MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Selkirk Wetland Mitigation Reserve
Two Dot, Wheatland County, Montana

Prepared for:

MONTANA DEPARTMENT OF TRANSPORTATION
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Helena, MT 59620-1001

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MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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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 2010 Monitoring Report summarizes methods and results from the fourth 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 Selkirk mitigation site was constructed by a private party on private land during the winter of 2006 to 2007. The site consisted of upland communities and approximately 25 acres of impaired wetland community prior to initiation of mitigation construction. The mitigation reserve encompasses 71.5 acres of herbaceous wet meadow wetland, scrub/shrub wetland, and open water, and 2.9 acres of upland buffer (PBJ&J 2009). Figures 2 and 3 (Appendix A) show the mapped site features and monitoring activity locations, respectively. Appendix B contains the Mitigation Monitoring Forms, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the Montana Department of Transportation (MDT) Functional Assessment Forms. Appendix C contains relevant photographs. The project plan sheet is provided in Appendix D.

The original purpose of the mitigation site 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 desired net total was approximately 60.4 acres of wetland credit after the application of various credit ratios to different design features and accounting for the reduction of 0.4 acre for wetland fill associated with project construction (PBS&J 2009).

Four different mitigation areas were developed with individual performance standards and credit ratios. Credit ratios were established for the following mitigation types: rehabilitation, 1.5:1; re-establishment/creation, 1:1; enhancement; 3:1; and, upland buffer, 5:1. The US Army Corps of Engineers will determine the final credits based on these ratios and the achievement of performance standards.

The original performance standards were amended on March 29, 2010, as referenced in a USACE letter from Todd Tillenger dated August 6, 2010 (USACE 2010a). The amendment addressed the current method of awarding credits from a pass/fail system to a credit-reduction based methodology. The functional lift 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 (Berglund 1999).

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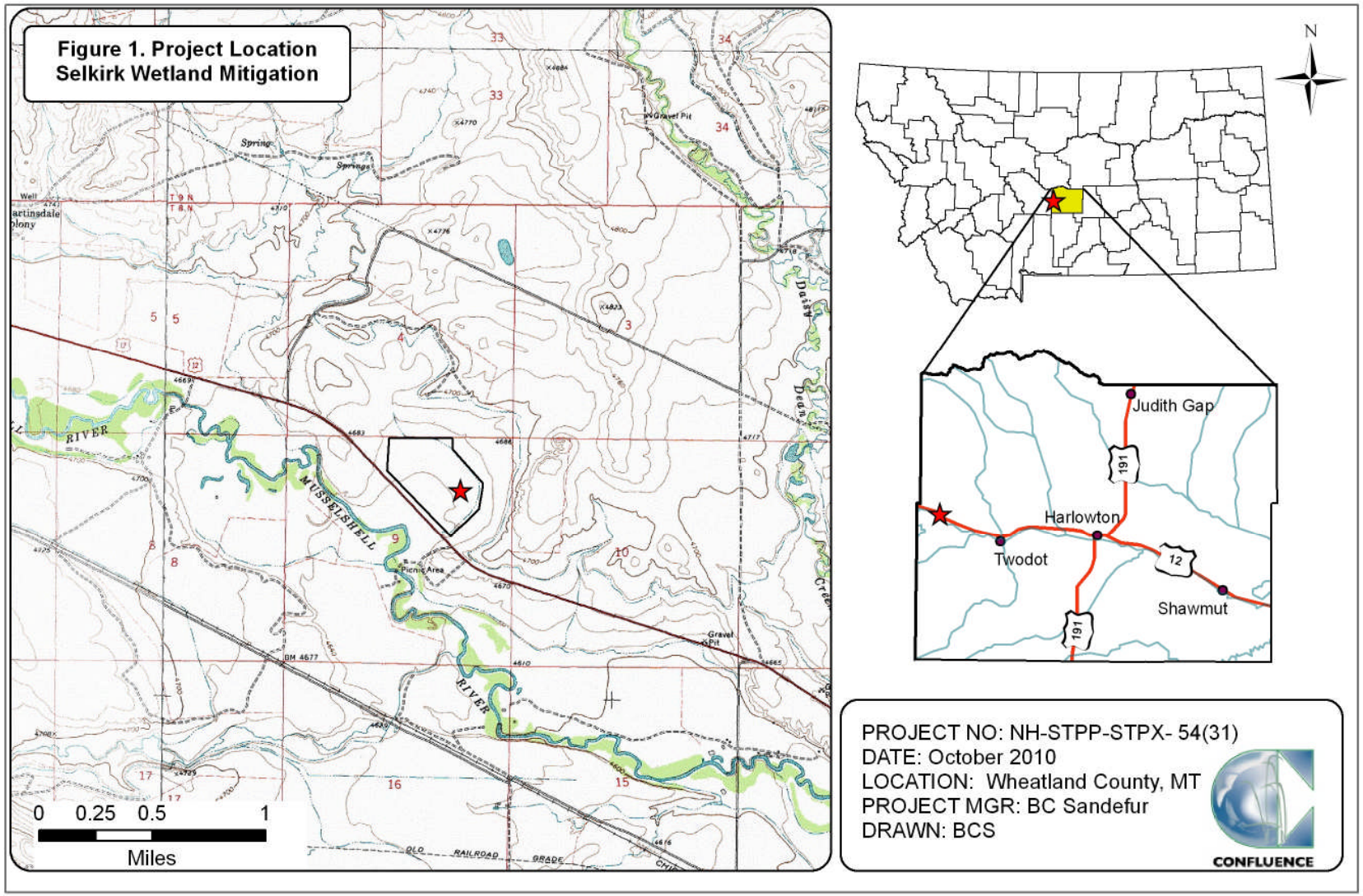

Figure 1. Project Location Selkirk Wetland Mitigation Reserve.

The Primary Standards for performance as amended in 2010 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. 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 site was visited on August 24, 2010. Monitoring activity sites were located with a global positioning system (GPS) (Figure 2, Appendix A). Information contained on the Wetland Mitigation Site Monitoring Form and the USACE Wetland Determination Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Information collected included wetland delineation, vegetation community mapping, vegetation transect monitoring, woody species evaluation, soil data collection, hydrology data collection, bird and wildlife use documentation, photographs, and a non-engineering examination of the infrastructure established within the mitigation project area. Mapped site features are shown on Figure 3 (Appendix A).

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as “permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season.” (Environmental Laboratory 1987). 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).

Hydrological indicators as outlined on the USACE wetland determination data form were documented at three 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 data sheets (Appendix B).

Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

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 delineation data form (Appendix B). Groundwater levels were measured in 11 monitoring wells in 2009. The wells were not measured in 2010 during the monitoring event.

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on aerial photographs. 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 (< 1 percent), 1 (1-5 percent), 2 (6-10 percent), 3 (11-20 percent), 4 (21-50 percent), and 5 (>50 percent) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of a static belt transect (Figure 2, Appendix A). Vegetation composition was assessed and recorded along 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. Percent cover of each 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 the endpoints 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 “+”, “▲”, 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. Quantities of individual emergent species ranged from 50 to over 10,000 (PBJ&J 2009). Approximately 4,750 stems were planted within netted browse guards and weed mats (PBJ&J 2009).

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 USACE wetland determination 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, as described in the 1987 Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 Onsite Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the USACE 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 Interim 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 aerial photograph. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

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

2.6. Functional Assessment

Functional assessments were completed from 2006 to 2010 using the 1999 MDT Montana Wetland Assessment Method (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 Functional Assessment Form was completed for each credit area defined in previous reports [Assessment Areas(AA)] (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site and at the end points of the transects 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 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation boundaries.

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 frost-free period defined for the region associated with the dominant map unit, Fairway loam (135), is 70 to 130 days (USDA 2010). Areas defined as wetlands would require a minimum of 9 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

The average precipitation total from January through July for the period of record from 1893 to 2009 at the Martinsdale 3NNW station (245387) was 9.23 inches (WRCC 2010). The total for this period in 2009 was 8.1 inches or 88 percent of average. Precipitation data from January to July 2010 was incomplete for the month of July with more than eight days of data missing. The total for January

through June in 2010 was 8.05 inches, 0.05 inch less than the 2009 total recorded through July.

The primary source of hydrology for the wetland mitigation site is groundwater. The site was ditched historically to reduce groundwater levels and convey runoff and seepage from adjacent irrigation ditches (PBS&J 2009). An 8-foot deep ditch was present along the north and east edges of the current site boundary. A 4-foot deep ditch in the southeast quarter branched north and northeast and flowed south under Highway 12 and through the Montana Fish, Wildlife and Parks Selkirk Fishing Access. The Coulee Ditch entered the northwest edge of the site conveying surface water to the area that crosses several small ditches. Water was subsequently conveyed to the roadside ditch located southwest of the site.

A primary objective of the wetland design was to abandon and fill the 8-foot and 4-foot deep and shallow coulee ditch systems, and to reconstruct three shallow, meandering, bermed swales to slow the spread of water. Three shallow ponds were also constructed. The swales intersected in a shallow water area that was partially vegetated with emergent plants at the time of the 2009 investigation. Lateral grade checks were constructed in the northwest area of the site to collect and spread water from the coulee.

There are 11 monitoring wells within the project site. Wells were measured on June 16, 2009, after flood irrigation had begun (PBS&J 2009). The groundwater table was within 12 inches of the ground surface at MW-5, MW-7, and MW-9. Groundwater was 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 (PBS&J 2009). Well MW-10 was destroyed when one of the ponds was constructed.

The August 24, 2010, monitoring survey estimated that 40 percent of the site was inundated with an average site-wide water depth of 0.6 feet. Surface water depths ranged from 0 to 3 feet. The constructed ponds and large swale located near the west boundary were inundated during the investigation. The swales in the northwest corner and center of the site were inundated at intermittent depths. Based on information collected at the wetland data points (discussed below) and on the presence and extent of hydrophytic communities across the site, a majority of the remainder of the site appears to be saturated within 12 inches of the ground surface.

Data points S-1 to S-3 were located in areas that met the wetland criteria (Figure 2, Appendix A; Wetland Forms, Appendix B). The wetland hydrology indicator at S-1 was inundation at 2 inches (bgs). Hydrology indicators at S-2 included a water table at 6 inches bgs and saturation to the surface. At data point S-3, the water table was 8 inches bgs and the soils were saturated at 2 inches bgs.

3.2. Vegetation

A comprehensive list of 63 vegetation species identified at the site from 2007 to 2010 is shown in Table 1. Seven wetland and one upland vegetation community types were identified in 2010 (Figure 3, Appendix B). They included Type 1 – *Typha latifolia/Alopecurus arundinaceus* Wetland, Type 2 – *Alopecurus arundinaceus/Juncus balticus* Wetland, Type 3 – *Carex* spp*./Juncus balticus* Wetland, Type 4 – *Alopecurus arundinaceus/Scirpus maritimus* Wetland, Type 5 – *Bromus inermis/Agroyron repens* Upland, Type 6 – *Puccinellia airoides/Juncus balticus* Wetland, Type 13 – *Salix exigua/Alopecurus arundinaceus* Wetland, Type 14 – *Hordeum jubatum/Juncus balticus* Wetland, and Type 18 – *Distichlis spicata/Puccinellia airoides* Wetland. A complete list of dominant species within each community is presented on the Monitoring Forms (Appendix B).

Community types 1 through 6 and 13 and 14 corresponded to the vegetation types identified in 2009. Community type 18 was defined for the first time in 2010.

Wetland community Type 1 – *Typha latifolia/Alopecurus arundinaceus* was identified in the northwest corner of the site where several swales were constructed. Dominant species in descending order of abundance were broad-leaf cattail (*Typha latifolia*), creeping foxtail (*Alopecurus arundinaceus*), and Baltic rush (*Juncus balticus*). Hardstem bulrush (*Scirpus acutus*), soft bulrush (*Scirpus validus*), and saltmarsh bulrush (*Scirpus maritimus*) each comprised 1 to 5 percent of total vegetation cover.

Community Type 2 – *Alopecurus arundinaceus/Juncus balticus* wetland was found in the center of the site. The vegetation was dominated by creeping foxtail, Baltic rush, Western water hemlock (*Cicuta douglasii*), Nebraska sedge (*Carex nebrascensis*), and creeping spikerush (*Eleocharis palustris).*

Nebraska sedge, clustered field sedge (*Carex praegracilis*), Baltic rush, water hemlock and creeping spikerush were the predominant species in vegetation community Type 3 – *Carex* spp*./Juncus balticus.* The wetland community was located in the northeast quadrant of the site. The cover of clustered field sedge increased from 2009 to 2010.

Wetland community Type 4 – *Alopecurus arundinaceus/Scirpus maritimus* parallels the east site boundary and was dominated by creeping foxtail, saltmarsh bulrush, creeping spikerush, and Baltic rush. The cover of Baltic rush decreased from 2009 to 2010 and was replaced by creeping foxtail and saltmarsh bulrush.

Table 1. Vegetation species identified from 2007 to 2010.

Scientific Name	Common Name	Region 9 Indicator Status[1]
Agropyron repens	quackgrass	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Agrostis stolonifera	**bentgrass,spreading**	FAC+
Alopecurus arundinaceus	foxtail,creeping	NI
Aster subspicatus	aster,Douglas'	FACW
Atriplex patula	saltbush,halberd-leaf	FACW
Bromus inermis	smooth brome	NL
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Chenopodium album	**goosefoot,white**	FAC
Cicuta douglasii	water-hemlock,western	OBL
Cirsium arvense	thistle,creeping	FACU+
Cornus stolonifera	dogwood,red-osier	FACW
Deschampsia cespitosa	hairgrass,tufted	FACW
Distichlis spicata	**saltgrass, inland**	FAC+
Eleocharis palustris	spikerush,creeping	OBL
Epilobium ciliatum	**willow-herb,hairy**	FACW-
Festuca arundinacea	fescue,Kentucky	FACU-
Festuca idahoensis	**fescue,bluebunch**	NL
Glycyrrhiza lepidota	licorice,American	FAC+
Grindelia squarrosa	**gumweed,curly-cup**	FACU
Haplopappus lanceolatus	golden-weed,lance-leaf	FAC
Helianthus annuus	**sunflower,common**	FACU+
Hordeum jubatum	barley,fox-tail	FAC+
Iva axillaris	**sumpweed,small-flower**	FAC
Juncus balticus	rush,Baltic	OBL
Juncus hallii	rush,hall's	FAC
Juncus tenuis	rush,slender	FAC
Kochia scoparia	**summer-cypress,mexican**	FAC
Lepidium perfoliatum	**pepper-grass,clasping**	FACU+
Melilotus alba	**sweetclover,white**	FACU
Melilotus officinalis	**sweetclover,yellow**	FACU
Mentha arvensis	**mint,field**	FAC
Phalaris arundinacea	**grass,reed canary**	FACW
Plantago major	plantain,common	FAC+
Poa juncifolia	bluegrass,alkali	FACU+
Poa pratensis	**bluegrass,Kentucky**	FACU+

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are shown in **bold** type.

Table 1. (Continued). Vegetation species identified from 2007 to 2010.

Scientific Name	Common Name	Region 9 Indicator Status[1]
Polypogon monspeliensis	**grass,annual rabbit-foot**	FACW+
Populus deltoides	cottonwood,Eastern	FAC
Potentilla anserina	**silverweed**	OBL
Puccinellia airoides	**grass,Nuttall alkali**	OBL
Ranunculus gmelinii	butter-cup,small yellow water	FACW
Rumex crispus	**dock,curly**	FACW
Salicornia rubra	saltwort,red	OBL
Salix exigua	willow,sandbar	OBL
Scirpus acutus	bulrush,hard-stem	OBL
Scirpus maritimus	bulrush,saltmarsh	OBL
Scirpus pallidus	bulrush,cloaked	OBL
Scirpus pungens	bulrush,three-square	OBL
Scirpus validus	bulrush,soft-stem	OBL
Sisymbrium altissimum	**mustard,tall tumble**	FACU-
Solidago canadensis	**golden-rod,Canada**	FACU
Sonchus arvensis	sowthistle,field	FACU+
Sonchus asper	**sowthistle,prickly**	FAC-
Spartina pectinata	cordgrass,prairie	OBL
Suaeda calceoliformis	seepweed,pursh	NL
Suaeda depressa	seepweed,pursh	FACW-
Taraxacum officinale	dandelion,common	FACU
Triglochin palustre	**arrow-grass,marsh**	OBL
Typha latifolia	cattail,broad-leaf	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are show in **bold** type.

Community Type 5 – *Bromus inermis/Agroyron repens* was located in the upland perimeter of the project area. The vegetation species were dominated by smooth brome (*Bromus inermis*), quackgrass (*Agropyron repens*), halberd-leaf saltbush (*Atriplex patula*), white goosefoot (*Chenopodium album*), Kochia (*Kochia scoparia*), Pursh seepweed (*Suaeda depressa*), and inland saltgrass (*Distichlis spicata*).

Dominant species in wetland community Type 6 – *Puccinellia airoides/Juncus balticus* included Nuttall alkali grass (*Puccinellia airoides*), Baltic rush, inland saltgrass, saltmarsh bulrush, Pursh seepweed, broad-leaf cattail, and foxtail barley (*Hordeum jubatum*). Community 6 was identified on either side of the long narrow swale that bisects the site.

Community Type 13 – *Salix exigua/Alopecurus arundinaceus* was a small wetland community located in the extreme south portion of the project area. The woody overstory was dominated by sandbar willow (*Salix exigua*) with an herbaceous understory of creeping foxtail, yellow sweet clover (*Melilotus officinalis*), and smooth brome. The dominant cover of smooth brome in 2009 was replaced by creeping foxtail in 2010.

Community Type 14 – *Hordeum jubatum/Juncus balticus* was identified in a small area north of the inundated swale in the west half of the project. The dominant species were foxtail barley and Baltic rush.

Inland saltgrass, Nuttall alkali grass, and Pursh seepweed dominated the new 2010 community Type 18 – *Distichlis spicata/Puccinellia airoides.* Wetland community 18 was located in the center of the project.

Transect one traverses the south central portion of the site from east to west. It crosses the swale that bisects the property and contains areas of intermittent inundation. Transect one data trends from 2007 to 2010 are summarized in tabular and graphic formats (Table 2 and Charts 1 and 2; Monitoring Forms in Appendix B). The transect end points were photographed in the four cardinal directions (Pages C-4 through C-7, Appendix C). The transect intersected three wetland communities types 1, 2, and 6. The vegetation transitioned from Type 6 in 2009 to Type 2 in 2010 on the first two hundred feet of the transect resulting in a reduction of alkali grass and an increase in creeping foxtail. One hundred percent of the transect was dominated by hydrophytic plants.

Table 2. Data summary from 2007 to 2010 for Transect 1.

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

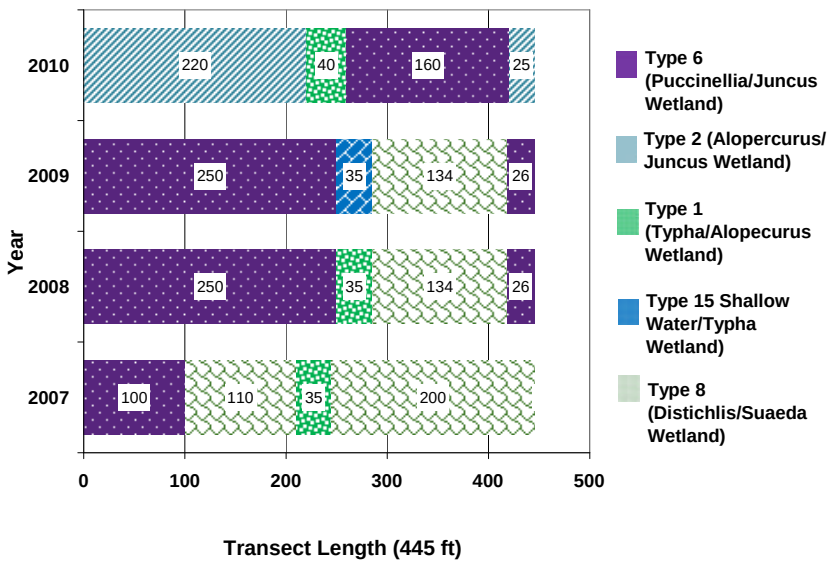

Chart 1. Maps of community types from the start (0 feet) to end of Transect 1 (445 feet) from 2007 to 2010.

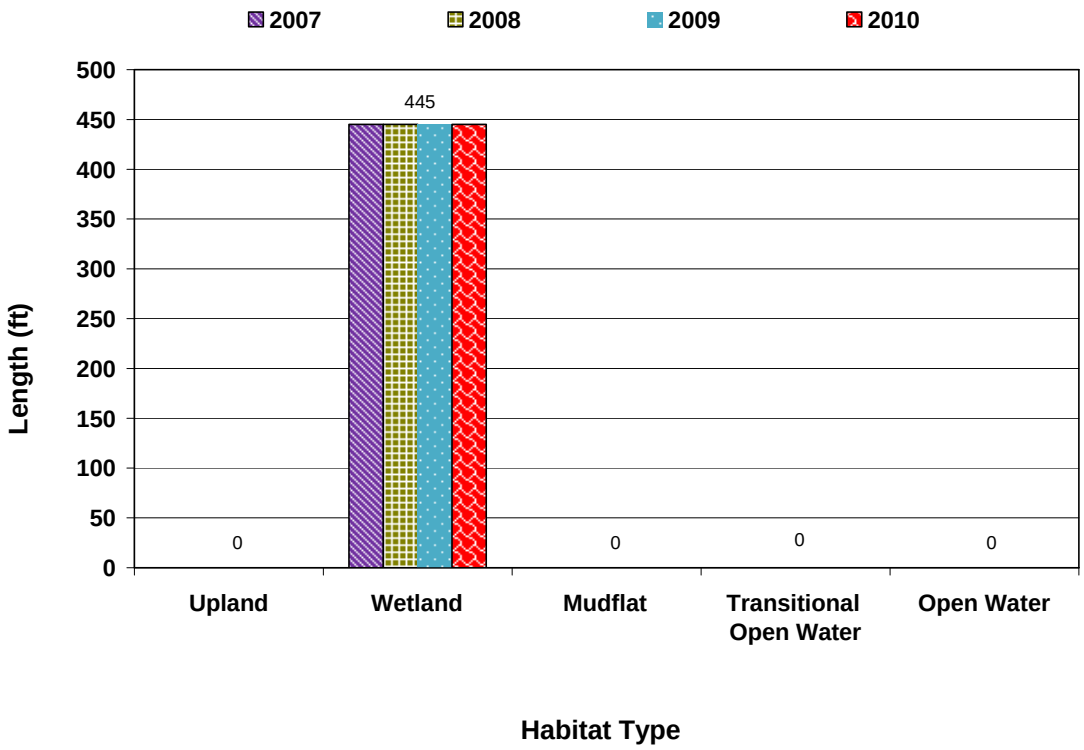

Chart 2. Length of habitat types within Transect 1 from 2007 to 2010.

Infestations of Canada thistle (*Cirsium arvense*), a Category 2B noxious weed, were identified at six locations (Figure 3, Appendix A). The size of the infestations ranged from less than 0.1 acre to 0.1 to 1 acre. The percent cover

within each infestation ranged from low (less than 1 percent), to moderate (5 to 25 percent), to high (25 to 100 percent cover). The cover class of Canada thistle observed at the south corner of the site was high. Isolated Canada thistle plants were observed in community types 3, 4, and 13.

The 2007 monitoring report noted that 24 woody species pods with approximately 4,750 woody stems were planted to meet the 500 stem count/acre criteria. Each plant was not counted in 2007, the first year of monitoring for woody species survival. The pods were reviewed and survivorship was estimated based on the viability of the stem. Survivorship for the first planting season was approximately 60 percent. No live woody plants were noted in 50 percent of the pods in 2009. Similar mortality was observed 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 was alive in 2010.

3.3. Soil

The predominant soil map unit within the vegetation transect is the somewhat poorly drained Fairway Loam (135) with a hydric Swampcreek component (USDA 2010). The Fairway silt loam is classified as a fine-loamy, mixed, superactive, frigid Fluvaquentic Haplustolls.

Soils in test pit S-1 were clay (10 YR 5/1) with redoximorphic concentrations (10 YR 4/3) in the matrix. Test pit S-2 was also clay (10 YR 4/2) with redox concentrations (10 YR 4/3) in the matrix. The soil profile at S-3 revealed a clay loam (10 YR 5/1) with redox concentrations (10 YR 3/4) in the matrix. The low chromas and redox concentrations were positive indicators for wetland hydrology. The test pit soils generally confirmed the soil map unit.

3.4. Wetland Delineation

Three wetland data points, S-1 through S-3, confirmed the wetland boundaries. The wetland vegetation, soil and hydrology criteria were met at each sample collection point. Wetlands encompassed 70.15 acres within the mitigation site (Table 3), which was an increase of 0.65 acres from 2009. The increase in wetland acreage was delineated in the re-establishment/creation mitigation area. The USACE wetland forms are included in Appendix B. Shallow water areas (less than 24 inches deep) colonized with aquatic and emergent vegetation were incorporated in the wetland acreage total.

Table 3. Wetland acres identified in 2010.

Habitat	2009 (acres)	2010 (acres)
Wetlands	69.50	70.15

3.5. Wildlife

Fourteen bird species were identified in August 2010 (Table 4). Mammals observed during the 2010 investigation were mule deer, red fox, striped skunk, and white-tailed deer. Muskrat burrows were also noted. A total of 47 avian species have been observed since June of 2007. Eight bluebird and four wood duck nesting structures were installed on the site in 2007 and were being used in 2010.

Table 4. Wildlife species observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2010.

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*

Species first identified in 2010 are listed in **bold** type.
Species identified by MDT in 2010 are listed in **CAPS**.

Table 4 (Continued). Wildlife observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2010.

COMMON NAME	SCIENTIFIC NAME
BIRD	
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*
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*

Species first identified in 2010 are listed in **bold** type.
Species identified by in 2010 by MDT are listed in **CAPS**.

Table 4 (Continued). Wildlife observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2010.

COMMON NAME	SCIENTIFIC NAME
MAMMAL	
American Mink	*Mustela vison*
Mule Deer	***Odocoileus hemionus***
Muskrat	*Ondatra zibethicus*
Raccoon	*Procyon lotor*
Red Fox	***Vulpes vulpes***
Striped Skunk	***Mephitis mephitis***
White-tailed Deer	***Odocoileus virginianus***

Species first identified in 2010 are listed in **bold** type.
Species identified by in 2010 by MDT are listed in **CAPS**.

3.6. Functional Assessment

Functional assessments were completed for three AAs in 2010, the re-establishment/creation wetlands, rehabilitation wetlands, and enhancement wetlands (Table 5). The acreages of each are 37.16 acres, 31.9 acres, and 1.0 acre, respectively. The 1999 Montana Wetland Assessment Method continued

Table 5. Summary of the 2006 to 2010 wetland function/value ratings and functional points at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Re-Establishment/Creation				Rehabilitation					Enhancement				
	2007	2008	2009	2010	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
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)	Low (0.0)	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)	Low (0.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Low (0.0)	Mod (0.7)	Mod (0.7)	Low (0.0)	Low (0.0)
General Wildlife Habitat	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Low (0.3)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Mod (0.5)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Mod. (0.5)	Mod. (0.6)	Mod. (0.6)	NA	Mod (0.5)	Mod (0.5)	Mod (0.6)	Mod (0.6)	NA	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)
Short and Long Term Surface Water Storage	High (0.9)	High (1.0)	High (1.0)	High (1.0)	Low (0.3)	High (0.9)	High (1.0)	High (1.0)	High (1.0)	Low (0.2)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (0.9)	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)	NA	High (0.9)	High (1.0)	High (1.0)	High (1.0)	NA	High (0.9)	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)	Mod (0.7)	Mod (0.7)	High (0.8)	High (0.8)	High (0.9)	Mod (0.6)	Mod (0.7)	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)	High (1.0)	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)	Low (0.1)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Low (0.3)	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)	Low (0.1)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	Low (0.1)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**7.6/11**	**8.4/11**	**8.5/11**	**8.5/11**	**3.1 / 9**	**7.7/11**	**8.4/11**	**8.5/11**	**8.5/11**	**3.6 / 9**	**6.6/11**	**7.4/11**	**6.7/11**	**6.7/11**
% of Possible Score Achieved	**69%**	**76%**	**77%**	**78%**	**34%**	**70%**	**76%**	**77%**	**78%**	**43%**	**60%**	**67%**	**61%**	**61%**
Overall Category	**II**	**II**	**II**	**II**	**III**	**II**	**II**	**II**	**II**	**III**	**III**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**32.90**	**34.23**	**36.51**	**37.16**	**31.90**	**31.90**	**31.99**	**31.90**	**31.99**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Functional Units (acreage x actual points)	**250.00**	**272.41**	**310.3**	**319.6**	**98.90**	**245.63**	**268.72**	**271.2**	**275.1**	**3.6**	**6.6**	**7.4**	**6.7**	**6.7**

[1](Berglund 1999).

to be used in 2010 for consistency (Berglund 1999). The functional assessment forms are included in Appendix B.

The three mitigation credit areas, excluding upland buffer, were classified as Category II wetlands in 2009 (PBS&J 2009). The re-establishment/creation credit area was considered upland prior to construction. The 2006 baseline assessment did not include this area. The rehabilitation mitigation area was classified as a Category III wetland in 2006 and a Category II wetland from 2007 to 2009. The enhanced wetland was classified as a Category III wetland in 2006 and 2007 and as a Category II wetland in 2008 and 2009 (PBS&J 2009).

The wetland area within the re-establishment AA increased by 0.65 acres in 2010 and increased in structural diversity with the establishment of submerged and floating vegetation, which resulted in a corresponding increase of 9.3 functional units. The highest ratings were for general wildlife habitat, 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.

The wetland area within the rehabilitated AA increased by 0.09 acres in 2010 through the conversion of upland to wetland. The ratings, functional points, and percent score increased with the development of submerged and floating vegetation between 2009 to 2010. Ratings were 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.

The enhancement AA is a one-acre wetland. The highest ratings were for general wildlife habitat, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education potential. The enhancement credit area receives most of the water flowing out of the wetland complex.

3.7. Photo Documentation

Representative photos taken from photo points and transect ends are included in Appendix C. Photo points PP1 to PP4 are shown on Pages C-1 to C-4 and Photo point PP5 is shown on C-5. Photographs in the four cardinal directions of the transect start and end are shown on pages C-4 to C-7.

3.8. Maintenance Needs

Infestations of Canada thistle, a Priority 2B noxious weed, were identified at six locations in 2010 (Figure 3, Appendix A). The largest infestation with the highest percent cover was located in the south portion of the site. Isolated Canada thistle plants were observed in communities 3, 4 and 13. The infestation sizes and cover increased from 2009 to 2010. Canada thistle spread to the swales

located in the northwest corner and to the open water pond located in the northeast corner of the site. The weeds were sprayed by MDT in spring 2010.

Eight bluebird and four wood duck structures were installed on the site. The structures are being used. One of the duck boxes, located nearest to PP1, was tilted unevenly as a result of frost heave and should be reset to facilitate use.

3.9. Current Credit Summary

The estimated wetland credits for 2010 based on the mitigation types re-establishment and creation, rehabilitation, enhancement, and upland buffer are shown in Table 6. Approximately 70.15 acres of wetland were delineated site wide in 2010, an increase of 0.65 acres from 2009. Approximately 37.12 acres of wetland were re-established/created. The wetland mitigation areas were rated as Category II in 2010. The upland buffer credit was based on the acreage of 2.9 acres that was presented in the original proposal rather than the 2010 surveyed area of site uplands, which was 3.45 acres.

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 encompass approximately 71.5 acres of herbaceous wet meadow wetland, scrub/shrub wetland, and open water, and 2.9 acres of upland buffer. Overall, the mitigation site was designed to provide a total net of approximately 60.4 acres of wetland credit after applying various credit ratios and after accounting for 0.4 acre for wetland fill associated with project construction.

The existing performance standards were amended in a letter from the USACE dated March 29, 2010, as discussed in Section 1.0. The amendment addressed the current 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. Site conditions in 2010 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 of the mitigation site and in the northwest corner. The percent weed cover did not exceed five percent site-wide in 2010. Soil saturation within 12 inches of the ground surface and inundation was evident site-wide based on data collected at sample points and on the presence and extent of hydrophytic vegetation communities. The aerial vegetation coverage was at least 80 percent site-wide. The open water areas contain persistent emergent vegetation and aquatic bed vegetation and there was no single open water body that exceeded three acres.

The functional lift 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 lift evaluation was based on the 1999 MDT Montana Wetland Assessment Method (Berglund 1999). The

creation, rehabilitation, and enhancement assessment areas have achieved a Category II rating.

Table 6. The 2010 estimated mitigation credit acreage for the Selkirk Wetland Mitigation Reserve.

Mitigation Type	Proposed Credit Acreage	2009 Acres	2010 Acres	Credit Ratio	2010 Estimated Wetland Credits
1 - Re-establishment and Creation	38.6	36.51	37.16	1.1	37.2
2 - Rehabilitation	31.9	31.9	31.9	1.5:1	21.3
3 - Enhancement	1	1	1.00	3:1	0.3
4 - Upland Buffer	2.9	4.59	2.90*	5:1	0.6
Wetland Fill		-0.4	-0.4	-	-0.4
TOTAL					**58.9**

*Upland credit acreage based on original proposed acreage in mitigation plan.

4. REFERENCES

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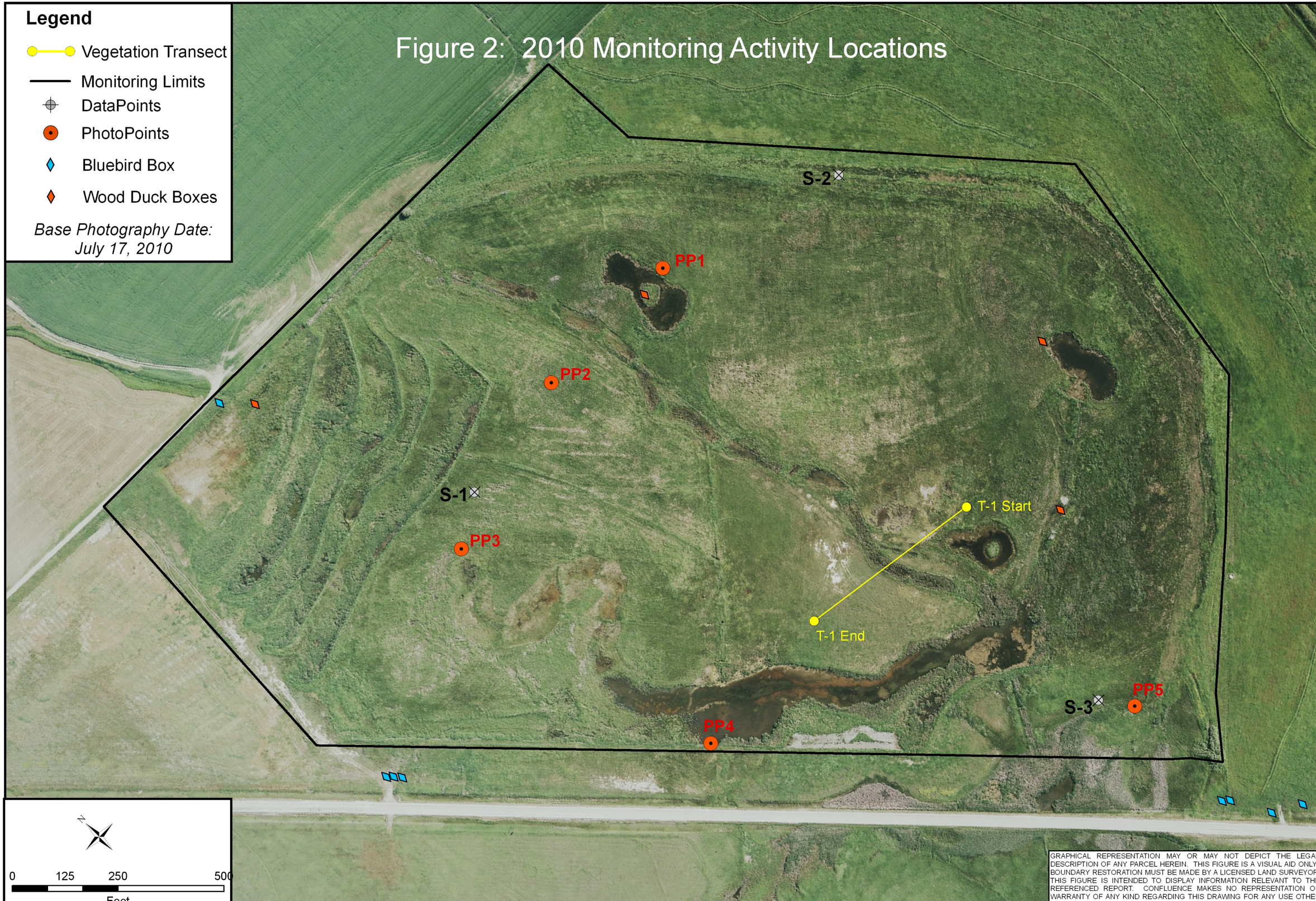
Appendix A

Figures 2 and 3

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

Figure 2: 2010 Monitoring Activity Locations



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 THAT 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/Monitor2010.mxd

Project Name
Selkirk Wetland Mitigation Site

Drawing Title
2010 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	XXX

SCALE: Noted

Drawn: September 24, 2010

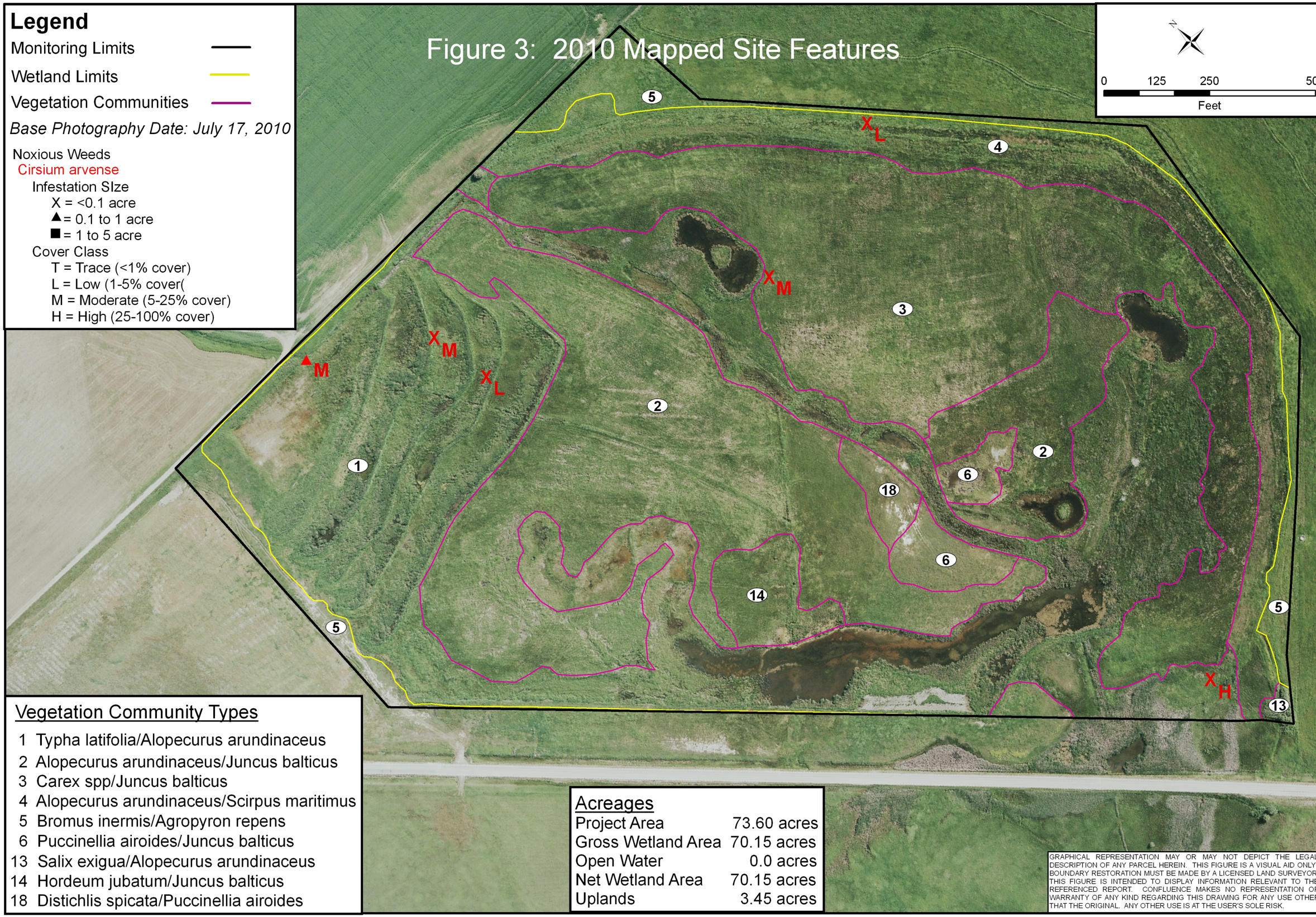
PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure
2

REV -

Figure 3: 2010 Mapped Site Features



Appendix B

2010 Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Delineation Form
2010 MDT Functional 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 8/24/2010 10:16:01 AM

Person(s) conducting the assessment: B. Sandefur

Weather: Clear, sunny, warm 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: 4 #Visits in Year: 1

Size of Evaluation Area: 75 (acres)

Land use surrounding wetland:

Agriculture, hay production

HYDROLOGY

Surface Water Source: Groundwater

Inundation: ☑ Average Depth: 0.6 **(ft)** Range of Depths: 0-3 **(ft)**

Percent of assessment area under inundation: 40 %

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

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

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

Groundwater Monitoring Wells

Record depth of water surface below ground

Well ID	**Water Surface Depth**
NA	**(ft)**

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:

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

Species	Cover class	Species	Cover class
Agrostis alba	0	Alopecurus arundinaceus	3
Helianthus annuus	1	Juncus balticus	2
Scirpus acutus	1	Scirpus maritimus	1
Scirpus validus	1	Solidago canadensis	1
Triglochin palustre	1	Typha latifolia	5

Comments:

Community # 2 Community Type: Alopecurus arundinaceus / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	3	Carex nebrascensis	2
Cicuta douglasii	2	Eleocharis palustris	2
Epilobium ciliatum	1	Hordeum jubatum	1
Juncus balticus	3	Mentha arvensis	0
Polypogon monspeliensis	1	Potentilla anserina	1
Puccinellia airoides	1	Triglochin palustre	1

Comments:

Community # 3 Community Type: Carex spp / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Carex nebrascensis	4
Carex praegracilis	2	Cicuta douglasii	2
Cirsium arvense	0	Eleocharis palustris	2
Epilobium ciliatum	1	Juncus balticus	3
Melilotus officinalis	1	Mentha arvensis	1
Potentilla anserina	1	Rumex crispus	1

Comments:

Community # 4 Community Type: Alopecurus arundinaceus / Scirpus maritimus

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alopecurus arundinaceus	5
Cirsium arvense	0	Eleocharis palustris	2
Glycyrrhiza lepidota	1	Helianthus annuus	0
Hordeum jubatum	1	Juncus balticus	2
Melilotus officinalis	1	Phalaris arundinacea	1
Puccinellia airoides	1	Scirpus maritimus	3
Sonchus arvensis	1		

Comments:

Community # 5 Community Type: Bromus inermis / Agropyron repens

Species	Cover class	Species	Cover class
Agropyron repens	3	Alopecurus arundinaceus	1
Atriplex patula	2	Bromus inermis	3
Chenopodium album	2	Distichlis spicata	2
Festuca idahoensis	1	Grindelia squarrosa	1
Hordeum jubatum	1	Iva axillaris	1
Kochia scoparia	2	Lepidium perfoliatum	1
Melilotus alba	0	Sisymbrium altissimum	1
Sonchus asper	1	Spartina pectinata	1
Suaeda depressa	2	Triglochin palustre	1

Comments:

Community # 6 Community Type: Puccinellia airoides / Juncus balticus

Species	Cover class	Species	Cover class
Distichlis spicata	2	Hordeum jubatum	2
Juncus balticus	3	Puccinellia airoides	5
Scirpus maritimus	2	Sonchus arvensis	1
Suaeda depressa	2	Triglochin palustre	1
Typha latifolia	2		

Comments:

Community # 13 Community Type: Salix exigua / Alopecurus arundinaceus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	4	Bromus inermis	2
Cirsium arvense	1	Helianthus annuus	1
Melilotus officinalis	2	Phalaris arundinacea	1
Salix exigua	5	Typha latifolia	1

Comments:

Community # 14 Community Type: Hordeum jubatum / Juncus balticus

Species	Cover class	Species	Cover class
Agropyron trachycaulum	1	Hordeum jubatum	5
Juncus balticus	4	Poa juncifolia	1
Sonchus arvensis	1	Triglochin palustre	1

Comments:

Community # 18 Community Type: Distichlis spicata / Puccinellia airoides

Species	Cover class	Species	Cover class
Distichlis spicata	5	Haplopappus lanceolatus	1
Puccinellia airoides	4	Spartina pectinata	1
Suaeda depressa	2	Triglochin palustre	1

Comments:

VEGETATION TRANSECTS

Site: Selkirk Date: 4/2010 10:16:01 AM

Transect Number: 1 **Compass Direction from Start:** 250

Interval Data:

Ending Station 220 **Community Type:** Alopecurus arundinaceus / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Eleocharis palustris	2
Grindelia squarrosa	0	Haplopappus lanceolatus	1
Hordeum jubatum	1	Juncus balticus	3
Melilotus officinalis	1	Mentha arvensis	1
Puccinellia airoides	3	Scirpus acutus	2
Scirpus maritimus	2	Sonchus arvensis	1
Typha latifolia	3		

Ending Station 260 **Community Type:** Typha latifolia / Alopecurus arundinaceus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Eleocharis palustris	1
Scirpus acutus	1	Scirpus maritimus	2
Scirpus validus	1	Typha latifolia	5

Ending Station 420 **Community Type:** Puccinellia airoides / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Distichlis spicata	4
Haplopappus lanceolatus	1	Hordeum jubatum	2
Juncus balticus	0	Poa pratensis	1
Puccinellia airoides	5	Sonchus arvensis	0
Suaeda depressa	2		

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

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Glycyrrhiza lepidota	0
Hordeum jubatum	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		
Red-osier Dogwood (bare root)	950		
Sanbar Willow (cuttings)	1908		*See Comments
Sandbar Willow (bare root)	400		
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 be animal-caused as most of the screening around each plant seems to be in place, unless rodents are chewing the stems, which was not obvious to the aurthor. Mortality 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 wetland was not counted in the planted pod count (24) or assessed during the leafy-stem estimate; this will 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 roughly 10% of the total number of stems originally planted are surviving.

Selkirk

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: 8-Bluebird; 4-Wood Duck

How many? 12

Are the nesting structures being used? Yes

Do the nesting structures need repairs? Yes

Nesting Structure Comments:

One duck box, near PP1, tilting approximately 30 degrees from frost heave. Likely too steep f use and recommend reinstallation.

Species	#Observed	Behavior	Habitat
American Goldfinch	2		SS,UP,
Cinnamon Teal	3		AB, OW
Green-winged Teal	5	N	AB, OW
Mallard	8	N	AB, MA, OW
Mourning Dove	6	FO	UP,
Northern Harrier	1	FO	MA,UP,
Red-tailed Hawk	1	FO	MA,UP,
Red-winged Blackbird	10		MA
Sandhill Crane	3	FO	MA
Song Sparrow	3	FO	MA, SS
Turkey Vulture	2	FO	
Wilson's Phalarope	3		AB, MA, US
Wilson's Snipe	5		AB, MA, US
Yellow-headed Blackbird	2	L	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
Mule Deer	1	No	No	No	
Muskrat		No	No	No	Two muskrat lodges observed within site
Red Fox	1	No	No	No	
Striped Skunk	1	No	No	No	
White-tailed Deer	2	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
6227			180	PP3
6229			90	PP3
6232			0	PP2
6233			270	PP2
6235			90	PP5
6239			0	PP1
6241			270	PP1
6242			180	PP1
6255			180	PP5
6258			270	PP5
6262			0	PP4
6263			45	PP4
6264			135	PP4
6265			215	PP4
6267			270	Veg Tran 1, start
6268			180	Veg Tran 1, start
6269			135	Veg Tran 1, start
6270			0	Veg Tran 1, start
6276			45	Veg Tran 1, end
6279			0	Veg Tran 1, end
6280			180	Veg Tran 1, end
6281			215	Veg Tran 1, end

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Functional Assessments

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

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? Yes

If yes, do they need to be repaired? Yes

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 working properly and in good working order? No

If no, describe the problems below.

No repair needs identified; outflow pipe and berms in good working order.

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

Project/Site: Selkirk City/County: Wheatland Sampling Date: 8/24/2010

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

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

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

Subregion (LRR): MLRA 22A Lat: 46.4733433333333 Long: -110.227413333333 Datum: WGS 84

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus arundinaceus	60	☑	NI
2. Juncus balticus	20	☑	OBL
3. Triglochin palustre	20	☑	OBL
4. Potentilla anserina	5	☐	OBL
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	105 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? **Yes ☑ No ☐**

Remarks:
0

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)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Clay Loam	
4-12	10YR 5/1	90	10YR 4/3	5	C	M	Clay	other 5% include darker concretions

[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
- ☐ Aquatic 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:

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): 2

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

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

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

Project/Site: Selkirk City/County: Wheatland Sampling Date: 8/24/2010

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

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

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

Subregion (LRR): MLRA 22A Lat: 46.4736583333333 Long: -110.223506666667 Datum: WGS 84

Soil Map Unit Name: Shambo 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Scirpus maritimus	30	☑	OBL
2. Alopecurus arundinaceus	55	☑	NI
3. Eleocharis palustris	25	☑	OBL
4. Hordeum jubatum	10	☐	FAC+
5. Puccinellia airoides	5	☐	OBL
6. Triglochin palustre	5	☐	OBL
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	130 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
0

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

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic 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):
Water Table Present?	Yes ☑	No ☐	Depth (inches): 6
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 City/County: Wheatland Sampling Date: 8/24/2010

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

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

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

Subregion (LRR): MLRA 22A Lat: 46.4694416666667 Long: -110.22453 Datum: WGS 84

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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Triglochin palustre	20	☑	OBL
2. Alopecurus arundinaceus	20	☑	NI
3. Potentilla anserina	5	☐	OBL
4. Sonchus arvensis	5	☐	FACU+
5. Juncus balticus	40	☑	OBL
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	90 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? **Yes** ☑ **No** ☐

Remarks:
0

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

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): 8
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 2

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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 8/24/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Enhancement

6. Wetland Location(s): T 8N **R** 12E **Sec1** N1/2NE1/ **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10 - Musselshell **County** Wheatland Co.

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 70.15

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	70
Depressional	Palustrine	none	Scrub-Shrub Wetland	Impounded	saturated	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)

Culverts conveying water from wetland sites to the north flow through this area

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

Cirsium arvense, 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:

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 US FWS

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)

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

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA

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

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

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

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

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

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

ii. Wildlife habitat features (Working from top to bottom, 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 directly adjacent to substantial wildlife use areas

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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 ☑ **(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:

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:

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:

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 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	.7M	.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)

i. **Check categories that apply to the AA:**____Educational/;scientific study;____Consumptive rec.;____Non-consumptive rec.;____Other

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

iii. **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

Comments:

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	H	.9	1	0.9
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:		7.4	11	7.4
Percent of Possible Score		**67.27** %		

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 8/24/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Re-establish and creatio

6. Wetland Location(s): T 8N **R** 12E **Sec1** N1/2NE1/ **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10 - Musselshell **County** Wheatland Co.

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 70.15

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 37.16

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
Slope	Palustrine	none	Emergent Wetland	Impounded	saturated	90
Depressional	Palustrine	none	Emergent Wetland	Impounded	intermittantly flooded	5
Depressional	Palustrine	none	Emergent Wetland	Impounded	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

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: Woody species present but yet to attain shrub size status. Structure classes present 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 US FWS

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)

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 Species observed onsite by landowners

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA

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

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 ☑ **(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:

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:

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:

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:

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	.7M	.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)

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

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

iii. **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

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Re-establish and 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	26.012
C. General Wildlife Habitat	E	1	1	37.16
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	M	.6	1	22.296
F. Short and Long Term Surface Water Storage	H	1	1	37.16
G. Sediment/Nutrient/Toxicant Removal	H	1	1	37.16
H. Sediment/Shoreline Stabilization	H	1	1	37.16
I. Production Export/Food Chain Support	H	.9	1	33.444
J. Groundwater Discharge/Recharge	H	1	1	37.16
K. Uniqueness	M	.4	1	14.864
L. Recreation/Education Potential	H	1	1	37.16
Totals:		8.6	11	319.576
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 8/24/2010 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Rehabilitation

6. Wetland Location(s): T 8N **R** 12E **Sec1** N1/2NE1/ **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10 - Musselshell **County** Wheatland Co.

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 70.15

How assessed: Measured e.g. by GPS

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

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
Slope	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	100

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)

Lateral grade checks have been placed in NW area to spread natural and irrigation run-off

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

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: Numerous woody species planted in the area in 2007, 100-150 leaf-bearing seedlings observed during monitoring in 2010, 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 US FWS

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)

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 Previous observation records for site

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA

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 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 ☑ **(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:

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:

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	.7M	.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)

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

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

iii. **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

Comments:

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	6M	.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 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 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 2 – *Photo 1*
Bearing: North
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 2 – *Photo 1*
Bearing: North
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 2 – *Photo 2*
Bearing: West
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 2 – *Photo 2*
Bearing: West
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 3 – *Photo 1*
Bearing: South
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 3 – *Photo 1*
Bearing: South
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 3 – *Photo 2*
Bearing: East
Location: Re-est/Creation Credit
Taken in 2009

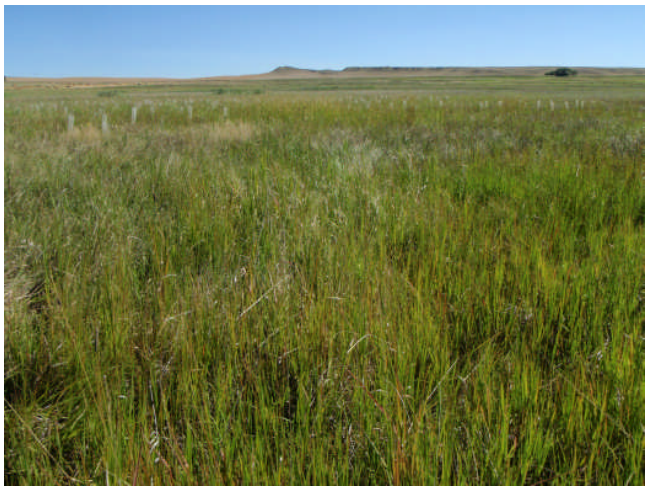


Photo Point 3 – *Photo 2*
Bearing: East
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 4 – *Photo 1*
Bearing: North
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 4 – *Photo 1*
Bearing: North
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 4 – *Photo 2*
Bearing: Southeast
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 4 – *Photo 2*
Bearing: Southeast
Location: Re-est/Creation Credit
Taken in 2010

Photo Point 4 – *Photo 2*
Bearing: Southwest
Location: Re-est/Creation Credit
Taken in 2009

Photo Point 4 – *Photo 2*
Bearing: Southwest
Location: Re-est/Creation Credit
Taken in 2010

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: 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: 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: North
Location: Rehabilitation credit area
Taken in 2009

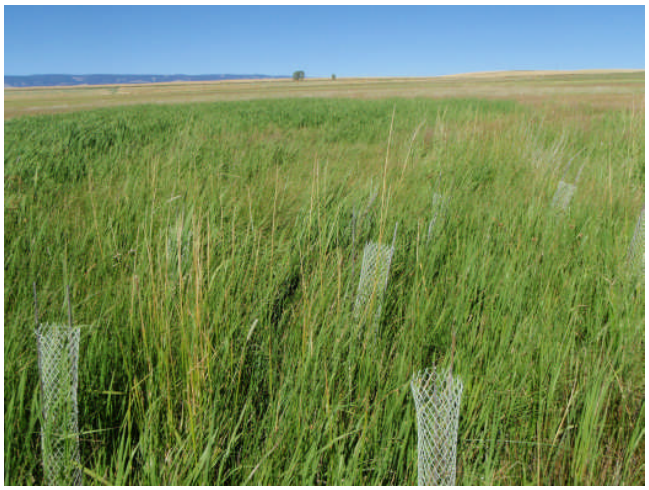


Photo Point – *T-1 Start*
Bearing: North
Location: Rehabilitation credit area
Taken in 2010

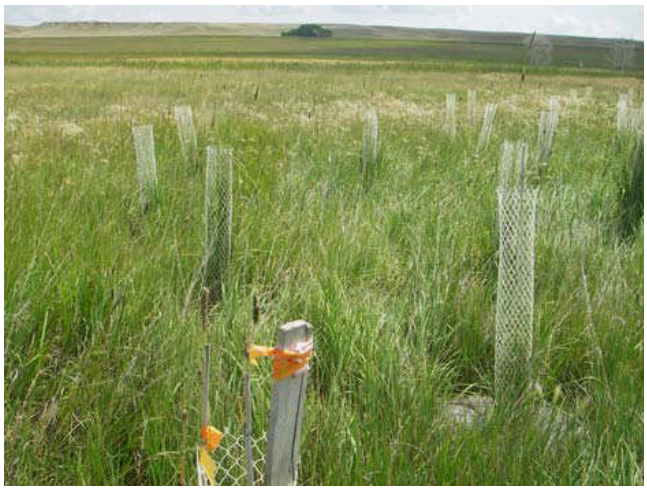


Photo Point – *T-1 End*
Bearing: Northeast
Location: Re-est/Creation Credit
Taken in 2009

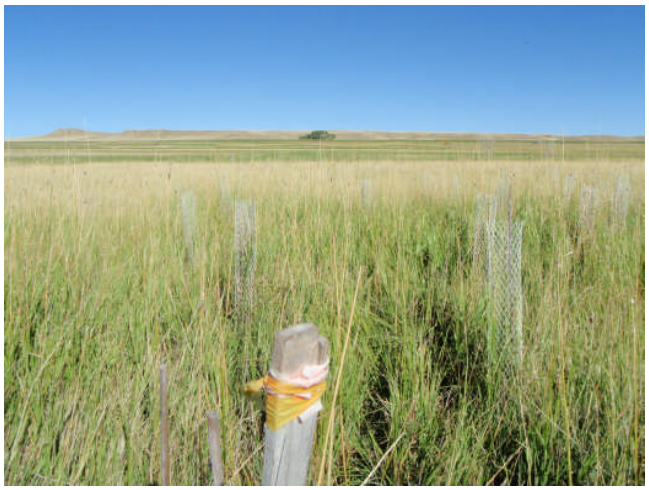


Photo Point – *T-1 End*
Bearing: Northeast
Location: Re-est/Creation Credit
Taken in 2010

Photo Point – *T-1 End*
Bearing: North
Location: Re-est/Creation Credit
Taken in 2009

Photo Point – *T-1 End*
Bearing: North
Location: Re-est/Creation Credit
Taken in 2010

Photo Point – *T-1 End*
Bearing: Southeast
Location: Re-est/Creation Credit
Taken in 2009

Photo Point – *T-1 End*
Bearing: Southeast
Location: Re-est/Creation Credit
Taken in 2010

Photo Point – *T-1 End*
Bearing: South
Location: Re-est/Creation Credit
Taken in 2009

Photo Point – *T-1 End*
Bearing: South
Location: Re-est/Creation Credit
Taken in 2010

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

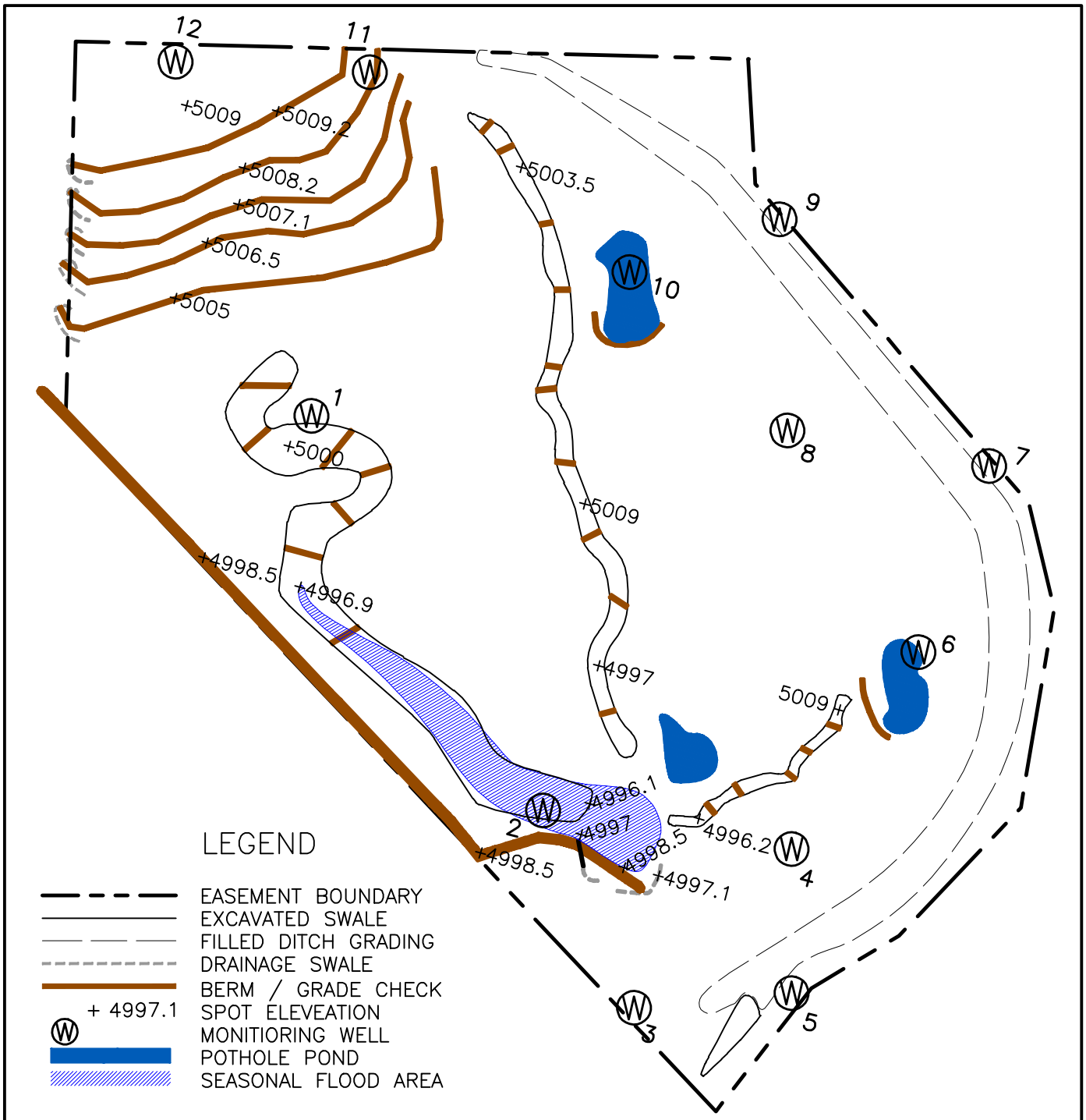
Photo Point 5 – *Photo 2*
Compass Bearing: South
Location: Re-est/Creation Credit
Taken in 2010

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

Appendix D

Project Plan Sheet

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



NORTH

0 150 300

APPX SCALE:1 IN= 300 FEET

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
TWO DOT, MT

D-1

FIGURE

1

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