MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Schrieber Meadows
Lincoln County, Montana



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MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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MDT Project Number NH 27(021)
Control Number 1027

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CCI Project No: MDT.004

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Cover: (Photo description) View of southeast cell

1. INTRODUCTION

The Schrieber Meadows Wetland Mitigation 2010 Monitoring Report presents the results of the first of five years of post-construction monitoring at the Schrieber Meadows mitigation area. The Montana Department of Transportation (MDT) Schrieber Meadows mitigation project is located adjacent to the US Highway 2 corridor in Sections 11, 12, and 13, of Township 27 North, Range 30 West, MPM, Lincoln County (Figure 1). The 147-acre MDT-owned parcel lies within the boundaries of Watershed #1 – Kootenai River Basin. The property is bisected by Coyote Creek that flows across the property and eventually drains into Schrieber Lake and the Fisher River. The property consists of hayfields, pasture, and recently logged forested hillsides that abut US Forest Service land.

Figures 2 and 3 included in Appendix A of the Mitigation 2010 Monitoring Report show the monitoring activity locations and mapped site features, respectively. The MDT Wetland Mitigation Monitoring Forms, US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the 2008 MDT Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008) forms are presented in Appendix B. Representative photographs of the site are included in Appendix C and the project plan sheet is included in Appendix D.

The project permit authorized the use of 3.72 acres of wetland credit to offset wetland impacts associated with transportation projects within Watershed #1, specifically MDT's Swamp Creek East roadway reconstruction project. The overall objective was the creation and restoration of wetlands in areas that had been previously filled, graded, and drained. The original project was scaled back from site wide mitigation construction to a pilot project entailing the development of three shallow depression wetlands. The northwest cell, central cell, and southeast cell encompass 8.15 acres. The pilot project objectives are listed below (MDT 2009)

- Create 2.38 acres of emergent depression wetlands within portions of existing upland hay fields using a variety of herbaceous wetland species.
- Restore (rehabilitate) 1.12 acres of degraded wetlands dominated by pasture grasses through the permanent restoration of hydrology, excavation of shallow depressions, and revegetation with wetland seed.
- Develop 2.96 acres of upland buffers around the created wetland areas.

The primary source of hydrology for the constructed wetland cells is groundwater. Revegetation of the site was accomplished initially by removing meadow foxtail (*Alopecurus pratensis*) via mechanical excavation. The wetland cells were subsequently reseeded with a wetland mix and replanted with existing shrubs, trees, and plants salvaged from wetlands located adjacent to the project site. The project credit ratios approved by the USACE are shown in Table 1 (MDT 2009).

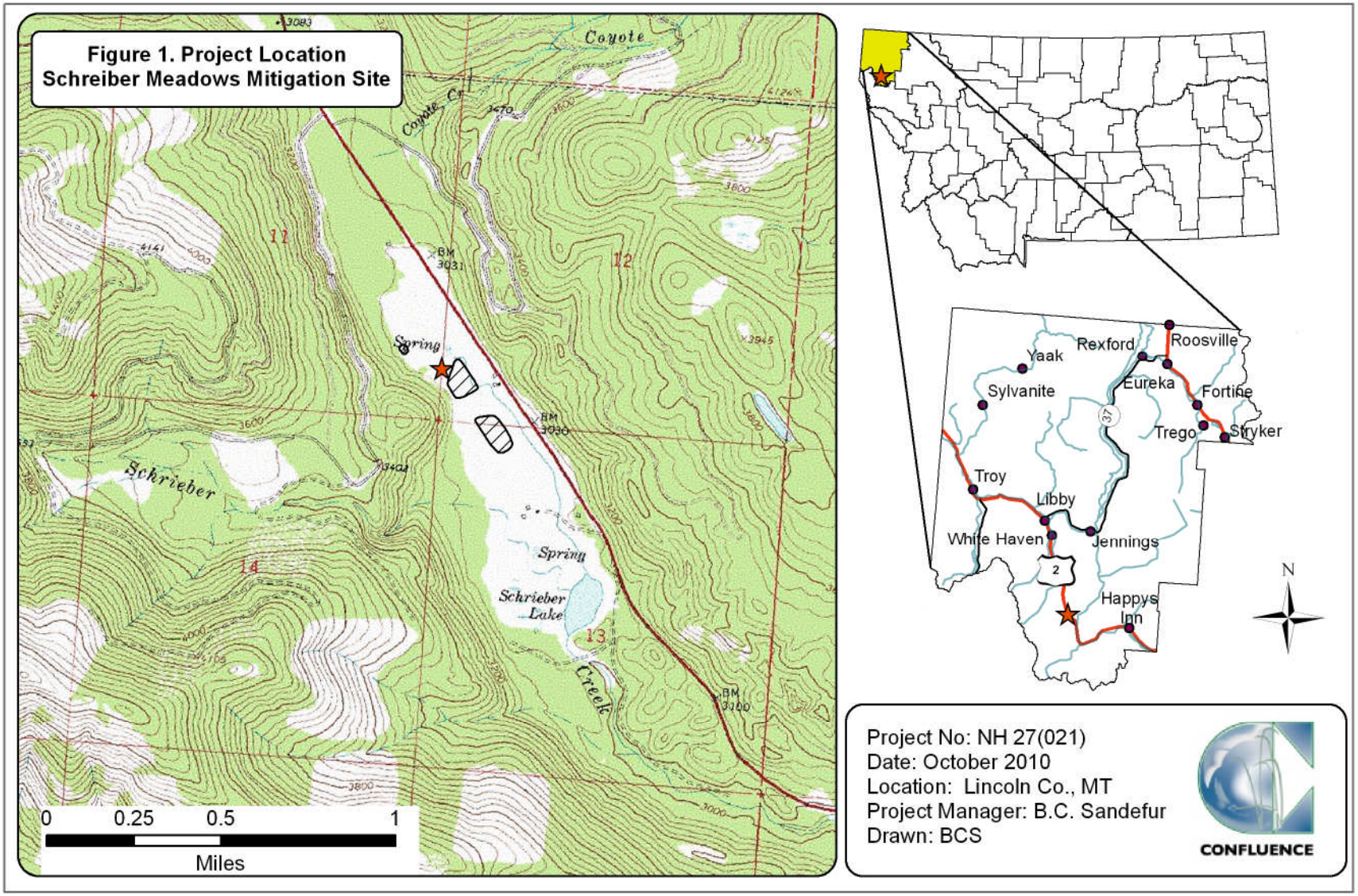


Figure 1. Project location Schrieber Meadows Mitigation Site.

Table 1. USACE wetland credit ratios.

Creation - Northwestern Cell	0.08	1:1	0.08
Creation - Central Cell	2.01	1:1	2.01
Creation - Southeast Cell	0.29	1:1	0.29
Restoration/Rehabilitation - Southeast Cell	1.12	1.5:1	0.75
Upland Buffer (50 feet)	2.96	5:1	0.59
Project Impacts	0.00	None	
Total Mitigation Acreage	**6.46**		**3.72**

The approved performance standards are listed below (MDT 2009).

1. **Wetland Characteristics**: All restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010).
    a) **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Wetland Manual. Soil saturation will be present for at least 12.5 percent of the growing season.
    b) **Hydric Soil Success** will be achieved where hydric soil conditions are present [per the most recent Natural Resource Conservation Service (NRCS) definitions for hydric soil or appear to be forming], the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Wetland Manual. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success is achieved.
    c) **Hydrophytic Vegetation Success** will be achieved where combined absolute cover of facultative or wetter species is ≥70 percent and Montana State-listed noxious weeds do not exceed 5 percent absolute cover.

    The following concept of "dominance", as defined in the 1987 USACE Wetland Delineation manual, will be applied during future routine wetland determinations in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover*

(herbaceous understory), and/or greatest number of stems (woody vines).”

2. **Open Water:** It is the intent of the project to provide open water during the spring and early summer within excavated depressions. As the growing season progresses and the groundwater levels recede, it is anticipated that vegetation will germinate within the majority of the depressions. Open water will therefore be considered successful and creditable.

3. **Upland Buffer Success** will be achieved when the noxious weeds do not exceed 5 percent of cover within the buffer areas on site. Any area within the creditable buffer zone disturbed by project construction must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.

4. **Weed Control** will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site, and control measures based upon the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of State Listed Noxious weed species within the site. The MDT is currently managing the property to control current weed problems (knapweed and hounds tongue) prior to the initiation of wetland construction activities within the site.

5. **Fencing** of the proposed mitigation site will be installed around the perimeter of the site to protect the integrity of the wetland from disturbance. Fencing installed along the perimeter of the site will be designed to be “wildlife friendly to allow for wildlife movement into and out of the wetland complex. “

2. METHODS

The first year of monitoring was initiated on August 29, 2010. Information for the MDT Mitigation Monitoring Form and USACE Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). The location of monitoring activity sites were recorded with a global positioning system (GPS) (Figure 2, Appendix A). Information collected included wetland delineation, vegetation community mapping, vegetation transect monitoring, 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.

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" (USACE 2010). 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 Routine Wetland Determination Data Form (USACE 2010) were documented at six data points established within the project area. The 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.

No groundwater monitoring wells are present on the site. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data was recorded electronically on the wetland data form (Appendix B). Areas of surface inundation were delineated on an aerial photograph during the growing season. The extent of soil saturation was determined through core sampling.

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 verbatim on the monitoring forms: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to 10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B).

Temporal changes in vegetation will be evaluated through annual assessments of static belt transects established in summer 2010 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along one vegetation belt transect approximately 10 feet wide and 318 feet long (Figure 2, Appendix A). The transect endpoints were recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated using the same cover ranges listed above (Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix B). 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 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively, as listed on Figure 3 (Appendix C).

2.3. Soil

Soil information was obtained from the *Lincoln County Soil Survey* and *in situ* soil descriptions accessed from the NRCS official soil description website (USDA 2010). Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the USACE 1987 manual. A description of the soil profile, including hydric indicators when present, was recorded on the wetland data form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 USACE Wetland Delineation Manual and the 2010 Regional Supplement.

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 and 2010 Regional Supplement, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 On-site Determination Method (USACE 2010) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the wetland data dorm (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were

assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was a special aquatic site, an atypical situation, or a problem area. The wetland boundary was identified on aerial photography. 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 will be compiled each year.

2.6. Functional Assessment

The 2008 MDT MWAM was used to evaluate functions and values on the site in 2010. This method provides an objective means of assigning wetlands an overall rating and provides regulators a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008).

Field data for this assessment were collected during the site visit. The functional assessment form was completed at a later date in the office. A Functional Assessment Form was completed for each wetland or group of wetlands [Assessment Areas (AA)] (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provided supplemental information documenting wetland 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 transect end points during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 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 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 community boundaries.

2.9. Maintenance Needs

Channels, engineered structures, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. A cursory examination was completed rather than an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

The growing season recorded for the meteorological station at Libby 32 SSE (245020), located approximately 8 miles northwest of the project, extends from June 13 to September 1 for a total of 81 days (NRCS 2010). Areas defined as wetlands would require 10 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria and performance standards.

Climate data from the Libby weather station recorded an average total annual precipitation rate of 24.13 inches from 1910 to 2010 (WRCC 2010). Annual precipitation for 2009 was 19.74 inches. Monthly totals were incomplete for the first six months of 2010. Precipitation totals for the month of June in 2010 were over 300 percent higher than in June 2009.

The average depth of surface water across the site was estimated at 2 feet with a range of depths of 0 to 2 feet. Approximately 44 percent of the assessment area was inundated. The surface water depth at the emergent vegetation and open water boundary was estimated at 0.2 feet.

Data from adjacent wetland and upland sample plots were collected from each of the three cells located in the northwest corner, center, and southeast corner of the site (C-1 through C-3, respectively) to determine the wetland and upland boundaries (Figure 2, Appendix A). The data points were numbered SM-C1-U (upland), SM-C1-W (wetland), SM-C2-U, SM-C2-W, SM-C3-U, and SM-C3-W. Positive indicators of wetland hydrology at SM-C1-W were water marks, drift deposits, and hydrogen sulfide odor. Primary wetland hydrological indicators at SM-C-2-W were a water table at 7 inches below the ground surface (bgs), saturation at 1 inch bgs, sediment deposits, and inundation that was visible on aerial imagery. Secondary indicators included drainage patterns and the FAC-neutral test. Data point SM-C3-W exhibited a high water table at 11 inches bgs and saturation at 8 inches bgs. There were no hydrological indicators at the upland data points.

3.2. Vegetation

A comprehensive list of 74 plant species identified on the site during the first year of monitoring is shown on Table 2 (Monitoring Forms, Appendix B). Four community types, two wetland and two upland, were identified in 2010. The communities were Type 1 – *Agropyron repens/Centaurea maculosa* Upland,

Type 2 – *Eleocharis palustris/Potamogeton foliosus* Wetland, Type 3 – *Phalaris arundinacea* – Upland, and Type 4 – *Glyceria elata/Eleocharis* spp. Wetland.

Upland community Type 1 – *Agropyron repens/Centaurea maculosa* was found in two small isolated areas located at the boundary of the central cell. The community was dominated by quackgrass (*Agropyron repens),* spotted knapweed (*Centaurea maculosa*), alsike clover (*Trifolium hybridum*), and alfalfa (*Medicago lupulina*). The community contained trace amounts of several grasses and forbs.

Wetland community Type 2 - *Eleocharis palustris/Potamogeton foliosus* was identified in a small polygon within the central cell. Creeping spikerush (*Eleocharis palustris*) and leafy pondweed (*Potamogeton foliosus*) dominated the community.

Upland community Type 3 – *Phalaris arundinacea* was found in the upland perimeter of cells 1 and 2, along the southern periphery of Cell 3, and on the islands created within the open water depressions. These areas met the wetland vegetation criteria yet did not meet the soil and hydrology wetland criteria. The dominant species was reed canary grass. There were over twenty other species identified in the community between one to five percent cover and less than one percent cover (Monitoring Forms, Appendix B).

Wetland community Type 3w – *Phalaris arundinacea* was comprised of a similar vegetation community as Type 3; however, this area met both the hydric soils and wetland hydrology criteria and had been identified as wetland prior to the construction of this mitigation project.

Wetland Type 4 – *Glyceria elata/Eleocharis* spp. was located in the wetland fringes adjacent to open water in the central and southeast cells. The community was dominated by tall mannagrass (*Glyceria elata*), creeping spikerush, pale spikerush (*Eleocharis flavescens*), reed canary grass, water smartweed (*Polygonum amphibium*), and Norwegian cinquefoil (*Potentilla norvegica*).

The open water was identified by the number 5 on Figure 3 (Appendix A). The open water depressions contained surface water ranging in depth from 0 to 2 feet. Leafy pondweed, creeping spikerush, and common hornwort (*Ceratophyllum demersum*) dominated the margins of the open water.

Table 2. Vegetation species identified in 2010 at the Schrieber Meadows Wetland Mitigation Site.

Achillea millefolium	yarrow,common	FACU
Agropyron cristatum	crested wheatgrass	NL
Agropyron repens	quackgrass	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis scabra	bentgrass,rough	FAC
Agrostis stolonifera	bentgrass,spreading	FAC+
Algae, green	algae, green	NL
Alopecurus pratensis	foxtail,meadow	FACW
Beckmannia syzigachne	sloughgrass,American	OBL
Bromus carinatus	brome, California	NL
Cardaria spp.		NL
Carex athrostachya	sedge,slender-beak	FACW
Carex bebbii	sedge, Bebb's	OBL
Carex lanuginosa	sedge,wooly	OBL
Carex microptera	sedge,small-wing	FAC
Carex nebrascensis	sedge,Nebraska	OBL
Carex pachystachya	sedge,thick-head	FAC
Carex stipata	awlfruit sedge	NL
Centaurea maculosa	spotted knapweed	NL
Cerastium arvense	chickweed,mouse-ear	FACU
Cerastium fontanum	common mouse-eared chickweed	NL
Ceratophyllum demersum	hornwort,common	OBL
Cirsium arvense	thistle,creeping	FACU+
Collomia linearis	collomia,narrow-leaf	FACU
Cynoglossum officinale	gypsy-flower	NL
Deschampsia cespitosa	hairgrass,tufted	FACW
Eleocharis flavescens	spikerush,pale	OBL
Eleocharis palustris	spikerush,creeping	OBL
Epilobium spp.		NL
Erysimum cheiranthoides	wallflower,worm-seed	FACU
Fragaria virginiana	strawberry,Virginia	UPL
Galium trifidum	bedstraw,small	FACW+
Geum macrophyllum	avens,large-leaf	FACW+
Glyceria elata	grass,tall manna	FACW+
Glyceria striata	grass,fowl manna	OBL
Gnaphalium palustre	cudweed,western marsh	FAC+
Hippuris vulgaris	mare's-tail,common	OBL
Juncus bufonius	rush,toad	FACW+
Juncus confusus	rush,Colorado	FAC
Juncus ensifolius	rush,three-stamen	FACW

[1]Region 9 Northwest (Reed 1988).

Table 2 (Continued). Vegetation species identified in 2010 at the Schrieber Meadows Wetland Mitigation.

Juncus nodosus	rush,knotted	OBL
Lemna minor	duckweed,lesser	OBL
Medicago lupulina	medic,black	FAC
Mentha arvensis	mint,field	FAC
Mimulus guttatus	monkey-flower,common large	OBL
Myriophyllum spicatum	water-milfoil,Eurasian	OBL
Phalaris arundinacea	grass,reed canary	FACW
Plantago major	plantain,common	FAC+
Poa palustris	bluegrass,fowl	FAC
Poa pratensis	bluegrass,Kentucky	FACU+
Poa spp.		NL
Polygonum amphibium	smartweed,water	OBL
Polygonum douglasii	knotweed,Douglas'	FACU
Polygonum lapathifolium	willow-weed	FACW+
Populus balsamifera	poplar,balsam	FAC
Potamogeton foliosus	pondweed,leafy	OBL
Potamogeton natans	pondweed,floating-leaf	OBL
Potentilla gracilis	cinquefoil,Northwest	FAC
Potentilla norvegica	cinquefoil,Norwegian	FAC
Ranunculus sceleratus	butter-cup,celery-leaf	OBL
Rumex acetosella	sorrel,sheep	FACU
Rumex crispus	dock,curly	FACW
Sparganium emersum	burreed,narrow-leaf	OBL
Stipa nelsonii	Nelson's needlegrass	NL
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Trifolium hybridum	clover,alsike	FACU+
Trifolium repens	clover,white	FACU+
Triglochin maritimum	arrow-grass,seaside	OBL
Typha latifolia	cattail,broad-leaf	OBL
Verbascum thapsus	common mullein	NL
Veronica americana	speedwell,American	OBL
Veronica peregrina ssp. Xalap.	hairy purslane spedwell	NL
Veronica serpyllifolia	speedwell,thyme-leaf	FAC

[1]Region 9 Northwest (Reed 1988).

One 318-foot transect was established and measured in 2010. Table 3 summarizes the transect data and Charts 1 and 2 graph the results (Monitoring Form, Appendix B). Photographs of the transect end points are shown on page C-4 of Appendix C. Vegetation communities 2, 3, and 4 and open water (5) were identified on the transect. Hydrophytic species dominated 62 percent of the transect intervals and open water encompassed 25 percent of the intervals.

Table 3. Data summary for Transect 1 in 2010 at the Schrieber Wetland Mitigation Site.

Vegetation Community Transitions along Transect	7
Vegetation Communities along Transect	3
Hydrophytic Vegetation Communities along Transect	2
Total Vegetative Species	32
Total Hydrophytic Species	22
Total Upland Species	10
% Transect Length Comprising Hydrophytic Vegetation Communities	62
% Transect Length Comprising Upland Vegetation Communities	13
% Transect Length Comprising Unvegetated Open Water	25
% Transect Length Comprising Bare Substrate	0

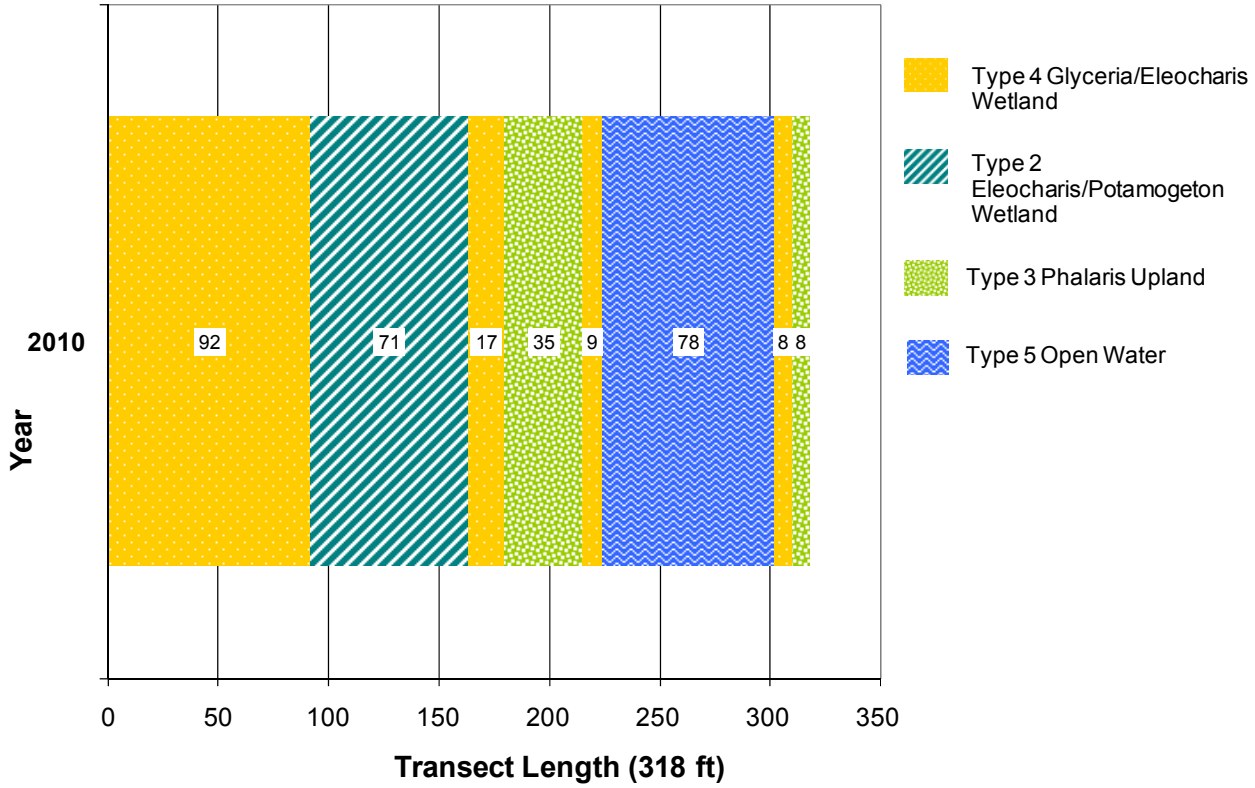


Chart 1. Transect map showing community types on Transect 1 in 2010 from start (0 feet) to end (318 feet).

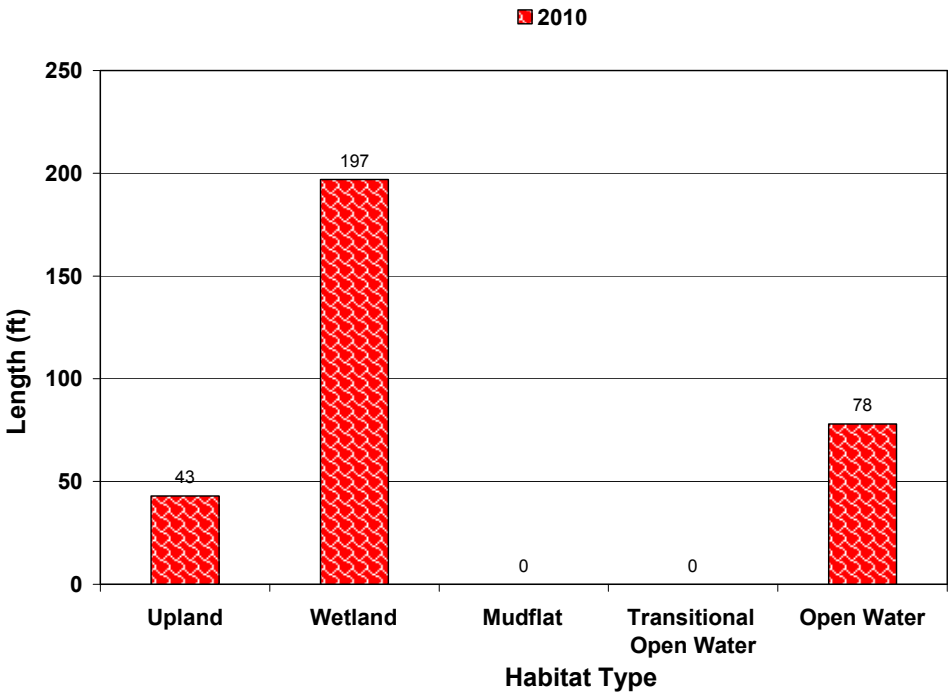


Chart 2. Length of habitat types within Transect 1 in 2010.

Approximately 21 to 50 percent of the vegetation cover in community Type 1 was identified as the priority 2B noxious weed, spotted knapweed (*Centaurea maculosa*) (Figure 3, Appendix A). The weed was identified at the north boundary of the north cell.

Willow shrubs were observed on the islands located within inundated areas of the central and southeast cells (see cover photo). The shrubs were healthy and showed signs of vigorous new growth.

3.3. Soil

The primary map unit on the site was identified as a poorly drained Aquic Udifluvents (105). The soil is found in intermontane basins and is classified as hydric.

The soil in test pit SM-C1-W was a silty clay (10 YR 2/1) without redoximorphic features. The depleted matrix was a positive indicator of hydric soil. The soil at SM-C2-W and SM-C3-W was described as muck (10 YR 2/1) with high organic matter. Histosol is a positive indicator of hydric soils. The soil at SM-C1-U met the hydric soil criteria for a redox dark surface with a matrix color of 10 YR 2/2 and redox concentrations (10 YR 5/6) in five percent of the matrix. Data points SM-C2-U and SM-C3-U did not meet the criteria for hydric soil.

3.4. Wetland Delineation

Six data points were sampled to determine the wetland and upland boundaries. Approximately 4.84 acres of wetland were delineated within the 8.15 acre site. The gross wetland total includes 2.33 acres of open water and 2.51 acres of vegetated wetlands. The northwest cell contained 0.06 acres of wetland and 0.02 acres of open water. The center cell contained approximately 0.78 acres of wetland and 1.23 acres of open water and the southeast cell contained 1.67 acres (1.12 acres pre-existing proposed restoration/rehabilitation) of wetland and 1.08 acres of open water.

Table 4. Total wetland acres delineated in 2010.

Gross Wetlands	4.84
Open Water	2.33
Vegetated Wetlands	2.51

3.5. Wildlife

A list of animal species observed directly or indirectly during 2010 monitoring is presented in Table 5. Five frogs and coyote and white-tailed deer scat were observed during the monitoring event.

Table 5. Wildlife observed at Schrieber Meadows Mitigation Site in 2010.

AMPHIBIAN	
FROG	***Rana luteiventris***
Frog spp	
PACIFIC TREE FROG	***Pseudacris regilla***
WESTERN TOAD	***Bufo boreas***
MAMMAL	
Coyote	*Canis latrans*
White-tailed Deer	*Odocoileus virginianus*

3.6. Functional Assessment

A baseline functional assessment from the 2004 and 2005 wetland delineation at Schrieber Meadows was not available to include within this report. The functional assessment completed in 2010 incorporated the three constructed wetland cells, the northwest cell, the central cell, and the southeast cell, into one AA. The 2008 MDT MWAM was used to evaluate the 4.84-acre AA. The wetlands received a Category II rating with 68 percent of the total possible points.

The ratings were high for MTNHP species habitat and groundwater discharge/recharge and moderate for general wildlife habitat, sediment/nutrient/toxicant removal, and production export/food chain support. The restoration of the existing stream in Phase II of mitigation construction is expected to increase the flood attenuation capacity and general wildlife habitat value of the site.

Table 6. Functions and Values of Schrieber Meadows wetlands.

Listed/Proposed T&E Species Habitat	Low (0.1)
MTNHP Species Habitat	High (0.9)
General Wildlife Habitat	Mod (0.7)
General Fish/Aquatic Habitat	NA
Flood Attenuation	NA
Short and Long Term Surface Water Storage	Mod (0.6)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)
Sediment/Shoreline Stabilization	Mod (0.6)
Production Export/ Food Chain Support	Mod (0.5)
Groundwater Discharge/Recharge	High (1.0)
Uniqueness	Low (0.3)
Recreation/Education Potential	Low (0.5)
Actual Points / Possible Points	**5.45 / 8**
% of Possible Score Achieved	**68%**
Overall Category	**II**
Acreage of Assessed Aquatic Habitats within Easement (ac)	**4.84**
Functional Units (acreage x actual points) **(f[1]-)**	**26.38**

[1]Berglund and McEldowney 2008.

3.7. Photo Documentation

Photographs taken of photo points one through ten (PP1 through PP10 on Figure 2, Appendix A) are shown on pages C-1 to C-3 of Appendix C. Transect end points are shown on page C-4 of Appendix C.

3.8. Maintenance Needs

No man-made nesting structures or water control structures were installed on the property. One priority 2B noxious weed, spotted knapweed, was identified at the north boundary of the north cell. A weed management plan should be implemented at the site to prevent the further spread of weeds.

3.9. Current Credit Summary

The pilot project objectives were the following:

- Create 2.38 acres of emergent depression wetlands within portions of existing upland hay fields using a variety of herbaceous wetland communities.
- Restore (rehabilitate) 1.12 acres of degraded wetlands dominated by pasture grasses through the permanent restoration of hydrology excavation of shallow depressions, and revegetation with wetland seed.
- Develop 2.96 acres of upland buffers around the created wetland areas.

Table 7. Summary of 2010 estimated credit acres.

Creation - Northwestern Cell	0.08	1:1	0.08	0.08	0.08
Creation - Central Cell	2.01	1:1	2.01	2.01	2.01
Creation - Southeast Cell	0.29	1:1	0.29	1.63	1.63
Restoration/Rehabilitation - Southeast Cell	1.12	1.5:1	0.75	1.12	0.75
Upland Buffer (50 feet)	2.96	5:1	0.59	2.96	0.59
Project Impacts	0.00	None		0	
Total Mitigation Acreage	**6.46**		**3.72**		**5.06**

Approximately 3.72 acres of emergent depression wetland and open water developed in the constructed cells in 2010. The cover of hydrophytic species in the shallow open water areas is expected to increase long-term. The total estimated credit acres included 1.12 acres of restoration/rehabilitation in the southeast cell calculated at a 1.5:1 ratio (0.75 acres). The 2010 calculated credits at the Schrieber wetland mitigation area total 5.06 mitigation acres.

The upland area outside the open water depressions was still dominated by a monoculture of reed canary grass. Community 4 has developed in the margins of the open water and exhibits high species diversity. The percent cover of hydrophytic species is expected to increase long-term based on the presence of wetland hydrology. The functional score of 43 percent is expected to increase in subsequent years as the structural diversity and percent cover increases, which will improve wildlife habitat and other functions. Restoring the existing stream in Phase II of mitigation construction is expected to increase the flood attenuation capacity of the site.

4. REFERENCES

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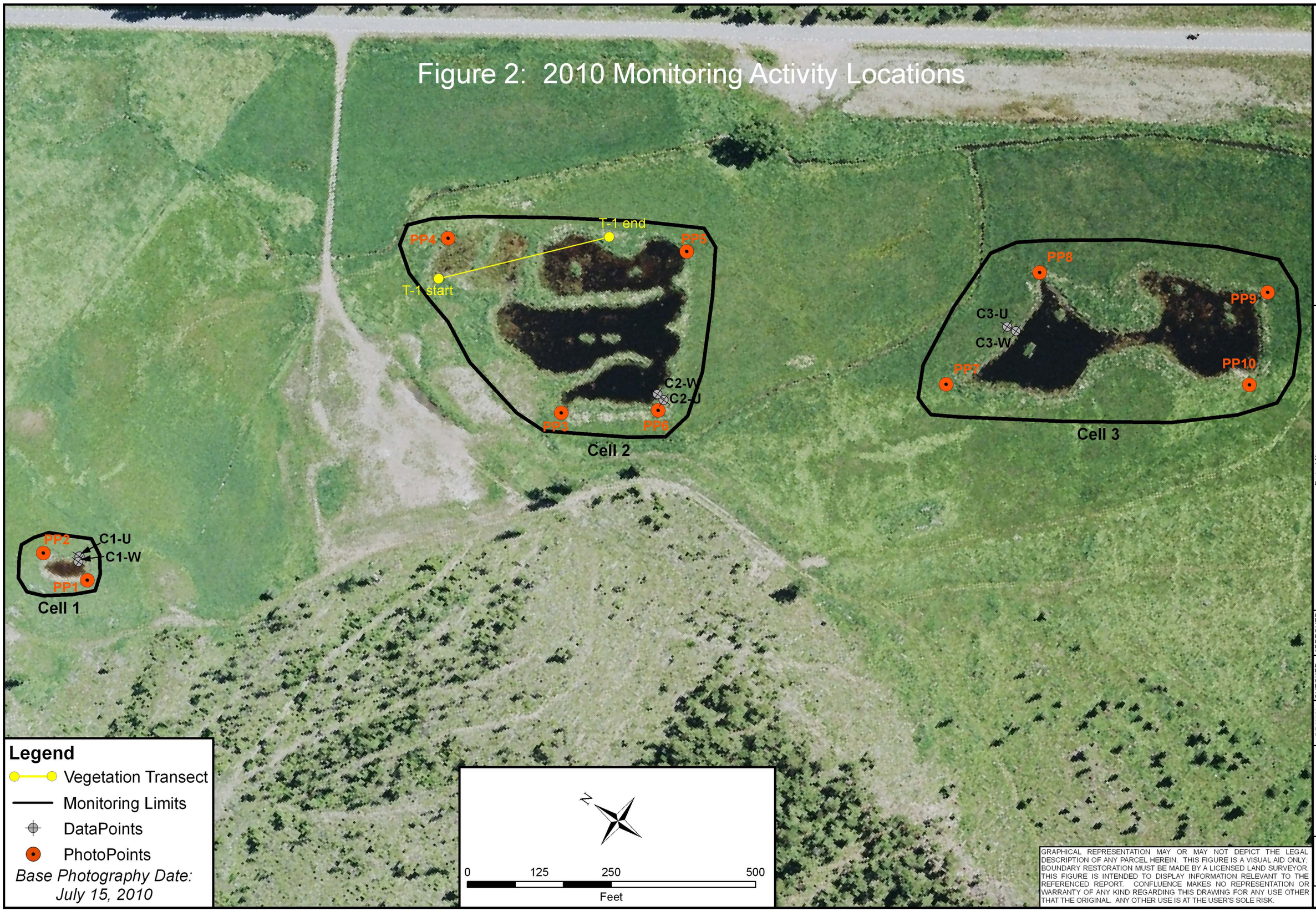
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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln 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: Lincoln Co., MT

PROJECT NO: NH 27(021)

FILE: Schreiber/Monitor2010.mxd

Project Name
Schreiber Meadows Mitigation Site

Drawing Title
2010 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JL

SCALE: Noted

Drawn: November 1, 2010

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 2

REV -

Figure 3: 2010 Mapped Site Features

Acreages	
Project Area	8.15 acres
Gross Wetlands	4.84 acres
Open Water (5)	2.33 acres
Vegetated Wetlands	2.51 acres
Uplands	3.31 acres

N

0 125 250 500

Feet

Legend

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

Base Photography Date: July 15, 2010

Vegetation Community Types

1 Agropyron repens/Centaurea maculosa
2 Eleocharis palustris/Potamogeton foliosus
3 Phalaris arundinacea
3w Phalaris arundinacea wetland
4 Glyceria elata/Eleocharis spp.

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: Lincoln Co., MT

PROJECT NO: NH 27(021)

FILE: Schreiber/Veg2010.mxd

Project Name
Schreiber Meadows Mitigation Site

Drawing Title
2010 Mapped Site Features

DRAWN BCS	CHECKED BV	APPROVED JL	
SCALE: Noted			
Drawn: November 1, 2010			
PROJ MGR: B Sandefur			

CONFLUENCE
consulting incorporated

Figure 3

REV -

Appendix B

2010 MDT Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Determination Data Form
2010 MDT Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Schrieber Meadows Assessment Date/Time 8/29/2010

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

Weather: Overcast / intermittent showers Location: Highway 2, Swamp Creek East

MDT District: Missoula Milepost: 0

Legal Description: T 27N R 30W Section(s) 11, 12, 13

Initial Evaluation Date: 8/29/2010 Monitoring Year: 1 #Visits in Year: 1

Size of Evaluation Area: 147 (acres)

Land use surrounding wetland:

pasture grasslands

HYDROLOGY

Surface Water Source: Spring, lateral from creek, runoff

Inundation: ☑ Average Depth: 2 **(ft)** Range of Depths: .0-2 **(ft)**

Percent of assessment area under inundation: 44 %

Depth at emergent vegetation-open water boundary: 0.2 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: No

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

Groundwater Monitoring Wells

Record depth of water surface below ground

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 Schrieber Meadows

(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:** Agropyron repens / Centaurea maculosa

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron cristatum	0
Agropyron repens	5	Agropyron trachycaulum	0
Bromus carinatus	0	Centaurea maculosa	4
Cirsium arvense	0	Collomia linearis	0
Gnaphalium palustre	0	Medicago lupulina	3
Phalaris arundinacea	0	Poa pratensis	0
Polygonum douglasii	0	Potentilla gracilis	0
Potentilla norvegica	1	Rumex acetosella	0
Rumex crispus	0	Stipa nelsonii	0
Trifolium hybridum	3	Verbascum thapsus	1

Comments:

COMM D

Community # 2 **Community Type:** Eleocharis palustris / Potamogeton foliosus

Species	Cover class	Species	Cover class
Eleocharis palustris	5	Glyceria elata	1
Myriophyllum spicatum	0	Phalaris arundinacea	0
Polygonum amphibium	0	Potamogeton foliosus	5
Sparganium emersum	2	Typha latifolia	0
Veronica americana	0		

Comments:

COMM E. Standing water is present in this wetland type, but no open water.

Community # 3 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron repens	0
Agrostis stolonifera	0	Alopecurus pratensis	1
Carex athrostachya	0	Carex bebbii	0
Carex pachystachya	1	Carex stipata	0
Centaurea maculosa	0	Cerastium arvense	0
Cerastium fontanum	0	Cirsium arvense	0
Cynoglossum officinale	0	Eleocharis palustris	0
Epilobium spp.	0	Fragaria virginiana	0
Mimulus guttatus	0	Phalaris arundinacea	5
Poa palustris	0	Polygonum amphibium	1
Polygonum douglasii	0	Potentilla norvegica	0
Rumex acetosella	0	Taraxacum officinale	0
Thlaspi arvense	0	Trifolium hybridum	1
Verbascum thapsus	0	Veronica serpyllifolia	0

Comments:

COMM A

Community # 4 **Community Type:** Glyceria elata / Eleocharis spp.

Species	Cover class	Species	Cover class
Agrostis scabra	0	Alopecurus pratensis	0
Beckmannia syzigachne	0	Cardaria spp.	0
Carex athrostachya	0	Carex bebbii	1
Carex lanuginosa	0	Carex microptera	0
Carex nebrascensis	1	Carex stipata	1
Cerastium fontanum	0	Deschampsia cespitosa	1
Eleocharis flavescens	1	Eleocharis palustris	5
Epilobium spp.	0	Erysimum cheiranthoides	0
Galium trifidum	0	Geum macrophyllum	0
Glyceria elata	4	Glyceria striata	0
Gnaphalium palustre	0	Juncus bufonius	0
Juncus confusus	0	Juncus ensifolius	0
Juncus nodosus	1	Mentha arvensis	0
Mimulus guttatus	0	Phalaris arundinacea	4
Plantago major	0	Poa spp.	1
Polygonum amphibium	2	Polygonum douglasii	0
Polygonum lapathifolium	0	Populus balsamifera	0
Potentilla norvegica	2	Ranunculus sceleratus	0
Rumex acetosella	0	Rumex crispus	0
Sparganium emersum	0	Taraxacum officinale	0
Trifolium hybridum	0	Trifolium repens	0
Triglochin maritimum	0	Typha latifolia	1
Verbascum thapsus	0	Veronica americana	0
Veronica peregrina ssp. Xal	0	Veronica serpyllifolia	0

Comments:

COMM B. In cell 1, this wetland edge is developing more slowly - much less cover of Glyceria elata and Eleocharis palustris, abundant Plantago major (2) and no Typha latifolia; fewer species in cell 1. Typha latifolia foms patches in cells 2 and 3. Cell 3 has less Glyceria elata. Unknown grass was very young with no seed head.

Community # 5 **Community Type:** Open water /

Species	Cover class	Species	Cover class
Algae, green	0	Ceratophyllum demersum	2
Eleocharis palustris	2	Glyceria elata	0
Hippuris vulgaris	0	Lemna minor	0
Myriophyllum spicatum	1	Open Water	5
Phalaris arundinacea	0	Polygonum amphibium	0
Potamogeton foliosus	4	Potamogeton natans	0
Sparganium emersum	1	Typha latifolia	1
Veronica americana	0		

Comments:

COMM C. Hippuris vulgaris was found in cell 3 only. Veronica americana observed creeping in to cell 1

VEGETATION TRANSECTS

Site: Schrieber Meadows Date: 8/29/2010

Transect Number: 1 **Compass Direction from Start:** 112

Interval Data:

Ending Station 92 **Community Type:** Glyceria elata / Eleocharis spp.

Species	Cover class	Species	Cover class
Carex athrostachya	0	Carex bebbii	0
Carex pachystachya	0	Eleocharis palustris	3
Glyceria elata	5	Juncus confusus	0
Juncus nodosus	0	Mentha arvensis	0
Phalaris arundinacea	4	Poa palustris	0
Poa spp.	0	Polygonum amphibium	1
Potentilla norvegica	0		

Ending Station 163 **Community Type:** Eleocharis palustris / Potamogeton foliosus

Species	Cover class	Species	Cover class
Algae, green		Eleocharis palustris	4
Glyceria elata	1	Phalaris arundinacea	0
Potamogeton foliosus	5	Sparganium emersum	4

Ending Station 180 **Community Type:** Glyceria elata / Eleocharis spp.

Species	Cover class	Species	Cover class
Algae, green		Eleocharis palustris	4
Glyceria elata	5	Juncus nodosus	0
Phalaris arundinacea	2	Poa spp.	0
Polygonum amphibium	0		

Ending Station 215 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Agropyron repens	0	Carex athrostachya	1
Carex bebbii	0	Carex pachystachya	1
Cirsium arvense	0	Eleocharis palustris	0
Fragaria virginiana	0	Geum macrophyllum	0
Glyceria elata	0	Juncus nodosus	0
Mimulus guttatus	0	Phalaris arundinacea	5
Plantago major	0	Poa palustris	0
Poa pratensis	0	Polygonum amphibium	2
Potentilla norvegica	0	Rumex acetosella	0
Taraxacum officinale	0		

Ending Station 224 **Community Type:** Glyceria elata / Eleocharis spp.

Species	Cover class	Species	Cover class
Carex bebbii	0	Carex nebrascensis	1
Carex stipata	1	Eleocharis palustris	5
Epilobium spp.	0	Glyceria elata	2
Glyceria striata	1	Juncus nodosus	0
Phalaris arundinacea	3	Poa spp.	0
Potentilla norvegica	1	Typha latifolia	0
Veronica americana	0		

Ending Station 302 **Community Type:** Open water /

Species	Cover class	Species	Cover class
Algae, green		Ceratophyllum demersum	3
Eleocharis palustris	4	Glyceria elata	0
Open Water	5	Phalaris arundinacea	0
Polygonum amphibium	0	Potamogeton foliosus	5

Ending Station 310 **Community Type:** Glyceria elata / Eleocharis spp.

Species	Cover class	Species	Cover class
Carex athrostachya	0	Eleocharis palustris	5
Mentha arvensis	0	Phalaris arundinacea	4
Polygonum amphibium	0	Potentilla norvegica	0

Ending Station 318 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Phalaris arundinacea	5		

Transect Notes:

18 degree compass declination

From 40-57', community is upland on the south 1/2 of transect, and wetland on north 1/2 of transect.

From 92-113': community is upland on north 1/2 of transect, and mostly wetland on south 1/2 of transect (mixed with some upland)

PLANTED WOODY VEGETATION SURVIVAL

Schrieber Meadows

Planting Type	#Planted	#Alive	Notes
None planted			

Comments

Schrieber Meadows

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat

Bird Comments

No records kept

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
Columbia Spotted Frog		No	No	No	
Coyote		No	Yes	No	
Frog spp	5	No	No	No	
Pacific Treefrog		No	No	No	
Western Toad		No	No	No	
White-tailed Deer		No	Yes	No	

Wildlife Comments:

Schrieber Meadows

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.

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? No

If yes, do they need to be repaired? No

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

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

into or out of the wetland? No

If yes, are the structures working properly and in good working order? No

If no, describe the problems below.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Co. Sampling Date: 8/29/2010

Applicant/Owner: MDT State: MT Sampling Point: SM-C1-U

Investigator(s): J. Asebrook Section, Township, Range: S 12 T 27N R 30W

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

Subregion (LRR): Lat: 48.113556 Long: -115.42041876 Datum: NAD 83

Soil Map Unit Name: Aquic udifluents, poorly drained NWI classification: Upland

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris arundinacea	85	☑	FACW
2. Alopecurus pratensis	10	☐	FACW
3. Carex pachystachya	5	☐	FAC
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	95	x 2 =	190
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		205 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: SM-C1-U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/2						Loam	
7-18	10YR 2/2		10YR 5/6	5	C	M	Silty Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

No evidence of wetland hydrology.

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Co. Sampling Date: 8/29/2010

Applicant/Owner: MDT State: MT Sampling Point: SM-C1-W

Investigator(s): J. Hintz Section, Township, Range: S 12 T 27N R 30W

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

Subregion (LRR): Lat: 48.11354435 Long: -115.42045145 Datum: NAD83

Soil Map Unit Name: Aquic udifluents, poorly drained NWI classification: PEM

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus balsamifera ssp. trichocarpa	1	☐	FAC
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris arundinacea	20	☑	FACW
2. Alopecurus pratensis	3	☐	FACW
3. Plantago major	3	☐	FACU
4. Eleocharis palustris	1	☐	OBL
5. Juncus confusus	1	☐	FAC
6. Polygonum amphibium	1	☐	OBL
7. Carex bebbii	1	☐	OBL
8. Potentilla norvegica	1	☐	FAC
9. Veronica serpyllifolia	1	☐	FAC
10. Veronica americana	1	☐	OBL
11. Taraxacum officinale	1	☐	FACU
	33 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		
% Bare Ground in Herb Stratum 65			

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	4	x 1 =	
FACW species	23	x 2 =	46
FAC species	4	x 3 =	12
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	33 (A)		70 (B)

Prevalence Index = B/A = 2.12

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: SM-C1-W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/1		1 Gley 3 10Y		D	M	Silty Clay Loam	Other mottles present: Gley 1: 5/10 GY;
4-10	7.5YR 6/2		10YR 5/2		D	M	Silty Clay Loam	
10-16	10YR 2/1							

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☑ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☑ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☑ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Water table not currently present at plot location.

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Co. Sampling Date: 8/29/2010

Applicant/Owner: MDT State: MT Sampling Point: SM-C2-U

Investigator(s): J. Hintz Section, Township, Range: S 12 T 27N R 30W

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

Subregion (LRR): Lat: 48.1119222 Long: -115.41692871 Datum: NAD83

Soil Map Unit Name: Aquic udifluents, poorly drained NWI classification: Upland

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris arundinacea	100	☑	FACW
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: SM-C2-U

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

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

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

No evidence of wetland hydrology.

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Co. Sampling Date: 8/29/2010

Applicant/Owner: MDT State: MT Sampling Point: SM-C2-W

Investigator(s): J. Asebrook Section, Township, Range: S 12 T 27N R 30W

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

Subregion (LRR): Lat: 48.11188038 Long: -115.41692795 Datum: NAD83

Soil Map Unit Name: Aquic udifluents, poorly drained NWI classification: PEM

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Eleocharis palustris	70	☑	OBL
2. Typha latifolia	10	☐	OBL
3. Phalaris arundinacea	10	☐	FACW
4. Glyceria elata	5	☐	FACW
5. Potentilla norvegica	2	☐	FAC
6. Juncus nodosus	1	☐	OBL
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	81	x 1 =	
FACW species	15	x 2 =	30
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	98 (A)		117 (B)

Prevalence Index = B/A = 1.19

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: SM-C2-W

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

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

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

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

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [x] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) **(except MLRA 1)**
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes [x] No [ ]

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [x] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) **(LRR A)**
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- [x] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Raised Ant Mounds (D6) **(LRR A)**
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes [ ] No [x] Depth (inches): _____

Water Table Present? Yes [x] No [ ] Depth (inches): 7

Saturation Present? (includes capillary fringe) Yes [x] No [ ] Depth (inches): 1

Wetland Hydrology Present? Yes [x] No [ ]

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

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Co. Sampling Date: 8/29/2010

Applicant/Owner: MDT State: MT Sampling Point: SM-C3-U

Investigator(s): J. Asebrook Section, Township, Range: S 12 T 27N R 30W

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

Subregion (LRR): Lat: 48.11080397 Long: -115.41496734 Datum: NAD83

Soil Map Unit Name: Aquic udifluents, poorly drained NWI classification: Upland

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris arundinacea	100	☑	FACW
2. Carex pachystachya	2	☐	FAC
3. Polygonum amphibium	1	☐	OBL
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	
FACW species	100	x 2 =	200
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	103 (A)		207 (B)

Prevalence Index = B/A = 2.01

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: SM-C3-U

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

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

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

No evidence of wetlnad hydrology.

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Linclon Co. Sampling Date: 8/29/2010

Applicant/Owner: MDT State: MT Sampling Point: SM-C3-W

Investigator(s): J. Hintz Section, Township, Range: S 12 T 27N R 30W

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

Subregion (LRR): Lat: 48.11078779 Long: -115.41496072 Datum: NAD83

Soil Map Unit Name: Aquic udifluents, poorly drained NWI classification: PEM

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Eleocharis palustris	50	☑	OBL
2. Carex bebbii	10	☐	OBL
3. Carex nebrascensis	5	☐	OBL
4. Phalaris arundinacea	2	☐	FACW
5. Ranunculus sceleratus	1	☐	OBL
6. Beckmannia syzigachne	1	☐	OBL
7. Potentilla norvegica	1	☐	FAC
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	67	x 1 =	
FACW species	2	x 2 =	4
FAC species	1	x 3 =	3
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		74 (B)

Prevalence Index = B/A = 1.06

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: SM-C3-W

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

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

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

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

- ☑ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☑ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

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

Water Table Present? Yes ☑ No ☐ Depth (inches): 11

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Schrieber Meadows **2. MDT project#** NH 27(021) **Control#** 1027

3. Evaluation Date 8/29/2010 **4. Evaluators** J. Asebrook, J. Hintz **5. Wetland/Site# (s)**

6. Wetland Location(s): **T** 27N **R** 30W **Sec1** 12 **T** 27N **R** 30W **Sec2** 13

Approx Stationing or Mileposts approximately milepost 53.5

Watershed Kootenai-1 **County** Lincoln

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 4.84

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**

9. Assesssment area (AA) size (acres) 4.84

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittant	33
Depressional	Aquatic Bed	Excavated	Seasonal/Intermittant	1
Depressional	Unconsolidated Bottom	Excavated	Permanent/Perennial	66

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Highway 93 is within 300 feet of cells 2 and 3. Surrounding land may be hayed.

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

Centaurea maculosa is dominant in weedy upland; Cirsium arvense is present in low covers in weedy upland and upland; Cynoglossum officina

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

AA consists of 3 small wetland mitigation sites (0.3 (cell 1), 3.72 (cell 2) and 4.13 acres (cell 3). Total area of all three wetlands is 8.15 acres. The surrounding land is dominated by Phalaris arundinacea.

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

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

Comments: Emergent and aquatic bed present within AA

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	○ D ◉ S	Grizzlies and gray wolves
No usable habitat	☐ S	

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

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

Sources for documented use USFS wildlife tracking via GPS collars

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

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

Primary or critical habitat (list species)	◉ D ○ S	Western toad (S2)
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	◉ D ◉ S	
No usable habitat	☐ S	

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

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

Sources for documented use Documented by MDT and USFS on site (breeding)

14C. General Wildlife Habitat Rating:

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

Moderate

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

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

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

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

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

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

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

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

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

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

Comments Potential for more water fowl use as wetlands continue to develop.

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

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

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

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

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

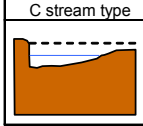
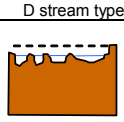
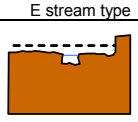
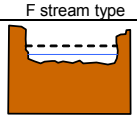
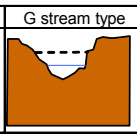
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

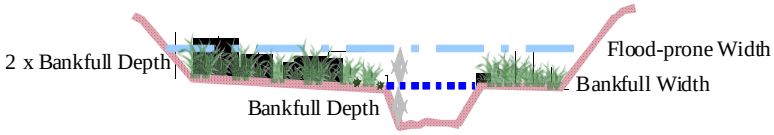
iii. Final Score and Rating: _____ Comments:

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

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)				Moderately entrenched – B stream type					
% of flooded wetland classified as forested and/or scrub/shrub				75%	25-75%	<25%			
AA contains **no outlet or restricted outlet**									
AA contains **unrestricted outlet**									

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



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

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

Comments: Cell 2 is adjacent to a creek/ditch sourced by Schrieber Lake. An upland separates the creek from the wetland, and the creek is not within AA.

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

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

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

Comments: Unconsolidated bottom habitats appear to have a permanent/perennial water regime; vegetated wetland habitats have a seasonal/intermittent water regime.

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

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of				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 [check] the functional points and rating)

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

Comments: open water areas with shoreline vegetated by deep-rroting species

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .5M

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: Springs are located within 200 feet of AA, but not within AA.

ii. Recharge Indicators

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

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.484	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	4.356	☐
C. General Wildlife Habitat	M	.7	1	3.388	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	NA	0	0	0	☐
F. Short and Long Term Surface Water Storage	M	.6	1	2.904	☐
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	3.388	☑
H. Sediment/Shoreline Stabilization	M	.6	0	2.904	☐
I. Production Export/Food Chain Support	M	.5	1	2.42	☑
J. Groundwater Discharge/Recharge	H	1	1	4.84	☑
K. Uniqueness	L	.3	1	1.452	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.242	☐
Totals:		5.45	8	26.378	
Percent of Possible Score			**68.13** %		

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

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

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

☐

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

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

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana



Photo Point 1 – *Photo 1*
Bearing: 350 degrees
Location: Cell 1
Taken in 2010



Photo Point 2 – *Photo 1*
Bearing: 190 degrees
Location: Cell 1
Taken in 2010



Photo Point 3 – *Photo 1*
Bearing: 90 degrees
Location: Cell 2
Taken in 2010



Photo Point 4 – *Photo 1*
Bearing: 180 degrees
Location: Cell 2
Taken in 2010



Photo Point 5 – *Photo 1*
Bearing: 270 degrees

Location: Cell 2
Taken in 2010



Photo Point 6 – *Photo 1*
Bearing: 40 degrees

Location: Cell 2
Taken in 2010



Photo Point 7 – *Photo 1*
Bearing: 110 degrees

Location: Cell 3
Taken in 2010



Photo Point 8 – *Photo 1*
Bearing: 200 degrees

Location: Cell 3
Taken in 2010



Photo Point 9 – *Photo 1*
Bearing: 330 degrees

Location: Cell 3
Taken in 2010



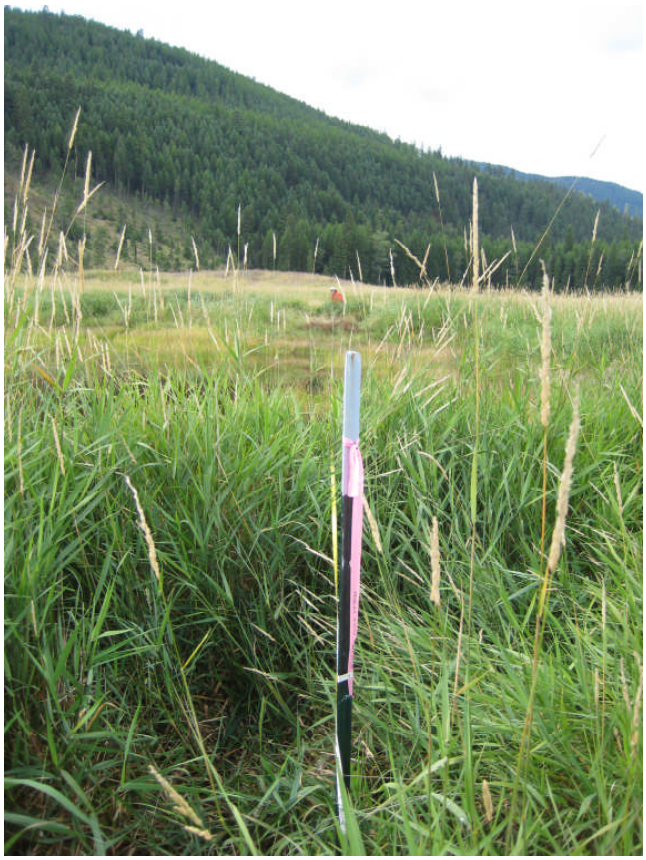
Photo Point 10 – *Photo 1*
Bearing: 30 degrees

Location: Cell 3
Taken in 2010



Veg Tran 1
Bearing: 115 degrees

Location: T-1 start
Taken in 2010



Veg Tran 1
Bearing: 245 degrees

Location: T-1 end
Taken in 2010

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

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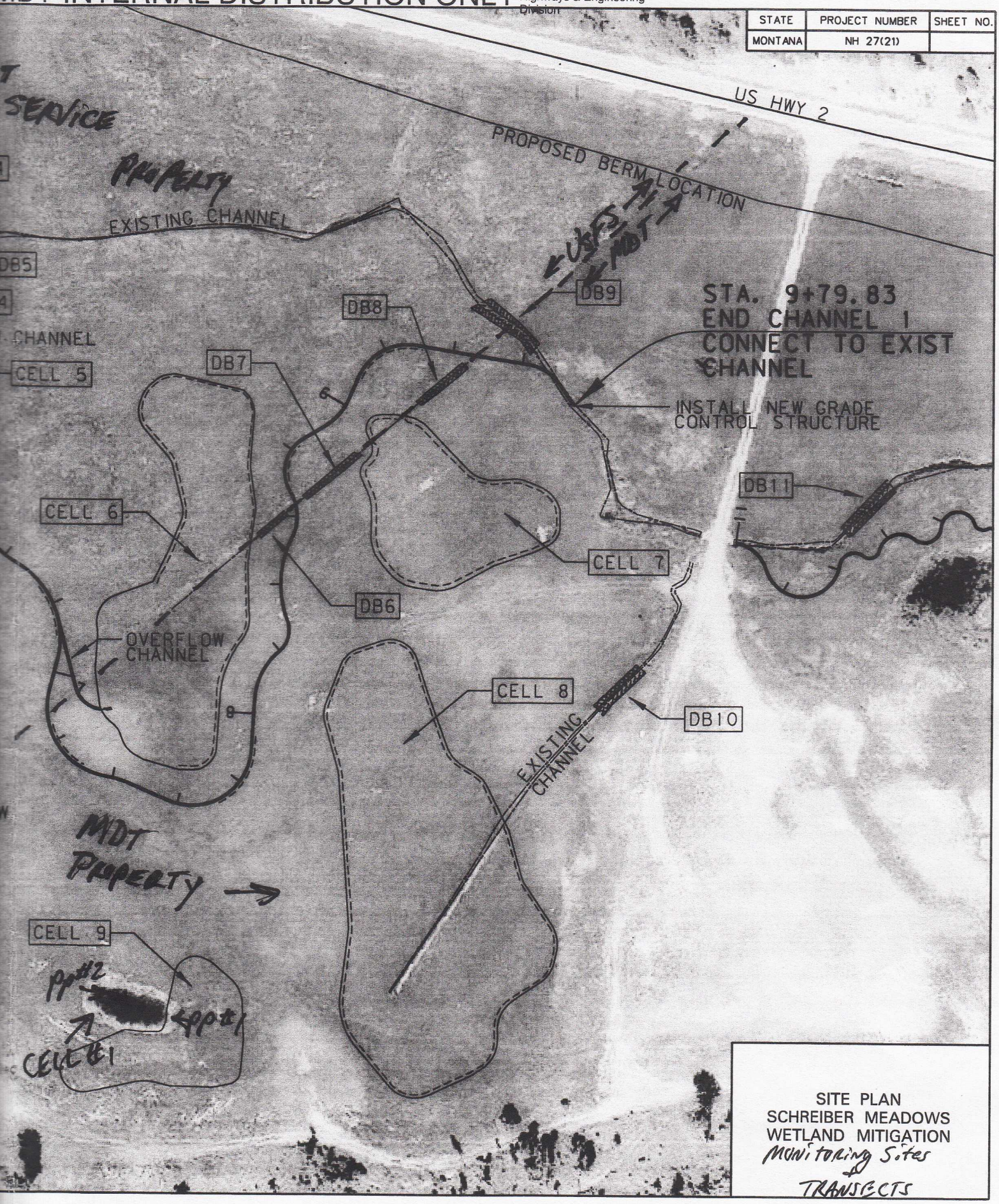
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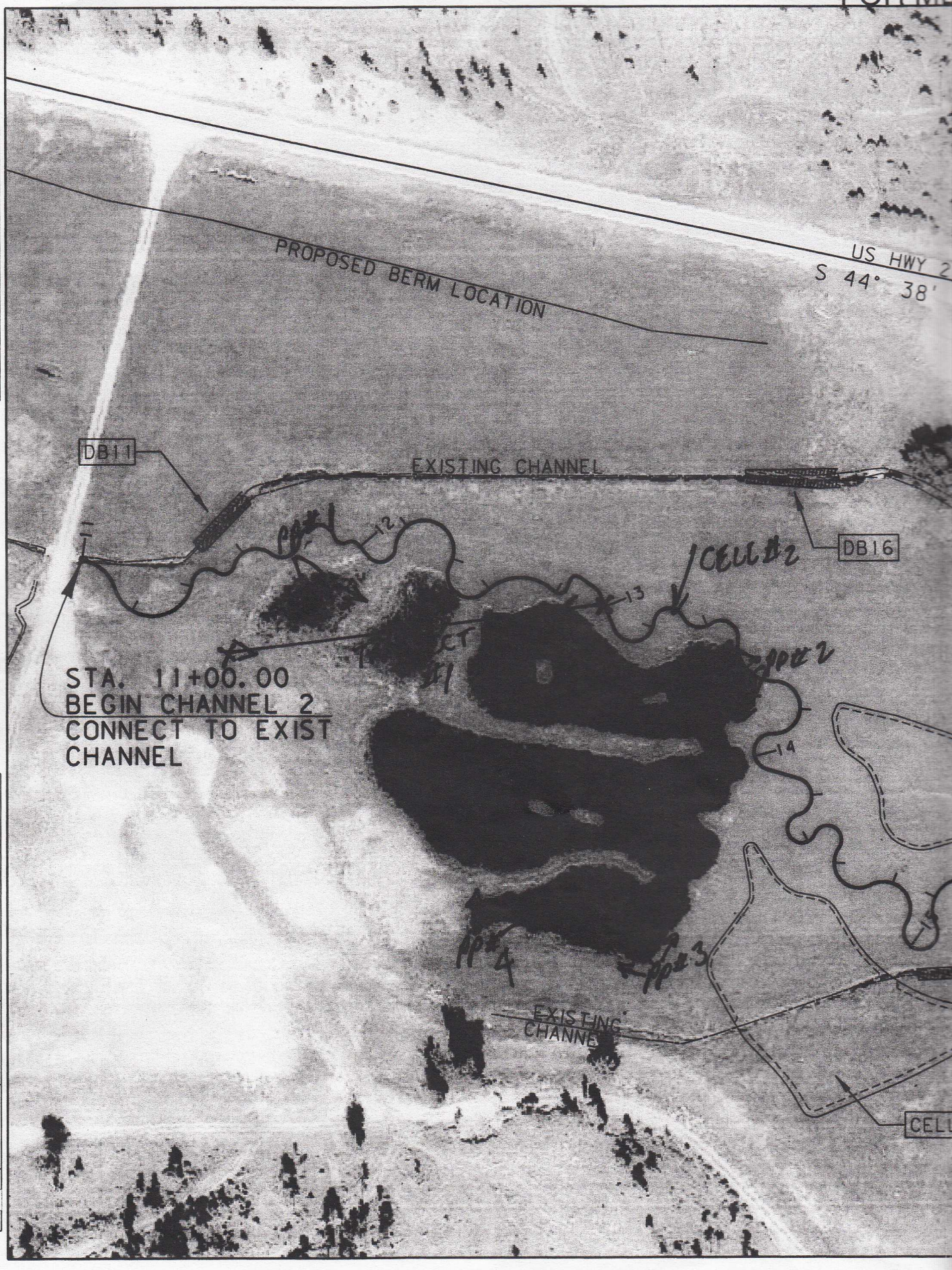
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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 27(21)	



SITE PLAN
SCHREIBER MEADOWS
WETLAND MITIGATION
Monitoring Points
+
TRANSECTS