MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2012

Selkirk Wetland Mitigation Reserve
Two Dot, Wheatland County, Montana

Prepared for:

MONTANA MDT DEPARTMENT OF TRANSPORTATION
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Helena, MT 59620-1001

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December 2012

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MDT Project Number NH-STPP-STPX 54(31)
Control Number 6161

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1. INTRODUCTION

The Selkirk Wetland Mitigation Reserve 2012 Monitoring Report summarizes methods and results from the sixth year of monitoring at the Selkirk Reserve. The wetland mitigation site is located in Wheatland County, Montana, near the community of Two Dot. The site occurs at approximately 4,640 feet above mean sea level in the northeast quarter of Section 9 of Township 8 North, Range 12 East (Figure 1).

The 73.6-acer Selkirk mitigation site was constructed by a private party on private land during the winter of 2006 to 2007. The site consisted of mostly upland communities with approximately 25 acres of impaired wetland community prior to construction. The mitigation reserve currently encompasses an herbaceous wet meadow wetland, scrub/shrub wetland, open water, and upland buffer. Figures 2 and 3 (Appendix A) show the Mapped Site Features and Monitoring Activity Locations, respectively. Figure 4 (Appendix A) illustrates the 2012 crediting and assessment areas. Appendix B contains the MDT Mitigation Site Monitoring Form, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the Montana Department of Transportation (MDT) 1999 Montana Wetland Assessment Forms (Berglund 1999). Appendix C contains project area photographs. The project plan sheet is presented in Appendix D.

The original purpose of the mitigation project was to provide the Montana Department of Transportation (MDT) with 50 acres of wetland mitigation credit prior to US Highway 12 road construction in Watershed 10, the Musselshell Basin. The desired net total was approximately 60.4 acres of wetland credit based on the application of appropriate credit ratios to various design features and after accounting for 0.4 acres of wetland impact associated with project construction.

Four different mitigation areas were originally developed with varying performance standards and credit ratios, including rehabilitation, 1.5:1; re-establishment/creation, 1:1; enhancement; 3:1; and, upland buffer, 5:1. The original performance standards were amended on March 29, 2010, as referenced in a USACE letter from Todd Tillinger dated August 6, 2010 (USACE 2010a). The amendment replaced the four previous sets of performance standards with a single set of performance standards that apply to all assessment areas. The new method of awarding credits is based on a credit-reduction methodology in contrast to the prior standard which was pass/fail. The new standard requires an assurance of a functional lift with the most favorable credit ratios awarded if wetland assessment areas achieve a Category II status or better (USACE 2010a). The functional lift evaluation will be based on the 1999 MDT Montana Wetland Assessment Method (MWAM) (Berglund 1999).

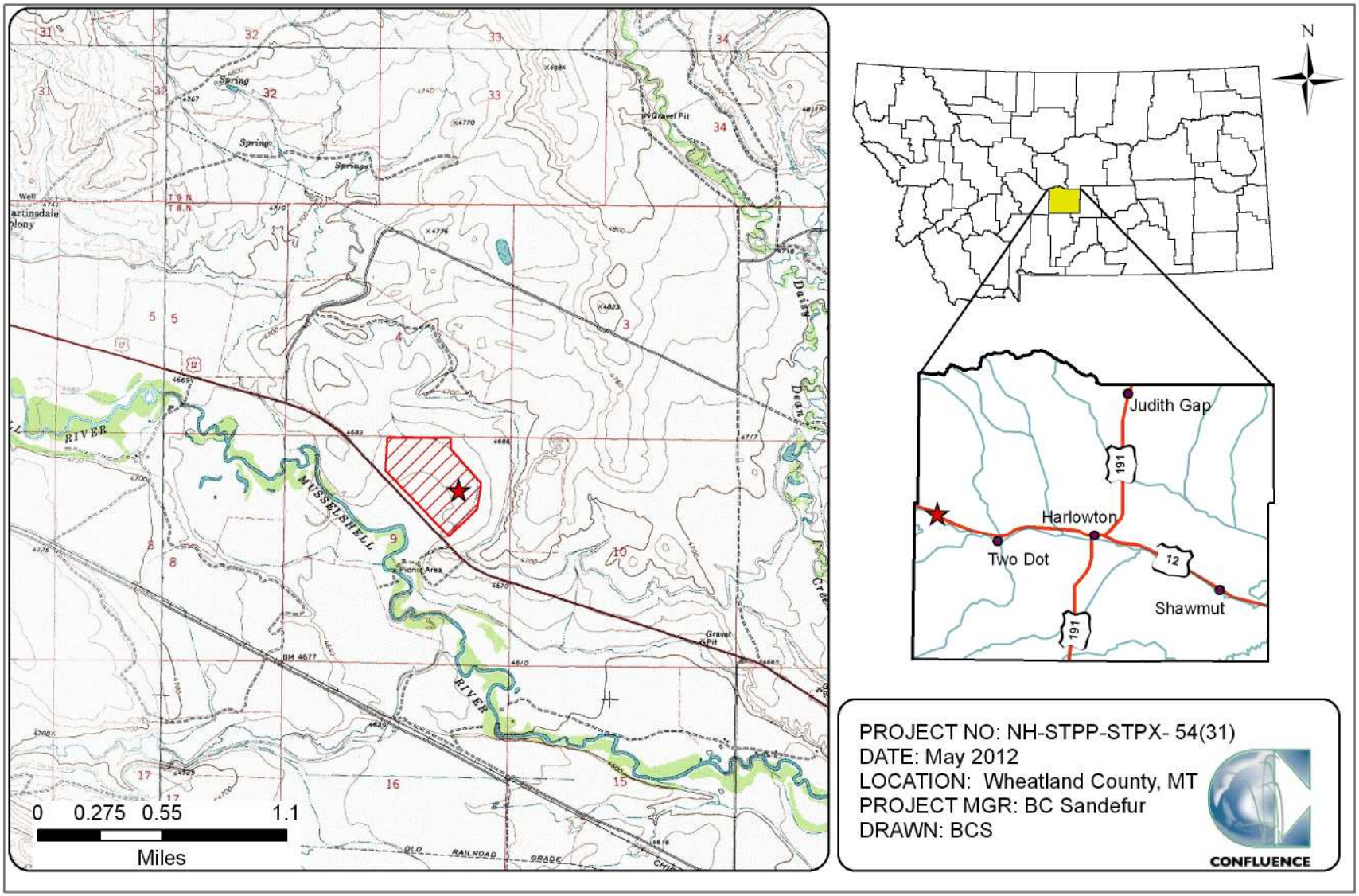

Figure 1. Project Location Selkirk Wetland Mitigation Reserve.

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The Primary Standards for performance as amended in 2010 for the Selkirk Wetland Reserve are listed below.

1. Meet all three wetland criteria as defined in USACE Wetland Delineation Manual (Environmental Laboratory 1987).

2. Maximum noxious weed coverage is not to exceed 5 percent

3. Demonstrate soil saturation in the upper 12 inches of the soil profile for a minimum of 12.5 percent of the growing season.

4. Aerial coverage of all plant species must be at least 80 percent and requires a 2-year survival period; bare ground shall not exceed 20 percent aerial coverage.

5. Permanent open water lacking persistent emergent vegetation or aquatic bed vegetation will comprise less than 15 percent of the total wetland project area and no single body is to exceed 3 acres.

6. Achieve a Category II functional rating.

2. METHODS

The 2012 monitoring event was completed on June 18, 2012. Information for the Mitigation Monitoring Form and Wetland Determination Data Forms was entered electronically in the field on a palmtop computer during the field investigation (**Error! Reference source not found.**). Monitoring activity sites were located with a global positioning system (GPS) and illustrated in Figure 2 (**Error! Reference source not found.**). Information collected included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird and wildlife use documentation, photographic documentation, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

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 12.5 percent or more during the growing season)” (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). The growing season recorded for the meteorological station at Martinsdale 3 NNW, Montana (245387) extends for an average of 119 days. Areas defined as wetlands would require 17 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

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

Groundwater levels were measured in 11 monitoring wells in 2009. The wells have not been monitored since 2009. 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 Determination Data Form (Appendix B).

2.2. Vegetation

The boundaries of dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2012 aerial photograph. The percent cover of dominant species within a community type was estimated and recorded using the following ranges as listed on the monitoring form: 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 a single vegetation belt transect approximately 10 feet wide and 445 feet long (Figure 2, Appendix A). The transect location was recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent cover of individual vegetation species within the belt was estimated using the same values and cover ranges listed for the community polygon data shown on the aerial photograph (Appendix B). Photographs were taken at each endpoint of the transect during the monitoring event (Appendix C).

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

Several species of wetland emergent plants, shrubs, and trees were installed or seeded throughout the site. Approximately 4,750 woody stems were planted within netted browse guards and weed mats. The number and condition of surviving woody plants observed during monitoring was recorded on the Mitigation Monitoring Form (Appendix B).

2.3. Soil

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

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and other special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 USACE delineation manual. In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology must be satisfied. The nomenclature and indicator status of plant species was derived from the Draft 2012 National Wetland Plant List (NWPL) (Lichvar and Kartesz. 2009). Previous years' reports used the 1988 National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). The 2012 NWPL scientific plant names were used in this report. Many common names used in the 2012 NWPL appear incomplete or erroneous. When used in this report, 2012 NWPL common names that appear to be incomplete or erroneous are provided with parenthetical clarification. For example, the common given name for the plant *Agrostis exarata* in the 2012 NWPL is "spiked bent". As this is likely an error, this species' common name would be reported here as "spiked bent (grass)". A Routine Level-2 Onsite Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the Wetland Determination Data Form (Appendix B).

The USACE determined that the 1987 Wetland 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 USACE of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010b) 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 classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the 2012 aerial photograph. Wetland areas were estimated using geographic information system (GIS) methods.

2.5. Wildlife

Observations of use by mammal, reptile, amphibian, and bird species were recorded on the Mitigation Monitoring Form during the site visit. Indirect use indicators including tracks, scat, burrow, eggshells, skins, and bones were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list has been compiled each year with new species noted.

2.6. Functional Assessment

Functional assessments were completed from 2006 to 2012 using the 1999 MDT MWAM (Berglund 1999) for consistency. The functional assessment provides an objective means of assigning wetlands an overall rating and gives a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund 1999).

Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each credit area (Assessment Areas, or AAs) as defined in the mitigation plan (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting the condition of the monitored wetlands and uplands, site trends, current land use surrounding the site, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site and at transect end points during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2012 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and presented in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included fence boundaries, photograph points, transect endpoints, and wetland data points.

2.9. Maintenance Needs

The outflow structures were checked for obstructions and other problems. Channels, structures, fencing, and other features were also examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination and not an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

The average precipitation total from January, 1893 to December, 2011 at the Martinsdale 3NNW, Montana (245387) meteorological station, was 13.24 inches (WRCC 2012). The total precipitation recorded in 2010 and 2011 was 16.13 inches and 15.25 inches, respectively. The long term average precipitation for the period of January through August totaled 10.55 inches. The totals for this same period were 11.63 inches (2010), 13.49 inches (2011), and 6.09 inches (2012). These data indicate that precipitation rates in the vicinity of the project in 2012 were well below the average for the January through August timeframe.

The primary source of hydrology for this wetland mitigation site is groundwater. The site was historically ditched in order to reduce groundwater levels and convey runoff and seepage from adjacent irrigation ditches. An 8-foot deep ditch runs along the north and east edges of the current site boundary. A 4-foot deep ditch in the southeast quarter branches north and northeast and flows south under Highway 12 through the Montana Fish, Wildlife and Parks, Selkirk Fishing Access site. The Coulee Ditch enters the northwest edge of the site conveying surface water to an area that crosses several smaller ditches. Surface water is subsequently conveyed to the roadside ditch southwest of the site.

A primary objective of the wetland design was to abandon and fill the 8-foot and 4-foot deep coulee ditch systems, and to construct three shallow, meandering, bermed swales to slow and spread surface water. Three shallow ponds were also constructed. The swales intersected a shallow groundwater area that was vegetated with emergent and aquatic plants. Lateral grade checks were constructed in the northwest area of the site to collect and spread water from the coulee.

Eleven monitoring wells have been installed within the project site. The wells were measured on June 16, 2009 after seasonal flood irrigation had begun. The groundwater table was within 12 inches of the ground surface at wells MW-5, MW-7, and MW-9 in 2009. Groundwater levels increased to 1 to 3 inches above the ground surface at wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-8, and MW-11 in 2009 after plugging the ditches. Well MW-10 was destroyed when one of the ponds was constructed. Well monitoring was discontinued after 2009 once groundwater elevations sufficiently demonstrated support of wetland communities.

The August 24, 2010 monitoring survey estimated 40 percent of the site was inundated with an average site-wide water depth of 0.6 feet. Surface water depths ranged from 0.0 to 3.0 feet. In July, 2011, approximately 85 percent of the site was inundated with depths ranging up to 3.5 feet. The 2012 hydrology data indicated that approximately 80 percent of the site was inundated with a range in surface water depths of 0.0 to 3.5 feet and an average depth of 0.3 feet. The constructed ponds and large swale near the west boundary were inundated

in 2012. The swales in the northwest corner and center of the site were inundated at varying depths. Soils within wetland areas delineated in 2012 exhibited either inundation or saturation within 12 inches of the soil surface indicating that water table elevations have increased site-wide following construction. Hydrological indicators listed on the Mitigation Monitoring Form and observed site wide included a salt crust, surface soil cracks, drift deposits, and drainage patterns.

Data points S-1, S-2, and S-4 were located in areas that met the wetland criteria (Figure 2, Appendix A; Wetland Determination Forms, Appendix B). The wetland hydrology indicators observed at S-1, S-2, and/or S-4 included inundation, saturation within 12 inches of the soil surface, drainage patterns in wetlands, water-stained leaves, and a positive FAC-neutral test. Data points S-3 and S-5 were located along the northwest and northeast boundaries of the site in upland communities and did not display any hydrologic indicators.

3.2. Vegetation

A comprehensive list of 81 vegetation species identified at the site from 2007 to 2012 is shown in Table 1. Nine wetland and one upland vegetation community types were identified in 2012 (Figure 3, Appendix B). A complete list of species within each vegetation community is presented on the Monitoring Form (Appendix B). Community types 1 through 6, 13 and 14 corresponded to vegetation types identified in 2009. Community type 18 was defined for the first time in 2010. The open water areas were renamed as Type 19 – Aquatic Macrophytes in 2012 based on the increase in dominance of aquatic macrophytes. The ten communities identified across the site in 2012 are detailed below.

Wetland community Type 1 – *Typha latifolia/Alopecurus arundinaceus* covers approximately 25.98 acres of the site, including the constructed swales in the northwest corner of the site and the edge of the existing meandering swale and shallow water areas. This community decreased by 1.72 acres from 2011, primarily the result the classification of the community Type 19 – Aquatic Macrophyes within the low-lying, perennially inundated depressions constructed across the site. Dominant species were broad-leaf cattail (*Typha latifolia*), and creeping meadow-foxtail (*Alopecurus arundinaceus*).

Wetland community Type 2 – *Alopecurus arundinaceus/Juncus arcticus* was identified on 20.91 acres in the central region of the site, a documented decrease of 1.52 acres from 2011. Creeping meadow foxtail, Arctic rush, and common spikerush were dominant species identified in this community. Ten other species each contributed less than five percent cover to this community. Although the diversity of wetland plants has increased in this community, the cover of creeping meadow-foxtail has not decreased in response to the sustained increase of inundation levels.

Wetland community Type 3 – *Carex* spp./*Juncus arcticus* occupies approximately 16 acres of the east half of the site. The community is characterized by a prevalence of Northwest Territory sedge, clustered field sedge (*Carex praegracilis*), Arctic rush, broad-leaf cattail, creeping meadow-foxtail, hard stem club-rush, Nebraska sedge (*Carex nebrascensis*), and fringed willow-herb.

Wetland community Type 4 – *Alopecurus arundinaceus/Schoenoplectus maritimus* parallels the east site boundary along the wetland margin and is dominated by creeping meadow-foxtail, saltmarsh club-rush, and Arctic rush. The community encompassed 2.37 acres.

Upland community Type 5 – *Bromus inermis/Elymus repens* (*Agropyron repens* on 1988 list) was located on 2.59 acres within the upland perimeter of the project area. This upland community increased in size from 2.35 acres in 2011 to 2.59 acres in 2012 (0.24-acre increase) due to the refinement of the wetland/upland boundary in northwestern corner of the site. The community was dominated by smooth brome (*Bromus inermis*), *Elymus* species, creeping meadow-foxtail, and common plantain (*Plantago major*). Although the indicator status of smooth brome was changed to FAC on the 2012 NWPL and resulted in this community meeting the criteria for hydrophytic vegetation, the community was classified as upland based on a lack of hydric soil and hydrological indicators.

Wetland community Type 6 – *Puccinellia nuttalliana/Juncus arcticus* was found in 1.25 acres near the center of the mitigation wetland at a slightly higher elevation than the majority of the surrounding wet meadow. This historic upland has transitioned to wetland as a result of the increase in post-construction groundwater elevations. A second area of community 6 is located on the east side of the narrow swale that bisects the site. Dominant species include Nuttall's alkali grass *(Puccinellia nuttalliana – Puccinellia airoides* on 1988 list), coastal salt grass, and deer root (*Iva axillaris*). The percent cover of coastal salt grass and deer root increased in 2012 while the cover of Arctic rush decreased.

Wetland community Type 13 – *Salix exigua/Alopecurus arundinaceus* was a small (0.24 acres) pre-existing community located in the south portion of the project area. This area receives hydrology from an irrigation return along this boundary of the site. The woody overstory was dominated by narrow-leaf willow (*Salix exigua*) with an herbaceous understory dominated by creeping meadow-foxtail, common silverweed, and Arctic rush.

Wetland community Type 14 – *Hordeum jubatum/Juncus arcticus* was identified in a small (0.94 acres) area north of the inundated swale in the west half of the project. The dominant species were fox-tail barley, Arctic rush, alkaligrass species, and coastal saltgrass.

Table 1. Vegetation species identified from 2007 to 2012 at the Selkirk Wetland Mitigation Reserve.

Scientific Names	Common Names	WMVC Indicator Status[1]
Agrostis gigantea	Black Bent	FAC
Agrostis stolonifera	Spreading Bent	FAC
Algae, green	**Algae, green**	**NL**
Alopecurus arundinaceus	Creeping Meadow-Foxtail	FAC
Argentina anserina	Common Silverweed	OBL
Atriplex patula	Halberd-Leaf Orache	FACW
Bassia scoparia	Mexican-Fireweed	FAC
Beckmannia syzigachne	American Slough Grass	OBL
Bromus inermis	Smooth Brome	FAC
Calamagrostis canadensis	Bluejoint	FACW
Carex nebrascensis	Nebraska Sedge	OBL
Carex praegracilis	Clustered Field Sedge	FACW
Carex utriculata	Northwest Territory Sedge	OBL
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium leptophyllum	**Narrow-Leaf Goosefoot**	**FACU**
Chenopodium sp.	**Goosefoot**	**NL**
Cicuta douglasii	Western Water-Hemlock	OBL
Cirsium arvense	Canadian Thistle	FAC
Cornus alba	Red Osier	FACW
Deschampsia cespitosa	Tufted Hairgrass	FACW
Descurainia sophia	**Herb Sophia**	**UPL**
Distichlis spicata	Coastal Salt Grass	FACW
Eleocharis palustris	Common Spike-Rush	OBL
Elymus repens	Creeping Wild Rye	FAC
Elymus sp.	**Wild Rye**	**NL**
Elymus trachycaulus	Slender Wild Rye	FAC
Epilobium ciliatum	Fringed Willowherb	FACW
Festuca arundinacea	Tall fescue	FAC
Festuca idahoensis	Bluebunch Fescue	FACU
Glyceria grandis	American Manna Grass	OBL
Glycyrrhiza lepidota	American Licorice	FAC
Grindelia squarrosa	Curly-Cup Gumweed	FACU
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FAC
Iva axillaris	Deer-Root	FAC
Juncus arcticus	Arctic Rush	FACW
Juncus effusus	Lamp Rush	FACW
Juncus hallii	Hall's Rush	FAC
Juncus tenuis	Lesser Poverty Rush	FAC
Lemna gibba	Inflated Duckweed	OBL
Lepidium campestre	Field Pepperweed	UPL

[1] Draft 2012 NWPL
New species identified in 2012 are bolded.

Table 1. (Continued). Vegetation species identified from 2007 to 2012 at the Selkirk Wetland Mitigation Reserve.

Scientific Names	Common Names	WMVC Indicator Status[1]
Lepidium latifolium	Broad-Leaf Pepperwort	FAC
Lepidium perfoliatum	Clasping Pepperwort	FACU
Medicago sativa	Alfalfa	UPL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Phalaris arundinacea	Reed Canary Grass	FACW
Plantago major	Great Plantain	FAC
Poa palustris	**Fowl Blue Grass**	**FAC**
Poa pratensis	Kentucky Blue Grass	FAC
Poa secunda	Curly Blue Grass	FACU
Poa sp.	**Blue Grass**	**NL**
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus deltoides	Eastern Cottonwood	FAC
Potentilla gracilis	**Graceful Cinquefoil**	**FAC**
Puccinellia nuttalliana	Nuttall's Alkali Grass	FACW
Pyrrocoma lanceolata	Lance-Leaf Goldenweed	FAC
Ranunculus gmelinii	Lesser Yellow Water Buttercup	FACW
Rumex crispus	Curly Dock	FAC
Salicornia rubra	Red Saltwort	OBL
Salix exigua	Narrow-Leaf Willow	FACW
Salix lasiandra	Pacific Willow	FACW
Salix lutea	Yellow Willow	OBL
Schoenoplectus acutus	Hard-Stem Club-Rush	OBL
Schoenoplectus maritimus	Saltmarsh Club-Rush	OBL
Schoenoplectus pungens	Three-Square	OBL
Schoenoplectus tabernaemontani	Soft-Stem Club-Rush	OBL
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scirpus pallidus	Pale Bulrush	OBL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sium suave	**Hemlock Water-Parsnip**	**OBL**
Solidago canadensis	Canadian Goldenrod	FACU
Sonchus arvensis	Field Sow-Thistle	FACU
Sonchus asper	Spiny-Leaf Sow-Thistle	FACU
Spartina pectinata	Freshwater Cord Grass	OBL
Suaeda calceoliformis	Paiuteweed	FACW
Symphyotrichum subspicatum	Leafy-Bract American-Aster	FACW
Taraxacum officinale	Common Dandelion	FACU
Triglochin palustris	Marsh Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL

[1] Draft 2012 NWPL
New species identified in 2012 are bolded.

Wetland community Type 18 – *Distichlis spicata/Puccinellia nuttalliana* adjoins community Type 6 along the slightly higher topographical elevations near the center of the project. This small community (0.57 acres) was characterized by coastal saltgrass and Nuttall's alkali grass with less cover of marsh arrow-grass, fox-tail barley, and paiuteweed.

Wetland community Type 19 – Aquatic Macrophytes characterized the open water areas (2.9 acres) present within the mitigation site including the constructed swales in the northwest corner of the site and the excavated depressions within communities 1 and 2. This community was first identified in 2012 as a result of the development of aquatic vegetation within the open water. These aquatic beds were typified by 1.0 to 2.0 feet of surface water vegetated with green algae, broad-leaf cattail, and hard stem club-rush and aquatic macrophytes that included inflated duckweed (*Lemna gibba*). An aquatic bed community is 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).

Transect T-1 traverses the south central portion of the site from east to west (Figure 3 in Appendix A). It crosses the swale that bisects the property and contains areas of intermittent and perennial inundation. Transect T-1 data trends from 2007 to 2012 are summarized in tabular (Table 2) and graphic (Charts 1 and 2) formats. The transect end points were photographed in the four cardinal directions (Pages C-14 through C-22, Appendix C). The transect intersected three wetland communities, including Type 1 – *Typha latifolia/Alopecurus arundinaceus*, 2 – *Alopecurus arundinaceus/Juncus arcticus*, and 6 – *Puccinellia nuttalliana/Juncus arcticus*. One hundred percent of the transect intersected hydrophytic plant communities. Chart 1 shows a notable shift from community Type 2 to community Type 1 in 2012 reflecting a decrease in the cover of Arctic rush and an increase in the cover of broad-leaf cattail on the first interval of the transect. There was also an increase in the cover of community Type 6 (Nuttall's alkali grass) on the final transect interval and a decrease in the cover of community Type 2 (creeping meadow-foxtail).

Infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were mapped at five locations (Figure 3, Appendix A). The sizes of the infestations were less than 0.1 acre. The percent cover within each infestation ranged from low (less than 1 percent) to moderate (5 to 25 percent). Isolated Canadian thistle plants were observed in community types 2, 4, 5, and 19.

Table 2. Data summary from 2007 to 2012 for Transect T-1 at the Selkirk Wetland Mitigation Reserve.

Monitoring Year	2007	2008	2009	2010	2011	2012
Transect Length (feet)	445	445	445	445	445	445
Vegetation Community Transitions along Transect	3	3	3	3	3	2
Vegetation Communities along Transect	3	3	3	3	3	3
Hydrophytic Vegetation Communities along Transect	3	3	3	3	3	3
Total Vegetative Species	12	12	12	18	19	12
Total Hydrophytic Species	10	11	11	13	14	9
Total Upland Species	2	1	1	5	5	3
Estimated % Total Vegetative Cover	100	100	100	100	100	100
% Transect Length Comprising Hydrophytic Vegetation Communities	100	100	100	100	100	100
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0	0	0
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0	0	0	0

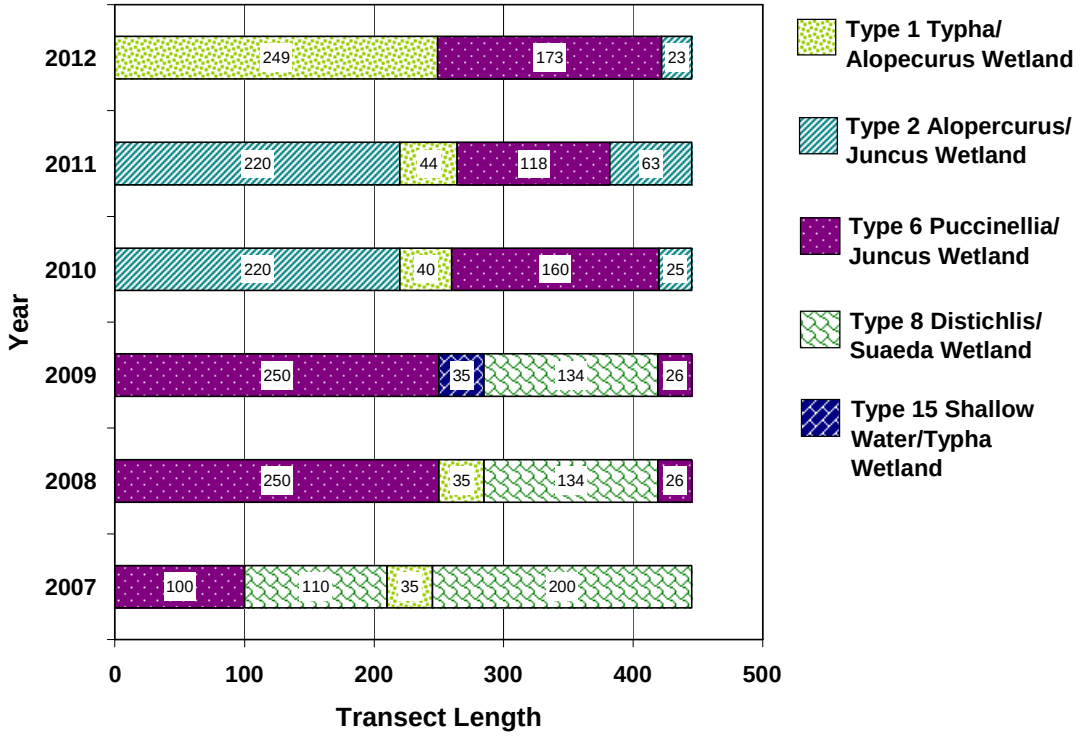

Chart 1. Maps of community types from the beginning (0 feet) to end of transect T-1 (445 feet) from 2007 to 2012 at the Selkirk Wetland Mitigation Reserve.

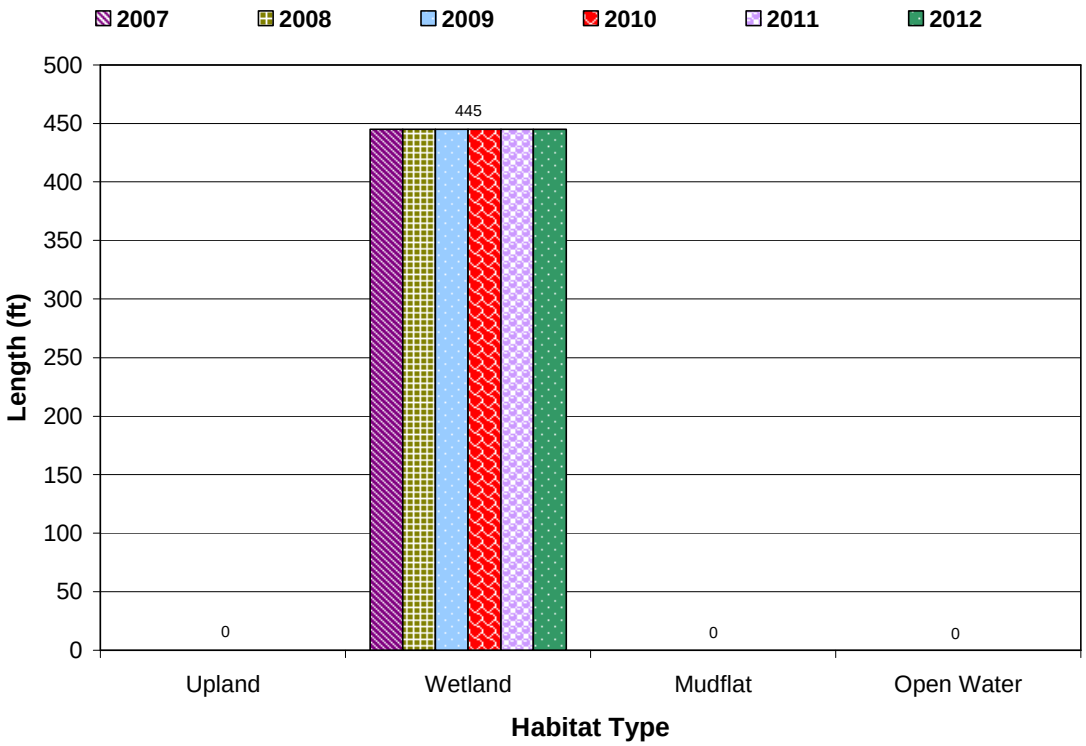

Chart 2. Length of habitat types within Transect 1 from 2007 to 2012 at the Selkirk Wetland Mitigation Reserve.

The 2007 monitoring report noted that 24 woody species pods with approximately 4,750 woody stems were planted on site. Individual plants were not counted in 2007. The pods were reviewed and survivorship was estimated based on the viability of the stem. Survivorship following the first growing season was approximately 60 percent. Survivorship in 2009 included approximately 150 leaf-bearing woody seedlings. High mortality of the planted woody vegetation was documented in 2010. Live woody plants were absent in over 50 percent of the pods. The remaining pods exhibited limited survival. Between 5 and 15 percent of the stems were green and bore leaves. Approximately 10 percent of the total number of stems originally planted were alive in 2010. The same survival rates were observed in 2011. In 2012, all pods were investigated, with only five pods supporting any live willows. Four of the five pods showed less than five percent survival. One pod, just east of the center open water cell, displayed approximately 20 percent survival. In general, there were very low numbers of yellow willow (*Salix lutea*) and planeleaf willow (*Salix planifolia*) surviving adjacent to narrow-leaf willow (*Salix exigua*), which was the dominant surviving woody species.

A viable community of narrow-leaf willow was observed in the south corner of the site in 2012. Few individual plants have survived in the remaining planting zones. Approximately 100 stems of the plant material originally planted appear to have survived. Some of the protective screenings were removed to examine

the plant condition. It is recommended that the remaining plant screens be removed to release the surviving stems from the confines of the protective screens. Prolonged periods of inundation throughout the planted woody vegetation cells and high water tables around the root zones may have resulted in a high mortality rate. No volunteer woody plants were observed within the mitigation site.

3.3. Soil

The predominant soil map unit within the Selkirk mitigation wetland is the somewhat poorly drained Fairway Loam with a hydric Swampcreek component (USDA 2010). The Fairway silt loam is classified as a fine-loamy, mixed, superactive, frigid Fluvaquentic Haplustoll. Soils along the northeast boundary have been mapped as the Shambo series, which consist of deep, well-drained soils formed in calcareous alluvium mainly from soft sandstone. It is classified as a frigid Typic Haplustolls. An area of Larry loam was mapped near the center of the site and includes very deep, poorly drained frigid Typic Endoaquolls. A small area along the south boundary of the site was mapped as Nesda-Meadowcreek-Fluvaquentic Haplaquolls complex. The Nesda component consists of frigid Fluventic Haplustolls commonly found on floodplains and stream terraces. The Meadowcreek component is classified as frigid Fluvaquentic Haplustolls commonly mapped along flood plains, drainageways and stream terraces. With the exception of the Shambo series, all mapped soils within the mitigation project boundary are identified on the Montana Hydric Soils list.

Test pits S-1, S-2, and S-4 were located in areas with confirmed hydric soils. The soils in test pit S-1 (Klayent map unit) were dark gray (10YR 4/1) clay loam with dark yellowish brown (10YR 4/4) redoximorphic concentrations. Although test pits S-2 and S-3 were located within areas mapped as the Shambo unit, these soils did not express sufficient similar conditions to confirm soil type. The soil profile in S-2 revealed a very dark gray (10YR 3/1) clay loam with dark yellowish brown redoximorphic concentrations (10YR 4/4) and depletions (10 YR 2/1). The low chroma and redox features provided a positive indication of hydric soil. The soil from 2 to 12 inches in S-3 was a brown (10 YR 4/3) silty clay loam with redox concentrations (10 YR 4/4). This soil did not meet the criteria for hydric soils. Test pit S-4 revealed a dark gray (10 YR 4/1) sandy loam with dark yellowish brown (10 YR 4/6) concentrations and depletions throughout the matrix providing a positive indication of hydric soil. The soil in test pit S-5 was a dark grayish brown clay loam (10 YR 4/2) (mapped within the Fairway loam) with depletions in the matrix but no redox concentrations and did not qualify as a hydric soil.

3.4. Wetland Delineation

Five data points, S-1 through S-5, were investigated to assist in refining the wetland boundary in 2012. Data points S-1, S-2, and S-4 met the wetland vegetation, soil and hydrology criteria. Data point S-3 was an upland pairing to S-2 and S-5 was located in upland in the northwest corner of the site. Creeping meadow foxtail was a dominant species at all five data points. The 2012 NWPL

defines the indicator status for creeping meadow foxtail and smooth brome as FAC. Data points S-3 and S-5 met the criteria for hydrophytic vegetation based on the dominance of these two species. However, these plots did not meet the criteria for hydric soil and hydrology and classified as upland.

Approximately 71.01 acres of wetlands were delineated within the mitigation boundary in 2012 (Table 3), a decrease of 0.24 acres from 2011. The decrease in wetland acreage was the result of redrawing the wetland boundary in the northwest corner of the site to reflect the data collected at S-5. This data point did not meet the wetland criteria for soil or hydrology, and was located along a slight slope above the adjacent wetland.

Table 3. Wetland acres delineated from 2009 to 2012 at the Selkirk Wetland Mitigation Reserve.

Habitat	2009 (acres)	2010 (acres)	2011 (acres)	2012 (acres)
Wetlands	69.50	70.15	71.25	71.01

3.5. Wildlife

Forty-six individuals of eight bird species were observed during the June 2012 field visit (Table 4). Observed behaviors and habitats of the identified species are included on the Mitigation Monitoring Form (Appendix B). A total of 49 avian species have been observed since June 2007. The observations have included the S3B sensitive species (as defined by MTNHP) long-billed curlew and white-faced ibis observed by the landowner, and the S3B bobolink observed during 2011 and 2012 monitoring. Mammals observed during the 2012 investigation included a long-tailed vole (*Microtus longicaudus*), two pronghorn antelope (*Antilocarpa americana*), a striped skunk (*Mephitis meptitis*), and seven white-tailed deer (*Odocoileus virginianthus*), all observed for the first time in 2012. Muskrat (*Ondatra zibethicus*) burrows were also noted within the meandering swale and inundated cattails. Eight bluebird and four wood duck nesting structures were installed on the site in 2007 and were in use in 2012. The nesting structures were in good working order.

Table 4. Wildlife species observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2012.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Western Chorus Frog	*Pseudacris triseriata*
BIRD	
American Coot	*Fulica americana*
American Goldfinch	*Spinus tristus*
American Robin	*Turdus migratorius*
American Wigeon	*Anas americana*
Barn Swallow	*Hirundo rustica*
Black-billed Magpie	*Pica hudsonia*
Blue-winged Teal	*Anas discors*
Bobolink	***Dolichonyx oryzivorus***
California Gull	*Larus californicus*
Canada Goose	*Branta canadensis*
Cinnamon Teal	*Anas cyanoptera*
Common Raven	*Corvus corax*
Common Yellowthroat	*Geothlypis trichas*
Eared Grebe	*Podiceps nigricollis*
Franklin's Gull	*Leucophaeus pipixcan*
Gadwall	*Anas strepera*
Golden Eagle	*Aquila chrysaetos*
Greater Yellowlegs	*Tringa melanoleuca*
Green-winged Teal	***Anas crecca***
Killdeer	*Charadrius vociferus*
Lesser Yellowlegs	*Tringa flavipes*
Long-billed Curlew	*Numenius americanus*
Mallard	***Anas platyrhynchos***
Marbled Godwit	*Limosa fedoa*
Marsh Wren	*Cistothorus palustris*
Mourning Dove	***Zenaida macroura***
Northern Harrier	*Circus cyaneus*
Northern Pintail	*Anas acuta*
Northern Shoveler	*Anas clypeata*
Pine Siskin	*Spinus pinus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	***Agelaius phoeniceus***
Ring-necked Duck	*Aythya collaris*
Sandhill Crane	***Grus canadensis***
Savannah Sparrow	*Passerculus sandwichensis*

Species observed in 2012 are bolded.

Table 4 (Continued). Wildlife observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2012.

COMMON NAME	SCIENTIFIC NAME
BIRD	
Short-eared Owl	*Asio flammeus*
Snow Goose	*Chen caerulescens*
Solitary Sandpiper	*Tringa solitaria*
Song Sparrow	***Melospiza melodia***
Sora	*Porzana carolina*
Spotted Sandpiper	*Actitis macularius*
Stilt Sandpiper	*Calidris himantopus*
Tree Swallow	*Tachycineta bicolor*
Turkey Vulture	*Cathartes aura*
Western Meadowlark	***Sturnella neglecta***
White-faced Ibis	*Plegadis chihi*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Yellow-headed Blackbird	***Xanthocephalus xanthocephalus***
MAMMAL	
American Mink	*Mustela vison*
Deer Mouse	*Peromyscus maniculatus*
Long-tailed Vole	***Microtus longicaudus***
Mule Deer	*Odocoileus hemionus*
Muskrat	***Ondatra zibethicus***
Pronghorn	***Antilocapra americana***
Raccoon	*Procyon lotor*
Red Fox	*Vulpes vulpes*
Striped Skunk	***Mephitis mephitis***
White-tailed Deer	***Odocoileus virginianus***
REPTILE	
Common Gartersnake	*Thamnophis sirtalis*

Species observed in 2012 are bolded.

3.6. Functional Assessment

Functional assessments were completed in 2012 for three AAs that correspond to the mitigation credit types approved by the USACE prior to mitigation activities (Tables 5, 6, and 7). The AAs are illustrated on Figure 4 in Appendix A and include the 31.99-acre rehabilitation area, the 1-acre enhancement area located near the south property boundary, and the 38.02-acre creation area. The use of the 1999 MWAM was continued through 2012 for consistency. The functional assessment forms are included in Appendix B.

Table 5. Summary of the 2006 to 2012 wetland function/value ratings and functional points for the Rehabilitation AA at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Rehabilitation AA						
	2006	2007	2008	2009	2010	2011	2012
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Low (0.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Wildlife Habitat	Low (0.3)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	NA	Mod (0.5)	Mod (0.5)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short and Long Term Surface Water Storage	Low (0.3)	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	Mod (0.7)	High (0.8)	High (0.8)	High (0.9)	High (0.9)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.1)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**3.1 / 9**	**7.7 / 11**	**8.4 / 11**	**8.5 / 11**	**8.6 / 11**	**8.6 / 11**	**8.6 / 11**
% of Possible Score Achieved	**34%**	**70%**	**76%**	**77%**	**78%**	**78%**	**78%**
Overall Category	**III**	**II**	**II**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**31.90**	**31.90**	**31.99**	**31.90**	**31.99**	**31.99**	**31.99**
Functional Units (acreage x actual points)	**98.90**	**245.63**	**268.72**	**271.2**	**275.1**	**275.1**	**275.1**

[1](Berglund 1999).

Table 6. Summary of the 2006 to 2012 wetland function/value ratings and functional points for the Enhancement AA at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Enhancement AA						
	2006	2007	2008	2009	2010	2011	2012
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Low (0.0)	Mod (0.7)	Mod (0.7)	Low (0.0)	Low (0.0)	Mod (0.7)	Mod (0.7)
General Wildlife Habitat	Mod (0.5)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	NA	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)
Short and Long Term Surface Water Storage	Low (0.2)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Sediment/Nutrient/Toxicant Removal	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.6)	Mod (0.7)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**3.6 / 9**	**6.6 / 11**	**7.4 / 11**	**6.7 / 11**	**6.7 / 11**	**7.5 / 11**	**7.5 / 11**
% of Possible Score Achieved	**43%**	**60%**	**67%**	**61%**	**61%**	**68%**	**68%**
Overall Category	**III**	**III**	**II**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Functional Units (acreage x actual points)	**3.6**	**6.6**	**7.4**	**6.7**	**6.7**	**7.5**	**7.5**

[1](Berglund 1999).

Table 7. Summary of the 2006 to 2012 wetland function/value ratings and functional points for the Creation AA at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Creation AA					
	2007	2008	2009	2010	2011	2012
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Wildlife Habitat	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Mod. (0.5)	Mod. (0.6)	Mod. (0.6)	Mod. (0.6)	Mod. (0.6)
Short and Long Term Surface Water Storage	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	High (0.8)	High (0.8)	High (0.9)	High (0.9)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Mod (0.6)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**7.6 / 11**	**8.4 / 11**	**8.5 / 11**	**8.6 / 11**	**8.6 / 11**	**8.6 / 11**
% of Possible Score Achieved	**69%**	**76%**	**77%**	**78%**	**78%**	**78%**
Overall Category	**II**	**II**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**32.90**	**34.23**	**36.51**	**37.16**	**38.26**	**38.02**
Functional Units (acreage x actual points)	**250.00**	**272.41**	**310.3**	**319.6**	**329.0**	**327.0**

[1](Berglund 1999).

The wetland acreage within the rehabilitated AA stayed the same from 2011 to 2012. The ratings, functional points, and percent score also remained the same. Ratings were excellent for general wildlife habitat and high for short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education potential. This AA was classified as a Category III wetland in 2006 and a Category II wetland from 2007 to present.

The enhancement AA is a one-acre wetland located near the outlet of the wetland complex that is exposed to most of the surface water that leaves the site. The area was flooded by the Musselshell River in May/June, 2011. It did not show signs of flooding in 2012. The ratings were excellent for general wildlife habitat and high for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education potential. The functional points for the enhancement area increased 0.7 points in 2011 based on the documented secondary habitat for the white-faced ibis. This AA was classified as a Category III wetland in 2006 and 2007, and as a Category II wetland from 2008 to present.

The wetland area within the creation AA decreased by 0.24 acres from 38.26 acres in 2011 to 38.02 acres in 2012. Data point S-5 was excavated in the northwest corner of the site. The sample plot did not meet the wetland criteria for hydric soil or hydrology. The wetland boundary shown on Figure 3 for 2012 reflects this slight shift. This AA increased in structural diversity in 2010 with the establishment of submerged and floating vegetation, which resulted in a corresponding increase of 9.3 functional units. Scores for this area were consistent between 2011 and 2012. The highest ratings were for general wildlife habitat (excellent), short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge and recharge, and recreation/education potential. This AA has been classified as a Category II wetland since 2007.

3.7. Photo Documentation

Representative photos taken from photo points and transect ends are included in Appendix C. Photo points PP1 to PP6 are shown on Pages C-1 to C-13. Photographs in the four cardinal directions of the transect beginning and end are shown on pages C-14 to C-21. Photographs of the five data points are shown on page C-22.

3.8. Maintenance Needs

Infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were mapped at five locations (Figure 3, Appendix A). The sizes of the infestations were less than 0.1 acre. The percent cover within each infestation ranged from low (less than 1 percent) to moderate (5 to 25 percent). Isolated Canadian thistle plants were observed in community Types 1, 3, 4, and 13. The

weeds were sprayed by the landowner in spring, 2010. Continued weed spraying is recommended to address the five infestations identified in 2012.

Eight bluebird and four wood duck nesting structures were installed on the site in 2007 and were in use in 2012. The nesting structures were intact.

3.9. Current Credit Summary

The estimated wetland credits for 2012 based on the creation, rehabilitation, enhancement, and upland buffer mitigation types are shown in Table 6. Approximately 71.01 acres of wetland were delineated site-wide in 2012, a decrease of 0.24 acres from 2011. This small decrease was the result of redefining the wetland/upland boundary in the northwest corner of the site based on the data collected at S-5. The creation AA encompassed 38.02 acres of wetland. The enhancement AA accounted for 1.0 acre on the site and the rehabilitation AA was 31.99 acres in size. All three wetland mitigation areas were rated as Category II wetlands in 2012. The upland buffer credit was based on the presence of 2.35 acres of existing upland.

The intent of the 74.4-acre Selkirk Mitigation Reserve was to provide MDT with 50 acres of wetland mitigation credit prior to Highway 12 road construction in Watershed 10. The reserve was constructed to provide approximately 71.5 acres of herbaceous wet meadow and scrub/shrub wetlands, open water, and 2.9 acres of upland buffer. The mitigation site design was approved to provide approximately 60.4 acres of wetland credit after applying the appropriate credit ratios and after accounting for 0.4 acre of wetland impacts associated with project construction. Based on the 2012 monitoring results, the site has successfully generated 59.6 wetland credit acres and 0.5 upland buffer credit acres (Table 8).

The existing performance standards were amended in a letter from the USACE dated March 29, 2010, as discussed in Section 1.0. The amendment changed the former method of awarding credits from a pass/fail system to a credit-reduction based methodology. The USACE and MDT will negotiate an appropriate credit ratio reduction if the primary standards are not met in full at the end of the monitoring period. Site conditions in 2012 were compared against the performance standards listed in Section 1. The three wetland criteria were met for all areas identified on Figure 3 (Appendix A) as wetlands. The weed infestations were located primarily in the perimeter and northwest corner of the mitigation site. The percent weed cover did not exceed five percent site-wide in 2012. Soil saturation within 12 inches of the ground surface and inundation were evident site wide based on data collected at sample points and on the presence and extent of hydrophytic vegetation communities. The aerial vegetation coverage has exceeded 80 percent site-wide for over three years. The open water areas contained persistent emergent vegetation and aquatic bed vegetation and there was no single open water body that exceeded three acres.

The functional category standard requires an assurance of a functional lift with the most favorable credit ratios awarded if wetland assessment areas achieve a Category II status or better (USACE 2010). The functional category evaluation was based on the 1999 MDT MWAM. The creation, rehabilitation, and enhancement assessment areas have achieved a Category II rating.

Table 8. The estimated mitigation credit acreage from 2009 to 2012 at the Selkirk Wetland Mitigation Reserve.

Mitigation Type	Proposed Credit Acreage	2009 Acres	2010 Acres	2011 Acres	2012 Acres	Credit Ratio	2012 Wetland Credits**
1 - Creation	38.60	36.51	37.16	38.26	38.02	1.1	38.0
2 - Rehabilitation	31.90	31.90	31.9	31.99	31.99	1.5:1	21.3
3 - Enhancement	1.00	1.00	1.00	1.00	1.00	3:1	0.3
4 - Upland Buffer*	2.90	4.59	2.90	2.35	2.35	5:1	0.5
Wetland Fill		-0.4	-0.4	-0.4	-0.4	-	-0.4
TOTAL							**59.7**

*Upland credit acreage based on original proposed acreage in mitigation plan. The digital site boundary provided to Confluence defined a project area of 73.6 acres. The conservation easement encompasses 74.4 acres and is assumed to extend into the uplands surrounding the defined project area.

**MDT can only utilize 50 acres of credit from site, with option to purchase more at a later date.

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United States Department of Agriculture-Natural Resource Conservation Service. Web Soil Survey for Wheatland County, Montana. 2010. Accessed in October 2010 at: http://websoilsurvey.nrcs.usda.gov/app/.

Western Regional Climate Center. United States Historical Climatology Network. Reno, Nevada. 2011. Accessed June in 2011 at: http://www.wrcc.dri.edu/CLIMATEDATA.html.

Appendix A

Project Area Maps – Figures 2, 3, and 4

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana

Figure 2: 2012 Monitoring Activity Locations

Legend

- Vegetation Transect
- Monitoring Limits
- Data Point
- Photo Point
- Bluebird Box
- Wood Duck Boxes

Base Photography Date: June 28, 2012

PP1
PP2
PP3
PP4
PP5
S-1
S-2
S-3
S-4
S-5
T-1 Start
T-1 Finish

N

0 125 250 500
Feet

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: Wheatland Co., MT
PROJECT NO: NH-STPP-STPX 54(31)
FILE: Selkirk/Monitor2012.mxd

Project Name: Selkirk Wetland Mitigation Site
Drawing Title: 2012 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted
Drawn: September 4, 2012
PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 2

REV -

Figure 3: 2012 Mapped Site Features

Vegetation Community Types

1. Typha latifolia/Alopecurus arundinaceus
2. Alopecurus arundinaceus/Juncus arcticus
3. Carex spp/Juncus arcticus
4. Alopecurus arundinaceus/Schoenoplectus maritimus
5. Bromus inermis/Elymus repens
6. Puccinellia nuttalliana/Juncus arcticus
13. Salix exigua/Alopecurus arundinaceus
14. Hordeum jubatum/Juncus arcticus
18. Distichlis spicata/Puccinellia nuttalliana
19. Aquatic Macrophytes

Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Communities

Base Photography Date: June 28, 2012

Noxious Weeds

Cirsium arvense

Infestation Size
- X = <0.1 acre
- ▲ = 0.1 to 1 acre
- ■ = 1 to 5 acre

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

N

0 125 250 500

Feet

Acreages

Project Area	73.60 acres
Wetlands	71.01 acres
Uplands	2.59 acres

LOCATION: Wheatland Co., MT

PROJECT NO: NH-STPP-STPX 54(31)

FILE: Selkirk/Veg2012.mxd

Project Name: Selkirk Wetland Mitigation Site

Drawing Title: 2012 Mapped Site Features

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 4, 2012

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

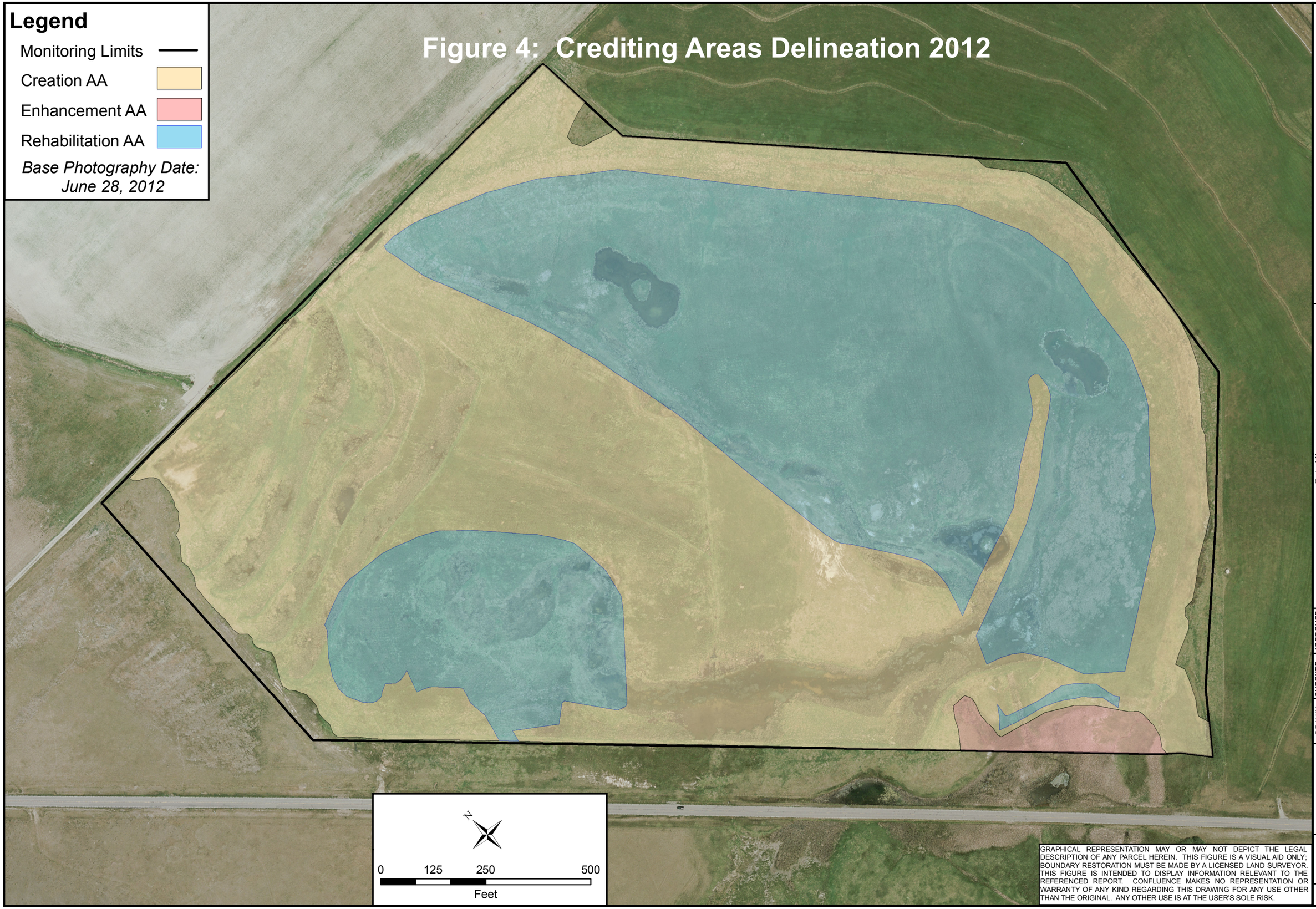
REV -

Figure 4: Crediting Areas Delineation 2012

Legend

- Monitoring Limits
- Creation AA
- Enhancement AA
- Rehabilitation AA

Base Photography Date: June 28, 2012



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: Wheatland Co., MT

PROJECT NO: NH-STPP-STPX 54(31)

FILE: Selkirk/CreditAreas.mxd

Project Name
Selkirk Wetland Mitigation Site

Drawing Title
Crediting Areas Delineation 2012

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 4, 2012

PROJ MGR: B Sandefur

CONFLUENCE
consulting Incorporated

Figure 4

REV -

Appendix B

2012 MDT Wetland Mitigation Site Monitoring Form
2012 USACE Wetland Determination Data Form
2012 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Selkirk Assessment Date/Time 6/18/2012 9:29:39 AM

Person(s) conducting the assessment: B. Sandefur

Weather: Mild & sunny, mid 60s, breezy. N Location: Two Dot, MT

MDT District: Billings Milepost: NA

Legal Description: T 8N R 12E Section(s) NE1/4 Sec. 9

Initial Evaluation Date: 8/22/2007 Monitoring Year: 6 #Visits in Year: 1

Size of Evaluation Area: 73.6 (acres)

Land use surrounding wetland:

Agriculture, hay production

HYDROLOGY

Surface Water Source: Groundwater

Inundation: ☑ Average Depth: 0.3 **(ft)** Range of Depths: 0-3.5 **(ft)**

Percent of assessment area under inundation: 80 %

Depth at emergent vegetation-open water boundary: 0.8 **(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:

Salt crust, surface soil cracks, drift deposits, drainage patterns, FAC-neutral. Entire wetland area with high water table, generally with surface water and/or saturated to surface.

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:

Hydro assessed at soil pits and direct evidence of surface water.

VEGETATION COMMUNITIES

Site Selkirk

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

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Typha latifolia / Alopecurus arundinaceus **Acres:** 25.98

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Argentina anserina	2
Carex nebrascensis	0	Carex utriculata	1
Cicuta douglasii	1	Eleocharis palustris	1
Juncus arcticus	1	Juncus effusus	0
Mentha arvensis	0	Puccinellia nuttalliana	1
Schoenoplectus acutus	0	Schoenoplectus maritimus	1
Sonchus arvensis	1	Triglochin palustris	1
Typha latifolia	5		

Comments:

Community # 2 **Community Type:** Alopecurus arundinaceus / Juncus arcticus **Acres:** 20.91

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Chenopodium sp.	0
Cirsium arvense	0	Distichlis spicata	0
Eleocharis palustris	2	Epilobium ciliatum	0
Juncus arcticus	4	Poa sp.	0
Potentilla gracilis	0	Puccinellia nuttalliana	1
Schoenoplectus acutus	0	Sonchus arvensis	0
Triglochin palustris	1	Typha latifolia	1

Comments:

Community # 3 **Community Type:** Carex spp. / Juncus arcticus **Acres:** 15.85

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Carex nebrascensis	1
Carex praegracilis	2	Carex utriculata	2
Cicuta douglasii	0	Epilobium ciliatum	1
Hordeum jubatum	0	Juncus arcticus	2
Schoenoplectus acutus	1	Typha latifolia	2

Comments:

Community # 4 Community Type: Alopecurus arundinaceus / Schoenoplectus mariti **Acres:** 2.37

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Cirsium arvense	0
Eleocharis palustris	0	Glycyrrhiza lepidota	0
Juncus arcticus	2	Lepidium campestre	0
Schoenoplectus maritimus	2	Sium suave	1
Sonchus arvensis	1	Typha latifolia	0

Comments:

Community # 5 Community Type: Bromus inermis / Elymus repens **Acres:** 2.59

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Bromus inermis	5
Chenopodium leptophyllum	1	Cirsium arvense	0
Descurainia sophia	0	Elymus sp.	3
Grindelia squarrosa	1	Hordeum jubatum	1
Iva axillaris	0	Melilotus officinalis	1
Plantago major	2	Sonchus arvensis	1
Taraxacum officinale	0		

Comments:

Community # 6 Community Type: Puccinellia nuttalliana / Juncus arcticus **Acres:** 1.25

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	0	Distichlis spicata	4
Hordeum jubatum	2	Iva axillaris	3
Juncus arcticus	0	Poa palustris	0
Puccinellia nuttalliana	4	Suaeda calceoliformis	1
Triglochin palustris	0		

Comments:

Community # 13 Community Type: Salix exigua / Alopecurus arundinaceus **Acres:** 0.24

Species	Cover class	Species	Cover class
Agrostis stolonifera	0	Alopecurus arundinaceus	4
Argentina anserina	2	Carex nebrascensis	0
Glycyrrhiza lepidota	0	Juncus arcticus	2
Salix exigua	5	Sonchus arvensis	1
Triglochin palustris	0	Typha latifolia	1

Comments:

Community # 14 **Community Type:** Hordeum jubatum / Juncus arcticus **Acres:** 0.94

Species	Cover class	Species	Cover class
Carex praegracilis	2	Distichlis spicata	3
Hordeum jubatum	4	Juncus arcticus	4
Puccinellia nuttalliana	3	Suaeda calceoliformis	1

Comments:

Community # 18 **Community Type:** Distichlis spicata / Puccinellia nuttalliana **Acres:** 0.57

Species	Cover class	Species	Cover class
Distichlis spicata	5	Hordeum jubatum	2
Puccinellia nuttalliana	4	Suaeda calceoliformis	1
Triglochin palustris	2		

Comments:

Community # 19 **Community Type:** Aquatic macrophytes / **Acres:** 2.9

Species	Cover class	Species	Cover class
Algae, green	4	Aquatic macrophytes	4
Cirsium arvense	0	Lemna gibba	1
Schoenoplectus acutus	1	Typha latifolia	2

Comments:

Total Vegetation Community Acreage **73.6**

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

VEGETATION TRANSECTS

Site: Selkirk Date: 6/18/2012 9:29:39 AM

Transect Number: 1 **Compass Direction from Start:** 280

Interval Data:

Ending Station 249 **Community Type:** Typha latifolia / Alopecurus arundinaceus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	3	Juncus arcticus	2
Schoenoplectus acutus	1	Schoenoplectus maritimus	1
Typha latifolia	5		

Ending Station 422 **Community Type:** Puccinellia nuttalliana / Juncus arcticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Distichlis spicata	3
Juncus arcticus	4	Poa palustris	2
Puccinellia nuttalliana	5	Suaeda calceoliformis	1

Ending Station 445 **Community Type:** Alopecurus arundinaceus / Juncus arcticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Chenopodium sp.	1
Distichlis spicata	2	Poa sp.	2
Puccinellia nuttalliana	1	Sonchus arvensis	1

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Selkirk

Planting Type	#Planted	#Alive	Notes
Pacific Willow (bare root)	200		
Plains Cottonwood (bare root)	100		
Planeleaf Willow (bare root)	400		
Red-Osier Dogwood (10 cu in)	392		*See Comments
Red-Osier Dogwood (bare root)	950		
Sandbar Willow (bare root)	1908		
Yellow Willow (bare root)	400		

Comments

2007: There are 24 woody species pods within the entire site and a total of 4,750 stems; each pod was planted with 100, 364, or 500 stems to meet the 500 stem ct/acre criteria. Each plant was not counted during the investigation. For survivorship estimates, each pod was observed and survivorship estimated based on viability of the stem. In most cases the stems were without leaves because of the first-year planting stress. Survivorship for the first planting season appeared to be approximately 60%. 2008: As of July 2008, approximately 1-5% of the planted woody stems had leaves. Oasis (2008) found that 50% of the stems were green during the two 2008 site visits and thus leaf growth and/or new growth may occur in 2009. Any mortality that has occurred does not appear to ve animal-caused as most of the screening around each plant seems to be in place, unless rodents are chewing through the stems, which was not obvious to the author. Mortaility of some stems may have resulted from the high water table around the root zones. A willow area in the south east corner of the wetlands was not counted in the planted pod count (24) or assessduring the leafy-stem estimate; this pod was approximately 100% cover. It is possible that a later leaf-out occurred due to colder than normal temperatures in May/June.

2009: At least 50% of the pods had no live woody plants, one had approximately 20% stems with live leaves, three had <1%, one had 1-5%, one had 5-10%, the remaining pods were not observed. A total of approximately 150 live planted woody species have survived 2 years. 2010: Similar survivorship was observed in 2010 as in 2009. Live woody plants were absent in over 50% of the pods. The remaining pods exhibited low survival rates, averaging between 5-15% green, leafed-out stems. It is estimated that roughlyt 10% of the total number of stems originally planted are surviving. 2011: A very low number of woody species pods exhibited any willow survival. All pods were investigated in 2011. Only five of the pods supported any live willows. Four ot the five pods showed less than 5% survival. One pod, just east of the center open water cell, displayed approximately 20% survival. Sandbar willow was the dominant surviving. A very low number of yellow willow and planeleaf willow were surviving alongside of the sandbar willow. Low survival may possibly be a factor of the extensive areas and extended periods of inundation present through the Selkirk site. 2012: One pod of sandbar willow in the southern corner of the site appeared to have developed a viable community. Only a few select individual survivors remain throughout some of the remaing planting zones. A few of the protective screenings were removed to examine the condition of some surviving stems. It is estimated that just under 100 stems of the original planted material remained viable in 2012. It is recommended that ALL remaining planting screens be removed to decrease competition for any surviving stems.

Selkirk

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: 8-BBB, 4-WDB

How many? 12

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
Bobolink	2	N	MA, WM
Green-winged Teal	4	F, N	I, MA, OW
Mallard	10	F, L, N	MA, OW, WM
Mourning Dove	2	F, FO	MA, UP, WM
Red-winged Blackbird	12	F	MA, OW, UP, WM
Sandhill Crane	24	F	WM
Song Sparrow	7	F	MA, UP, WM
Western Meadowlark	3	F, N	MA, OW, UP, WM
Yellow-headed Blackbird	6	BD, N	MA, OW, WM

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Long-tailed Vole	1	No	No	No	
Muskrat		Yes	No	Yes	
Pronghorn	2	No	No	No	
Striped Skunk	1	No	No	No	
White-tailed Deer	7	No	No	No	

Wildlife Comments:

Selkirk

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
9040	46.473006666667	-110.2293483333		S-1
9041-9050	46.473186	-110.227898		PP-3
9052-9060	46.473522	-110.22612		PP-2
9067-9078	46.473522	-110.224724		PP-1
9080-81	46.470901	-110.224335		Veg-tran 1
9082-92	46.470985	-110.224159		T-1 start, pano
9093	46.471134	-110.225906		T-1 end
9094-9103	46.471134	-110.225906		T-1 end, pano
9108	46.472075	-110.2214266667		S-2
9109	46.472075	-110.2214266667		S-3
9131-39	46.469215	-110.224548		PP-5
9141	46.468958333333	-110.2246233333		S-4
9156-65	46.471073	-110.227509		PP-4
9168	46.474513333333	-110.229645		S-5

Comments:

Selkirk

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

The wetland boundary along an area in the northwest corner (at data point S-5) was refined to exclude a portion of upland that had been mapped as wetland.

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? Yes

If yes, do they need to be repaired? No

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

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? Yes

If yes, are the structures in need of repair? No

If yes, describe the problems below.

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

Project/Site: Selkirk Wetland Mitigation Preserve | City/County: Wheatland | Sampling Date: 6/18/2012

Applicant/Owner: MDT | State: MT | Sampling Point: S-1

Investigator(s): Brian Sandefur | Section, Township, Range: S 9 T 8N R 12E

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

Subregion (LRR): LRR E | Lat: 46.4730066666667 | Long: -110.229348333333 | Datum: WGS84

Soil Map Unit Name: Klayent

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:
Point near boundary of veg com 1 & 2, good emergent marsh habitat with killdeer nest nearby.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus arundinaceus	45	☑	FAC
2. Triglochin palustris	7	☐	OBL
3. Eleocharis palustris	40	☑	OBL
4. Potentilla gracilis	5	☐	FAC
5. Epilobium ciliatum	5	☐	FACW
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	102 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 1 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S-1

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

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

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

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): 0

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

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Water table to surface, most of surrounding land with surface water approx 1-2 in deep.

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

Project/Site: Selkirk Wetland Mitigation Preserve City/County: Wheatland Sampling Date: 6/18/2012

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

Investigator(s): Brian Sandefur Section, Township, Range: S 9 T 8N R 12E

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

Subregion (LRR): LRR E Lat: 46.472075 Long: -110.221426666667 Datum: WGS84

Soil Map Unit Name: Shambo

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:
Point along wetland boundary in eastern corner between veg com 4 and 5.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Typha latifolia	30	☑	OBL
2. Alopecurus arundinaceus	30	☑	FAC
3. Eleocharis palustris	15	☐	OBL
4. Juncus arcticus	10	☐	FACW
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	85 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 1 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	100					Clay Loam	
8-14	10YR 3/1	95	10YR 4/4	5	C	M	Clay Loam	also w/ ~5% depletions, 10YR2/1

[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: frigid Typic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

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

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

Project/Site: Selkirk Wetland Mitigation Preserve | City/County: Wheatland | Sampling Date: 6/18/2012

Applicant/Owner: MDT | State: MT | Sampling Point: S-3

Investigator(s): Brian Sandefur | Section, Township, Range: S 9 T 8N R 12E

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

Subregion (LRR): LRR E | Lat: 46.472075 | Long: -110.221426666667 | Datum: WGS84

Soil Map Unit Name: Shambo

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:
Companion pnt to S-2 on upland side of wetland boundary. Similar species to adjacent irrigated hay field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus arundinaceus	60	☑	FAC
2. Bromus inermis	35	☑	FAC
3. Taraxacum officinale	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 1 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Hydrophytic vegetation community based on FAC indicator status for Bromus inermis.

SOIL

Sampling Point: S-3

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 2/1	100					Silty Clay Loam	
2-12	10YR 4/3	95	10YR 4/4	5	C	M	Silty Clay Loam	
12-16	10YR 5/1	95	10YR 4/4	5	C	M	Clay Loam	Redox increase w/ depth.

[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: frigid Typic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Soil hydric below 12in. Data point close to edge of wetland boundary with increased elevation from water table with distance from wetland boundary.

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: Soils moist @ 12in, water table w/in 30in of surface.

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

Project/Site: Selkirk Wetland Mitigation Preserve City/County: Wheatland Sampling Date: 6/18/2012

Applicant/Owner: MDT State: MT Sampling Point: S-4

Investigator(s): Brian Sandefur Section, Township, Range: S 9 T 8N R 12E

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

Subregion (LRR): LRR E Lat: 46.4689583333333 Long: -110.224623333333 Datum: WGS84

Soil Map Unit Name: Klayent

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:
Pnt in Com 13, area receives wetland hydrology from irrigation water return.

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: 15ft)			
1. Salix exigua	30	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	30 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Juncus arcticus	60	☑	FACW
2. Alopecurus arundinaceus	30	☑	FAC
3. Sonchus arvensis	10	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 1 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S-4

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					Silt Loam	
2-16	10YR 4/1	90	10YR 4/6	5	C	M	Sandy Loam	redox conc/depl and root/pore lining

[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: FLUVAQUENTIC ENDOAQUOLLS

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

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): 12

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

Project/Site: Selkirk Wetland Mitigation Preserve City/County: Wheatland Sampling Date: 6/18/2012

Applicant/Owner: MDT State: MT Sampling Point: S-5

Investigator(s): Brian Sandefur Section, Township, Range: S 9 T 8N R 12E

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): flat Slope (%): 3

Subregion (LRR): LRR E Lat: 46.4745133333333 Long: -110.229645 Datum: WGS84

Soil Map Unit Name: Fairway loam

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:
Area previously mapped wetland in west corner of site. Boundary shifted down gradient ~50ft.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus arundinaceus	60	☑	FAC
2. Bromus inermis	35	☑	FAC
3. Chenopodium leptophyllum	5	☐	FACU
4. Descurainia sophia	5	☐	UPL
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	105 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 1 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S-5

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
0-4	10YR 3/2	100					Clay Loam	
4-14	10YR 4/2	95	10YR 2/2	5	D	M		Soils moist around 14in

[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: frigid Fluvaquentic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Area likely saturated for brief periods following rain events during wet season due to clay content and surface runoff. Does not appear to maintain sufficient periods of saturation to qualify as wetland hydrology.

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 positive signs of wetland hydrology. Data point located on convex nose on slope well above water table of adjacent wetland area.

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Selkirk Wetland Mitigation Site **2. MDT project#** NH-STPP-TPX 54(31) **Control#**

3. Evaluation Date 6/18/2012 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Creation

6. Wetland Location(s): T 8N **R** 12E **Sec1** 9 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10040201 **Watershed/County** Musselshell Watershed/Wheatland County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 38.02

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 38.02

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	Palustrine	none	Emergent Wetland	Impounded	saturated	75
Depressional	Palustrine	none	Emergent Wetland	Impounded	intermittantly flooded	5
Depressional	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	15
Depressional	Palustrine	none	Aquatic Bed	Excavated	Permanently flooded	5

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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 disturbance	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)

Areas impacted from construction of lateral grade checks 100% revegetated. Wetland area decreased slightly in NW corner due to refinement of wetland boundary in this area. Hydrology supplied from both natural and irrigation runoff.

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

Low amounts of Cirsium arvense

iii. Brief descriptive summary of surrounding land use/habitat

Hayland production & grazing, Hwy 12 along SW boundary

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments: Low amounts of woody species present but yet to attain shrub size status. Structure classes present include emergent and aquatic beds within standing water.

SECTION PERTAINING TO FUNCTION 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 (circle one basedon definition 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 [circle] 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	.5L	.3L	0L

Sources for documented use USFWS database for County, no documented or suspected use by listed species.

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 (circle one basedon definition contained in instructions):

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

Secondary habitat (list Species) ◉ **D** ○ **S** Long-billed Curlew (S3B), White-faced Ibis (S3B), Bobolink (S3

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 [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MTNHP, Species observed onsite by landowners.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Substantial

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

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] 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, circle 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 [circle] 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 Numerous birds and other wildlife observed throughout monitoring efforts and documented by landowner.

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., click [x] **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not 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

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 (circle)? **Y** ◯ **N** ◉

Comments: The meandering swales and lateral grade checks established in this credit area have the potential to collect water and flood into the created wetland. Most of the created wetland was inundated with at least very shallow water (0-1 inch) during the June site visit.

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, check ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [circle] 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: Several inches of water were present in the NW corner of the upslope side of the lateral grade checks and excavated area and the meandering swales.

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, check ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] 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: Outlet restricted by berm on south side of wetland edge and water flowing from swales is culverted beneath south berm.

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 [circle] 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: Water in depressions appear to be perennial and subject to wave action.

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; 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=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or 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	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

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:

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 [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] 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: i. Is the AA a known rec./ed. Site ◉ Y ○ **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

iii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ○ Y ○ **N** (If yes, go to i then proceed to iv; if no, then rate as [circle] Low [0.1])

iv. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

1 H

Comments: Site used for wildlife viewing and bird-watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Creation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.7	1	26.614
C. General Wildlife Habitat	E	1	1	38.02
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	M	.6	1	22.812
F. Short and Long Term Surface Water Storage	H	1	1	38.02
G. Sediment/Nutrient/Toxicant Removal	H	1	1	38.02
H. Sediment/Shoreline Stabilization	H	1	1	38.02
I. Production Export/Food Chain Support	H	.9	1	34.218
J. Groundwater Discharge/Recharge	H	1	1	38.02
K. Uniqueness	M	.4	1	15.208
L. Recreation/Education Potential	H	1	1	38.02
Totals:		8.6	11	326.972
Percent of Possible Score		**78.18** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, 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**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

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

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Selkirk Wetland Mitigation Site **2. MDT project#** NH-STPP-TPX 54(31) **Control#**

3. Evaluation Date 6/18/2012 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Enhancement

6. Wetland Location(s): T 8N **R** 12E **Sec1** 9 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10040201 **Watershed/County** Musselshell Watershed/Wheatland County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 1

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	20
Depressional	Palustrine	none	Emergent Wetland	Impounded	saturated	60
Depressional	Palustrine	none	Scrub-Shrub Wetland	Impounded	saturated	10
Riverine	Riverine	none	Unconsolidated Bottom		Permanently flooded	10

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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 disturbance	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)

AA is adjacent to HWY 12, mostly cattails and grass species with an establishing stand of sandbar willow. Outflow of all reserve site occurs within this credit area.

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

Cirsium arvense, low amounts

iii. Brief descriptive summary of surrounding land use/habitat

AA located is southern corner of site. Hayland production & grazing to east, Hwy 12 along SW boundary, re-establishment and creation AA to west, and rehabilitation AA to north.

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments: Emergent and scrub/shrub vegetation communities present.

SECTION PERTAINING TO FUNCTION 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 (circle one basedon definition 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 [circle] 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	.5L	.3L	0L

Sources for documented use USFWS database for County, no documented or suspected use by listed species.

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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ◎ **D** ◎ **S**

Secondary habitat (list Species) ◉ **D** ○ **S** White-faced Ibis (S3B), Bobolink (S3B)

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 [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MTNHP database, landowner observed.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Substantial

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

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] 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, circle 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 [circle] 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 wildlife rating based on the numerous birds and wildlife track observed.

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., click [x] **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments

14E. Flood Attenuation:

(applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, check ☐ **NA** here and proceed to the next function.)

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not 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

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 (circle)? **Y** ◯ **N** ◉

Comments: Outlet from wetlands to the north of the berm flow through this wetland area and a channel has formed.

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, check ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [circle] 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: Water appears to flow from site year-round.

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, check ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] 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: Wetland has potential to receive sediment/nutrients from surrounding ag lands, area well-vegetated.

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 [circle] 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: Deep-rooted species dominate perennial outflow channel.

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; 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=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or 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	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

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:

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 [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments: HWY 12 forms a berm at the toe of the wetland, likely water seeps under road in addition to flowing through the culvert.

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] 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: i. Is the AA a known rec./ed. Site (●) Y ( ) **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

iii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ( ) Y (●) **N** (If yes, go to i then proceed to iv; if no, then rate as [circle] Low [0.1])

iv. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

1 H

Comments: Site used for wildlife viewing and bird-watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Enhancement

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.7	1	0.7
C. General Wildlife Habitat	E	1	1	1
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	L	.2	1	0.2
F. Short and Long Term Surface Water Storage	M	.4	1	0.4
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1
H. Sediment/Shoreline Stabilization	H	1	1	1
I. Production Export/Food Chain Support	H	.8	1	0.8
J. Groundwater Discharge/Recharge	H	1	1	1
K. Uniqueness	M	.4	1	0.4
L. Recreation/Education Potential	H	1	1	1
Totals:		7.5	11	7.5
Percent of Possible Score		**68.18** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, 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**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

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

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Selkirk Wetland Mitigation Site **2. MDT project#** NH-STPP-TPX 54(31) **Control#**

3. Evaluation Date 6/18/2012 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Rehabilitation

6. Wetland Location(s): T 8N **R** 12E **Sec1** 9 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10040201 **Watershed/County** Musselshell Watershed/Wheatland County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 31.99

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 31.99

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	90
Depressional	Palustrine		Aquatic Bed	Impounded	Permanently flooded	10

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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 disturbance	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)

AA includes 3 ponds, 2 swales, and the confluence of the 3 reserve swales. Mostly emergent vegetation with numerous shrub seedlings planted supporting low survival.

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

Cirsium arvense, in low amounts

iii. Brief descriptive summary of surrounding land use/habitat

Hayland production & grazing, Hwy 12 along SW boundary

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments: Numerous woody species planted in the area in 2007, low survival observed during monitoring in 2012 and none of size to classify as shrubs. Few dead cottonwoods in south end of area. Two structure classes include emergent and submergent.

SECTION PERTAINING TO FUNCTION 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 (circle one basedon definition 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 [circle] 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	.5L	.3L	0L

Sources for documented use USFWS database for County, no documented or suspected use by listed species.

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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ◉ **D** ○ **S** Long-billed Curlew (S3B), White-faced Ibis (S3B), Bobolink (S3

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 [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MTNHP, Species observed onsite by landowners.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Substantial

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

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] 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, circle 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 [circle] 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 Previous surveys and current field observations indicate this site is important habitat for several avian species.

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., click [x] **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not 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

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 (circle)? **Y** ◯ **N** ◉

Comments:

The meandering swales established in this credit area have the potential to collect water and flood into the wetlands. Most of this credit area had 0-1 inch of surface water during the monitoring, and ponds/swales had 1-20 inches of water.

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, check ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [circle] 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:

This credit area is saturated to the surface for apparently most of the year.

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, check ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] 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:

Meandering, low-gradient swales saturated/inundated during assessment

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 [circle] 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: Deep-rooted vegetation present along shallow ponds and swale

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; 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=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or 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	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

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:

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 [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] 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: i. Is the AA a known rec./ed. Site (•) Y ( ) **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

iii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ( ) Y (•) **N** (If yes, go to i then proceed to iv; if no, then rate as [circle] Low [0.1])

iv. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

1 H

Comments: Site used for wildlife viewing and bird-watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Rehabilitation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.7	1	22.393
C. General Wildlife Habitat	E	1	1	31.99
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	M	.6	1	19.194
F. Short and Long Term Surface Water Storage	H	1	1	31.99
G. Sediment/Nutrient/Toxicant Removal	H	1	1	31.99
H. Sediment/Shoreline Stabilization	H	1	1	31.99
I. Production Export/Food Chain Support	H	.9	1	28.791
J. Groundwater Discharge/Recharge	H	1	1	31.99
K. Uniqueness	M	.4	1	12.796
L. Recreation/Education Potential	H	1	1	31.99
Totals:		8.6	11	275.114
Percent of Possible Score		**78.18** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, 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**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

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

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2009

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2010

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2011

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2012

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2009

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2010

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2011

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2012

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2009

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2010

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2011

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2012

Photo Point 2 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2009

Photo Point 2 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2010

Photo Point 2 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2011

Photo Point 2 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2012

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2009

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2010

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2011

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2012

Photo Point 3 – *Photo 1*
Bearing: South
Location: Creation Credit
Taken in 2009

Photo Point 3 – *Photo 1*
Bearing: South
Location: Creation Credit
Taken in 2010

Photo Point 3 – *Photo 1*
Bearing: South
Location: Creation Credit
Taken in 2011

Photo Point 3 – *Photo 1*
Bearing: South
Location: Creation Credit
Taken in 2012

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2009

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2010

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2011

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2012

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2012

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2012

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2012

Photo Point 4 – *Photo 4*
Bearing: Southwest
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 4*
Bearing: Southwest
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 4*
Bearing: Southwest
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 4*
Bearing: Southwest
Location: Creation Credit
Taken in 2012

Photo Point 5 – *Photo 1*
Compass Bearing: East
Location: Creation Credit
Taken in 2010

Photo Point 5 – *Photo 2*
Compass Bearing: South
Location: Creation Credit
Taken in 2010

Photo Point 5 – *Photo 1*
Compass Bearing: East
Location: Creation Credit
Taken in 2011

Photo Point 5 – *Photo 2*
Compass Bearing: South
Location: Creation Credit
Taken in 2011

Photo Point 5 – *Photo 1*
Compass Bearing: Northeast
Location: Creation Credit
Taken in 2012

Photo Point 5 – *Photo 2*
Compass Bearing: South
Location: Creation Credit
Taken in 2012

Photo Point 5 – *Photo 3* **Location:** Creation Credit
Compass Bearing: West **Taken in 2010**

Photo Point 5 – *Photo 3* **Location:** Creation Credit
Compass Bearing: West **Taken in 2011**

Photo Point 5 – *Photo 3* **Location:** Creation Credit
Compass Bearing: West **Taken in 2012**

Photo Point – *T-1 Start*
Bearing: West
Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: West
Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: West
Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: West
Location: Rehabilitation credit area
Taken in 2012

Photo Point – *T-1 Start*
Bearing: South
Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: South
Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: South
Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: South
Location: Rehabilitation credit area
Taken in 2012

Photo Point – *T-1 Start*
Bearing: Southeast
Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: Southeast
Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: Southeast
Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: Southeast
Location: Rehabilitation credit area
Taken in 2012

Photo Point – *T-1 Start*
Bearing: North
Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: North
Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: North
Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: North
Location: Rehabilitation credit area
Taken in 2012

Photo Point – *T-1 Finish* **Location:** Creation Credit
Bearing: Northeast **Taken in 2009**

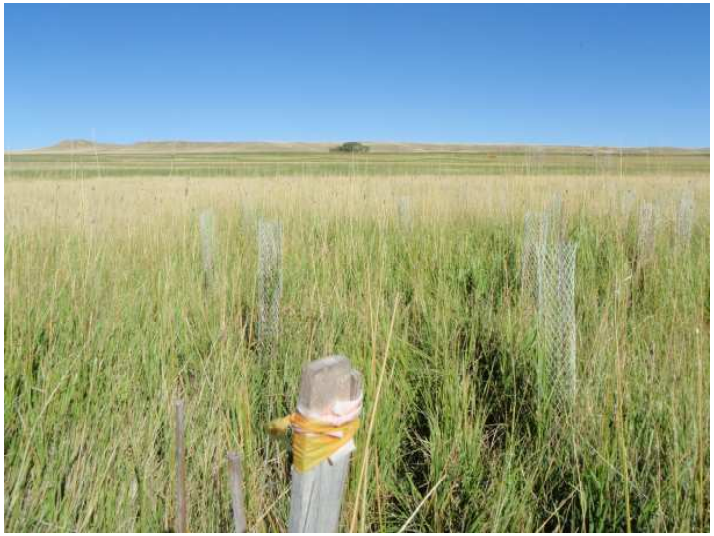


Photo Point – *T-1 Finish* **Location:** Creation Credit
Bearing: Northeast **Taken in 2010**

Photo Point – *T-1 Finish* **Location:** Creation Credit
Bearing: Northeast **Taken in 2011**

Photo Point – *T-1 Finish* **Location:** Creation Credit
Bearing: Northeast **Taken in 2012**

Photo Point – *T-1 Finish*
Bearing: North
Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: North
Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: North
Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: North
Location: Creation Credit
Taken in 2012

Photo Point – *T-1 Finish*
Bearing: Southeast
Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: Southeast
Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: Southeast
Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: Southeast
Location: Creation Credit
Taken in 2012

Photo Point – *T-1 Finish*
Bearing: South
Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: South
Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: South
Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: South
Location: Creation Credit
Taken in 2012

Data Point S – 1
Bearing: Southeast
Location: Communities 1&2
Taken in 2012

Data Point S – 2
Bearing: West
Location: Community 4
Taken in 2012

Data Point S – 3
Bearing: East
Location: Comm.5
Taken in 2012

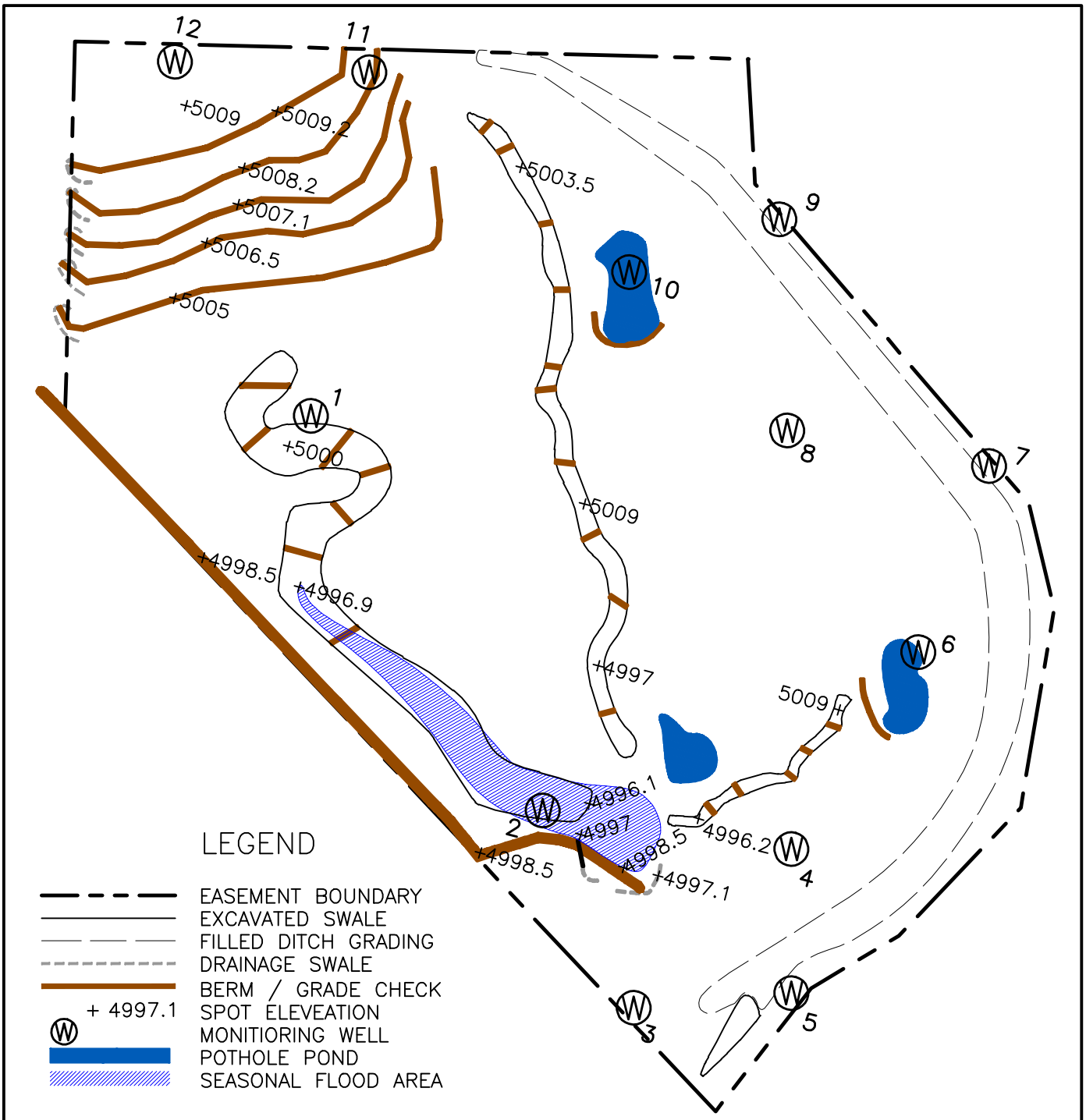
Data Point S – 4
Bearing: Southwest
Location: Communty 13
Taken in 2012

Data Point S – 5
Bearing: Northeast
Location: Community 5
Taken in 2012

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana



NOTE:
MONITORING WELL #10 REMOVED DURING CONSTRUCTION

oasis ENVIRONMENTAL

DATE: 05/01/07
CHKD: J.R.
DRAWN: bz
PROJ. No.: 321-001

PO Box 582 Livingston, MT 59047 (406) 222 7600

AS BUILT SITE PLAN

SELKIRK MITIGATION
D-1 TWO DOT, MT

FIGURE
1

PATH: 321-001/cad files/as built.dwg