22N **R** 24W **Sec1** 3 **T** **R** **Sec2**

Approx Stationing or Mileposts East of Lonepine, below Lower Dry Fork Reservoir

Watershed 17010212 **Watershed/County** Lower Clark Fork Watershed/Sanders County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 10.87

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 10.87

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Unconsolidated Bottom		Permanent/Perennial	25
Riverine	Emergent Wetland		Permanent/Perennial	70
Riverine	Scrub-Shrub Wetland		Permanent/Perennial	5

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Adjacent lands subject to livestock grazing and cultivation

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

moderate Cirsium arvense; many non-native grasses including reed canarygrass

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

AA includes pre-existing wetlands associated with Dry Fork Creek including a re-activated meander loop and adjacent excavated wetlands and the new creek section along the dam fence.

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

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

Comments: Scrub shrub area is filling in with many of the willows surviving and growing in size, particularly Salix exigua. Emergent also present.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use No field observations, USFWS database

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

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

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

Secondary habitat (list Species) ◉ D ◯ S bald eagle, great blue heron, long-billed curlew, western toad

Incidental habitat (list species) ◉ D ◯ S American white pelican, Bobolink

No usable habitat ☐ S

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

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

Sources for documented use Field observations and MTNHP list.

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments AA adjacent to created wetland cells and provides wildlife corridor. Abundant waterfowl, hawks and great blue herons. Periodic use by bald eagle, American white pelican, and long-billed curlew, all species of concern.

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

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

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

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

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** (●) **N** ( ) *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .4M

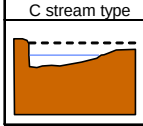
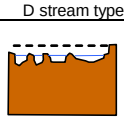
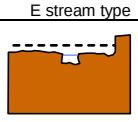
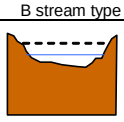
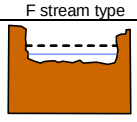
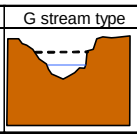
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ( ) **Y** (●) **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating .4M

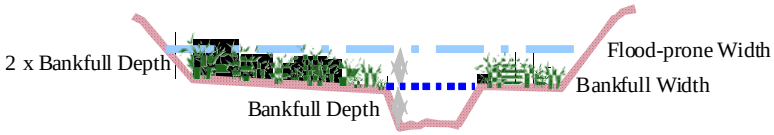
iii. Final Score and Rating: .4 M **Comments:** One small group of fish observed within the creek. Rated fish species as FWP Tier IV.

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

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

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

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



Floodrpone width 5 **/** **Bankfull width** 2 **=** **Entrenchment ratio** 2.5

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

Comments: Creek is sourced by Lower Dry Fork Reservoir and subject to dam releases.

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

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: The minimum water storage capacity is 20 AF (10 A x 2 ft).

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

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

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

Comments: AA contains restricted outlet. There is evidence of ponding.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: The vegetation cover on the channel streambanks improved to 35 to 64% in 2011.

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

Comments: AA has 1-5 acres of vegetation, high bio activity rating, contains a surface outlet, and a P/P regime.

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

i. Discharge Indicators

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

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

hunting, birdwatching

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Dry Fork Creek

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	6.522	☐
C. General Wildlife Habitat	E	1	1	10.87	☑
D. General Fish Habitat	M	.4	1	4.348	☐
E. Flood Attenuation	M	.6	1	6.522	☐
F. Short and Long Term Surface Water Storage	H	1	1	10.87	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	10.87	☑
H. Sediment/Shoreline Stabilization	M	.7	1	7.609	☐
I. Production Export/Food Chain Support	E	1	1	10.87	☑
J. Groundwater Discharge/Recharge	H	1	1	10.87	☑
K. Uniqueness	M	.4	1	4.348	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	2.174	☐
Totals:		7.9	11	85.873	
Percent of Possible Score			**71.82** %		

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

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

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

☐

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

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

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Lonepine Wetland Mitigation Project
Flathead Indian Reservation, Montana



Photo Point 1 – *Photo 1*
Bearing: 90 Degrees

Location: South edge of Cell 2
Taken in 2009



Photo Point 1 – *Photo 1*
Bearing: 90 Degrees

Location: South edge of Cell 2
Taken in 2010



Photo Point 1 – *Photo 1*
Bearing: 90 Degrees

Location: South edge of Cell 2
Taken in 2011



Photo Point 1 – *Photo 2*
Bearing: 0 Degrees

Location: South edge of Cell 2
Taken in 2009



Photo Point 1 – *Photo 2*
Bearing: 0 Degrees

Location: South edge of Cell 2
Taken in 2010



Photo Point 1 – *Photo 2*
Bearing: 0 Degrees

Location: South edge of Cell 2
Taken in 2011





Photo Point 2 – *Photo 1*
Bearing: 90 Degrees

Location: Between Cell 1 and cell 2
Taken in 2010



Photo Point 2 – *Photo 1*
Bearing: 90 Degrees

Location: Between Cell 1 and cell 2
Taken in 2011



Photo Point 3 – *Photo 1*
Bearing: 180 Degrees

Location: Northwest corner of project area
Taken in 2009



Photo Point 3 – *Photo 1*
Bearing: 180 Degrees

Location: Northwest corner of project area
Taken in 2010



Photo Point 3 – *Photo 1*
Bearing: 180 Degrees

Location: Northwest corner of project area
Taken in 2011



Photo Point 4 – *Photo 1*
Bearing: 270 Degrees

Location: Along Dry Fork Creek
Taken in 2009



Photo Point 4 – *Photo 1*
Bearing: 270 Degrees

Location: Along Dry Fork Creek
Taken in 2010



Photo Point 4 – *Photo 1*
Bearing: 270 Degrees

Location: Along Dry Fork Creek
Taken in 2011



Photo Point 5 – *Photo 1*
Bearing: 0 Degrees
Location: Along Dry Fork Creek
Taken in 2009



Photo Point 5 – *Photo 1*
Bearing: 0 Degrees
Location: Along Dry Fork Creek
Taken in 2010



Photo Point 5 – *Photo 1*
Bearing: 62 Degrees
Location: Along Dry Fork Creek
Taken in 2011



Photo Point 6 – *Photo 1*
Bearing: 270 Degrees

Location: North shore of Cell 4
Taken in 2009



Photo Point 6 – *Photo 1*
Bearing: 270 Degrees

Location: North shore of Cell 4
Taken in 2010



Photo Point 6 – *Photo 1*
Bearing: 270 Degrees

Location: North shore of Cell 4
Taken in 2011



Photo Point 7 – *Photo 1*
Bearing: 315 Degrees

Location: South shore of Cell 4
Taken in 2009



Photo Point 7 – *Photo 1*
Bearing: 315 Degrees

Location: South shore of Cell 4
Taken in 2010



Photo Point 7 – *Photo 1*
Bearing: 315 Degrees

Location: South shore of Cell 4
Taken in 2011



Photo Point 8 – *Photo 1*
Bearing: 315 Degrees

Location: Open water in Cell 5
Taken in 2009



Photo Point 8 – *Photo 1*
Bearing: 315 Degrees

Location: Open water in Cell 5
Taken in 2010



Photo Point 8 – *Photo 1*
Bearing: 315 Degrees

Location: Open water in Cell 5
Taken in 2011



Photo Point 8 – *Photo 2*
Bearing: 90 Degrees

Location: South boundary of project area
Taken in 2009



Photo Point 8 – *Photo 2*
Bearing: 90 Degrees

Location: South boundary of project area
Taken in 2010



Photo Point 8 – *Photo 2*
Bearing: 90 Degrees

Location: South boundary of project area
Taken in 2010



Photo Point 9 – *Photo 1* **Location:** Western edge of Cell 4
Bearing: 180 Degrees **Taken in 2010**



Photo Point 9 – *Photo 1* **Location:** Western edge of Cell 4
Bearing: 180 Degrees **Taken in 2011**

Intentionally Blank





Photo Point 10 – *Photo 1* **Location:** Start Veg Tran 1
Bearing: 180 Degrees **Taken in 2010**



Photo Point 10 – *Photo 1* **Location:** Start Veg Tran 1
Bearing: 180 Degrees **Taken in 2010**



Photo Point 12 – *Photo 1* **Location:** Start Veg Tran 2
Bearing: 0 Degrees **Taken in 2009**



Photo Point 13 – *Photo 1* **Location:** Finish Veg Tran 2
Bearing: 180 Degrees **Taken in 2009**



Photo Point 12 – *Photo 1* **Location:** Start Veg Tran 2
Bearing: 0 Degrees **Taken in 2010**



Photo Point 13 – *Photo 1* **Location:** Finish Veg Tran 2
Bearing: 180 Degrees **Taken in 2010**



Photo Point 12 – *Photo 1* **Location:** Start Veg Tran 2
Bearing: 0 Degrees **Taken in 2011**



Photo Point 13 – *Photo 1* **Location:** Finish Veg Tran 2
Bearing: 180 Degrees **Taken in 2011**



Photo Point 14 – *Photo 1*
Bearing: 180 Degrees

Location: View of project area from northwest corner
Taken in 2009



Photo Point 14 – *Photo 1*
Bearing: 180 Degrees

Location: View of project area from northwest corner
Taken in 2010



Photo Point 14 – *Photo 1*
Bearing: 180 Degrees

Location: View of project area from northwest corner
Taken in 2011



Photo Point 15 – *Photo 1*
Bearing: 180 Degrees

Location: View of project area from dam surface
Taken in 2009



Photo Point 15 – *Photo 1*
Bearing: 180 Degrees

Location: View of project area from dam surface
Taken in 2010



Photo Point 15 – *Photo 1*
Bearing: 180 Degrees

Location: View of project area from dam surface
Taken in 2011

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Lonepine Wetland Mitigation Project
Flathead Indian Reservation, Montana

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPX 45(33)	8

LONEPINE WETLAND MITIGATION

PROPOSED DAM OUTLET WORKS & CANAL MODIFICATIONS

POT 10+00.00

POT 18+06.36

NEW FENCE AROUND WELL

CONTROL LINE

NEW GATE

N 0° 28' 16" W

IRRIGATION TURNOUT STRUCTURES INVERT ELEV. 864.40 [2 835.96ft] (CELL 1) 863.83 [2 834.09ft] (CHANNEL 3)

44+85.41 END CHANNEL 3

REMOVE FENCE

NEW FENCE

Proposed Wetland Cell 1

Proposed Wetland Cell 2

Proposed Wetland Cell 3

Proposed Wetland Cell 4

Proposed Wetland Cell 5

OUTLET 1

OUTLET 2a

OUTLET 2b

OUTLET 3

OUTLET 4

OUTLET 5

INLET 1

INLET 4

WETLAND 2

WETLAND 3

WETLAND 4

WETLAND 5

TEMPORARY FENCE

DO NOT DISTURB

30+08.47 BEG. CHANNEL 2

CHANNEL 2

31+04.44 END CHANNEL 2

40+12.00 BEG. CHANNEL 3

CREEK

DRY FORK

WETLAND 1

Proposed Wetland Excavation A

CHANNEL PLUG

CHANNEL 3

21+51.02 END CHANNEL 1

CHANNEL 1

20+00.00 BEG. CHANNEL 1

OFFSITE WETLAND 1

DAM SAFETY PROJECT LIMIT OF CONSTRUCTION

DAM SAFETY PROJECT BUFFER ZONE

27 m

15 m

LEGEND

- EXISTING WETLANDS
- PERMITTED WETLAND IMPACTS
- PROPOSED WETLAND CELLS
- PROPOSED UPLAND BUFFER
- PROPOSED CHANNEL CENTERLINE
- PROPOSED BERM
- NEW FENCE

SCALE 1:1200

0 60M 120M

SITE PLAN

D-1

MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

WGM GROUP, INC.

LAND & WATER CONSULTING

A Division Of: PBS

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