Hunting Club, Lake County, and Wolf Land Parcels Fall 2010 Wildlife and Wetland Assessment

Final Report

OCTOBER 2011




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Executive Summary

PolyMet Mining Incorporated (PolyMet) proposes to construct an open pit, low grade, polymetallic mineral mine in northern Minnesota. This project, called the NorthMet Mine and Ore Processing Facilities Project (NorthMet Project), is located in St. Louis County on the eastern end of the Mesabi Iron Range, about 60 miles north of Duluth, and 6 miles south of Babbitt, Minnesota (Mine Site). PolyMet plans to mine and process polymetallic ore from the northwest portion of the Duluth Complex. The ore contains copper, nickel, gold, platinum, palladium, and cobalt. PolyMet plans to refurbish and operate a processing facility using the nearby former LTV Steel Mining Company taconite processing facility near Hoyt Lakes, Minnesota, that would produce copper concentrates, nickel concentrates, and base and precious metal precipitates, for off-site shipment and treatment.

The Mine Site encompasses about 2,801 acres of habitat used by wildlife, including species of concern to federal and state agencies. Habitats that would potentially be affected by the project include conifer forest (comprised primarily of black spruce, jack pine, tamarack, and balsam fir), deciduous forest (comprised primarily of trembling aspen and paper birch), mixed conifer/deciduous forest, riparian (dominated by speckled alder, red-osier dogwood, and willow), and wetland (dominated by sedges, cattail, bog Labrador-tea, leatherleaf, and sphagnum moss).

Of the approximately 2,801 acres, approximately 2,620 acres of the Mine Site are owned by the U.S. Government (Government) and administered by the U.S. Department of Agriculture Forest Service (Forest Service). In addition, about 3,898 acres adjacent to the Mine Site (Additional Parcel) are owned by the Government and administered by the Forest Service. The Forest Service is considering transferring these approximately 6,518 acres (Mine Site and Additional Parcel) to PolyMet in exchange for lands of similar value that have been offered for consideration by PolyMet. All lands potentially involved in the land exchange, including submerged lands, would be independently appraised according to the Uniform Appraisal Standards for Federal Land Acquisitions. The appraisals will determine the market value of the properties.

Wildlife and their habitats on the Mine Site were evaluated in 2000, 2004, and 2006 and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement (EIS) for the NorthMet Project. Wildlife and their habitats on the Additional Parcel were evaluated in 2008 and 2009 and this information, along with information collected for the Mine Site, was used by the Forest Service in the land exchange feasibility analysis. The aforementioned information will be used to evaluate impacts to wildlife and their habitats for a supplemental EIS which includes the NorthMet Project and the proposed land exchange. The parcels are in a region known to be used by several wildlife species that have been identified by state and federal agencies as species of concern, including bald eagle, northern goshawk, Canada lynx, and gray wolf.

PolyMet offers for consideration 7,075 acres of nonfederal lands to the Government as part of a proposed land exchange. These include 4,926 acres associated with the Hay Lake Parcel, 31 acres with the McFarland Lake Parcel, 1,576 acres associated with the Wolf Land parcels, 382 acres associated with the Lake County parcels, and 160 acres associated with the Hunting Club Parcel. Wildlife and their habitats, and wetland functions and values associated with the Hay Lake and McFarland Lake parcels were evaluated in 2009. The current study evaluated wildlife and their habitats, and wetland functions and values on the Lake County, Hunting Club, and Wolf Land parcels during November 2010.

The major components of this assessment included: 1) background research and collaboration with state and federal agencies to identify wildlife species and their habitats of interest; 2) field surveys to observe wildlife and their sign; 3) determination of wetland functions and values; and 4) mapping of upland and wetland habitat using aerial photographic interpretation, wetland inventories, and field observations.

Field surveys were conducted on the parcels from November 17 through November 24. The weather during this period was cold and snowy, with 6 inches or more of snow on the ground and a thin layer of ice covering streams and wetlands. Compared to surveys conducted at other time of the year, signs of wildlife were limited. There were no observations of amphibians or reptiles, or their sign, and bird and mammal observations were low. Birds seen

during the surveys include ruffed grouse, and pileated woodpecker, while mammal sightings included snowshoe hare, red squirrel, beaver, American marten, gray wolf, white-tailed deer, and moose. We mapped approximately 378 acres of upland and 1,740 acres of wetland habitat on the parcels. Thirty-seven wetlands, or portions of wetlands, were evaluated for their functions and values; all were rated high value for most wetland functions and values.

Information collected during the wildlife and wetland assessments will support land exchange and environmental review and permitting efforts.

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1.0 INTRODUCTION

1.1. Study Overview

PolyMet Mining Incorporated (PolyMet) proposes to construct an open pit, low grade, polymetallic mineral mine in northern Minnesota. This project, called the NorthMet Mine and Ore Processing Facilities Project (NorthMet Project), is located in St. Louis County on the eastern end of the Mesabi Iron Range, about 60 miles north of Duluth, and 6 miles south of Babbitt, Minnesota (Mine Site; **Figure 1**). PolyMet plans to mine and process polymetallic ore from the northwest portion of the Duluth Complex. The ore contains copper, nickel, gold, platinum, palladium, and cobalt. PolyMet plans to refurbish and operate a processing facility using the former LTV Steel Mining Company taconite processing facility near Hoyt Lakes, Minnesota, that would produce copper concentrates, nickel concentrates, and base and precious metal precipitates, for off-site shipment and treatment.

The Mine Site encompasses about 2,801 acres of habitat used by wildlife, including species of concern to federal and state agencies. Habitats that would potentially be affected by the project include conifer forest (comprised primarily of black spruce, jack pine, tamarack, and balsam fir), deciduous forest (comprised primarily of trembling aspen and paper birch), mixed conifer/deciduous forest, riparian (dominated by speckled alder, red-osier dogwood, and willow), and wetland (dominated by sedges, cattail, bog Labrador-tea, leatherleaf, and sphagnum moss).

Of the approximately 2,801 acres, approximately 2,620 acres of the Mine Site are owned by the U.S. Government (Government) and administered by the U.S. Department of Agriculture Forest Service (Forest Service). In addition, about 3,898 acres adjacent to the Mine Site (Additional Parcel) are owned by the Government and administered by the Forest Service. The Forest Service is considering transferring these approximately 6,518 acres (Mine Site and Additional Parcel) to PolyMet in exchange for lands of similar value that have been offered for consideration by PolyMet. All lands potentially involved in the land exchange, including submerged lands, would be independently appraised according to the Uniform Appraisal Standards for Federal Land Acquisitions. The appraisals will determine the market value of the properties.

Wildlife and their habitats on the Mine Site were evaluated in 2000, 2004, and 2006 and this information was used to evaluate impacts to wildlife and their habitats for an Environmental Impact Statement (EIS) for the NorthMet Project (ENSR 2000, 2005, 2006). Wildlife and their habitats on the Additional Parcel were evaluated in 2008 and 2009 and this information, along with information collected for the Mine Site, was used by the Forest Service in the preliminary land exchange appraisal, and will be used to evaluated impacts to wildlife and their habitats for an EIS for the proposed land exchange (AECOM 2008, 2009a). The parcels are in a region known to be used by several species that have been identified by state and federal agencies as species of concern, including bald eagle, northern goshawk, Canada lynx, and gray wolf.

PolyMet initially proposed to purchase and transfer 4,957 acres of nonfederal lands associated with the Hay Lake and McFarland Lake parcels to the Government as part of the proposed land exchange (**Figure 1**). Wildlife and their habitats, and wetland functions and values were assessed on these parcels in 2009 (AECOM 2009b).

After submittal of the draft feasibility report and further discussion with the Forest Service, the Forest Service requested that additional land be considered in the land exchange. An additional 2,118 additional acres were assessed, comprised of 1,576 acres associated with the Wolf Land parcels, 382 acres associated with the Lake County parcels, and 160 acres associated with the Hunting Club (also referred to as O'Reilly Hunting Club) Parcel, bringing the total acreage being considered for exchange to 7,075 acres (**Figure 1**). Wildlife and their habitats, and wetland functions and values were assessed on these additional parcels during November 2010.

The objectives of the studies were to:

- Determine general wildlife use of the study area;
- Determine the presence of wildlife species of concern;
- Identify important habitats used by wildlife;
- Determine wetland and upland acreage; and
- Evaluate wetland functions and values.

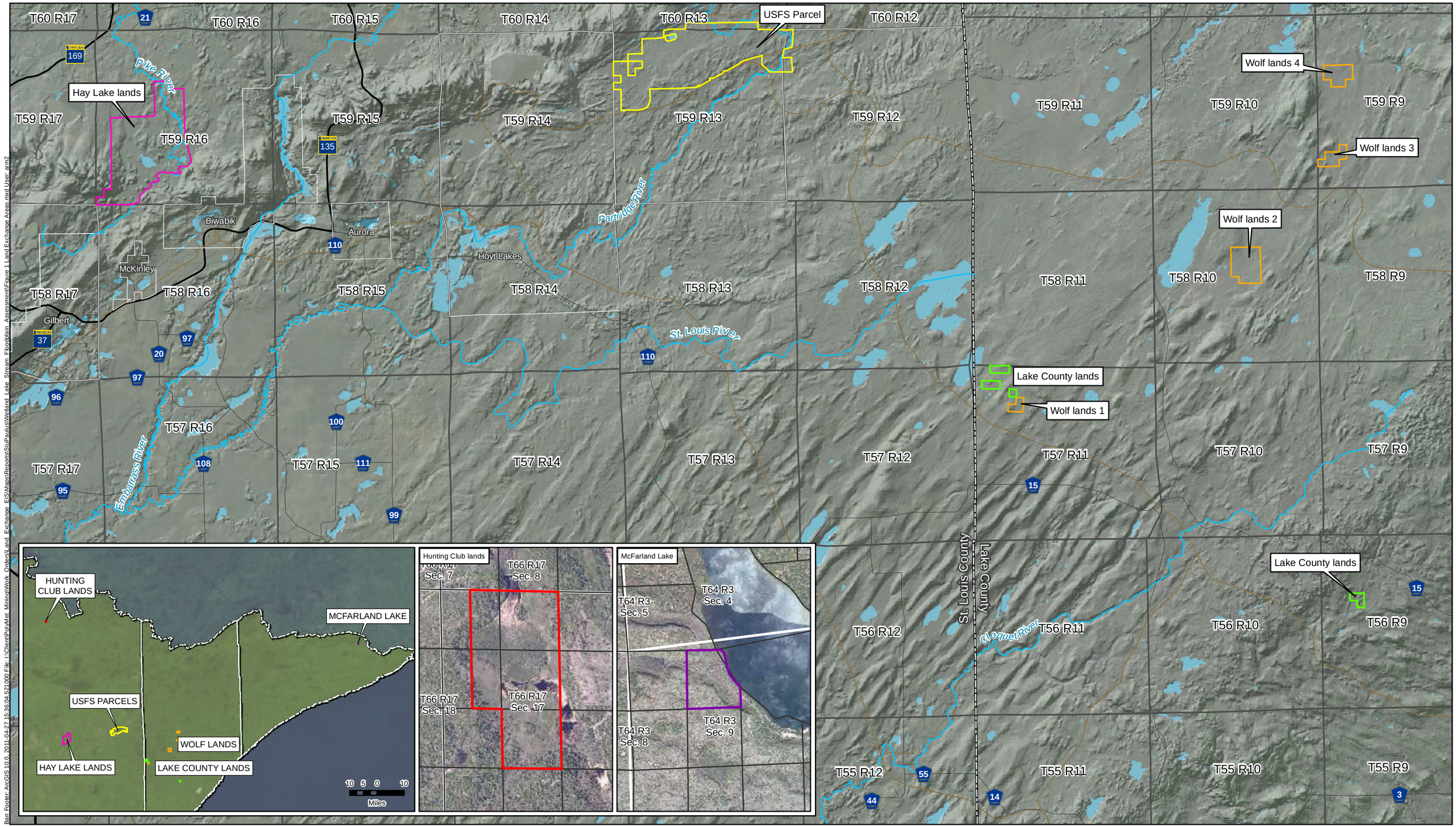
The major components of the assessments included: 1) background research and collaboration with state and federal agencies to identify wildlife species and their habitats of interest; 2) field surveys to observe wildlife and their sign; 3) determination of wetland functions and values; and 4) mapping of upland and wetland habitat using aerial photographic interpretation, wetland inventories, and field observations.

Wildlife species of concern (and federal/state status) that could occur on the parcels include gray wolf (federal threatened and state special concern), Canada lynx (federal threatened), bald eagle (state special concern), mountain lion (state special concern), least weasel (state special concern), northern goshawk (federal species of concern and Superior National Forest Regional Forester Sensitive Species), and boreal owl (federal species of concern and Superior National Forest Regional Forester Sensitive Species).

Information collected during the wildlife and wetland assessments will support land exchange and environmental review and permitting efforts, and help to identify additional data collection requirements.

1.2. Acknowledgements

AECOM appreciates the assistance of Kevin Pylka (PolyMet) in setting up the project and coordinating activities with other PolyMet personnel. David Grosshuesch and Daniel Ryan (Forest Service) provided wildlife and habitat information for the parcels. Lisa Joyal (Minnesota Department of Natural Resources; MnDNR) provided information on rare plant and animal species that could be found in the parcels. Amy Meulebroeck (Barr Engineering, Incorporated) prepared maps and provided Geographic Information System (GIS) analysis.



USFS Parcel
Hay Lake lands
Lake County lands
Wolf lands
McFarland Lake
Hunting Club lands

2.5 1.25 0 2.5
Miles

Figure 1
LAND EXCHANGE PARCELS
PolyMet Mining Inc.
Hoyt Lakes, MN

2.0 STUDY AREA

The Wolf Land parcels total 1,576 acres and are comprised of 126 acres in Section 8, Township 57 North, Range 11 West (Wolf Land 1); 768 acres in Sections 15 and 22, Township 58 North, Range 10 West (Wolf Land 2); 277 acres in Sections 30 and 31, Township 59 North, Range 9 West (Wolf Land 3); and 405 acres in Sections 7, 8, 15, 17, and 18, Township 59 North, Range 9 West (Wolf Land 4) in Lake County, Minnesota (**Figure 1)**. The parcels are nearly level and consist predominantly of second- or third-growth mixed deciduous and coniferous forest uplands and bog, emergent, scrub-shrub, and forested wetlands. Much of Wolf Land 3 has been recently logged.

The Lake County parcels consists of approximately 382 acres, with 265 acres in Sections 5 and 6, Township 57 North, Range 11 West (Lake County North), and 117 acres in Section 17, Township 56 North, Range 9 West (Lake County South) in Lake County, Minnesota. The parcels are nearly level and consist predominantly of second- or third-growth mixed deciduous and coniferous forest uplands and bog, emergent, scrub-shrub, and forested wetlands. Much of the Lake County South Parcel was recently logged.

The Hunting Club Parcel is in northern St. Louis County, and includes approximately 160 acres in Section 17, Township 66 North, Range 17 West. The parcel is nearly level and consists predominantly of second- or third-growth deciduous and mixed deciduous and coniferous forest uplands and emergent, scrub-shrub, and forested wetlands.

3.0 METHODS – WILDLIFE HABITAT ASSESSMENT

The evaluation of wildlife and their habitat use during November 2010 on the Wolf Land, Lake County, and Hunting Club parcels was based on a review of the literature, personal communications with biologists and wetland scientists familiar with wildlife and their habitats in the area (see Appendix B), natural resource database queries, and field studies.

3.1. Literature Review and Personal Communications

AECOM reviewed wildlife assessments conducted between 2000 and 2009 for the NorthMet Mine Project (ENSR 2000, 2005, 2006; AECOM 2008, 2009a, b). In addition, AECOM reviewed Forest Service wildlife and wildlife habitat surveys for other lands near the parcels and spoke with Forest Service biologists.

AECOM obtained a copy of the 2006 Superior National Forest Regional Forester Sensitive Species Conservation Assessments list of species of concern for the Superior National Forest (Appendix C), and reviewed several other documents and sources as well, including the Superior National Forest Land and Resource Management Plans (LRMP; Forest Service 1986, 2004) for Viability Indicator Species and Management Indicator Species and the MnDNR species of concern list on the MnDNR website (http://www.dnr.state.mn.us/ets/index.html).

AECOM conducted telephone and in-person interviews with agency staff (MnDNR regional biologist, U.S. Fish and Wildlife Service regional biologist, Forest Service Superior National Forest biologists, and International Wolf Center wildlife biologist; Appendix B) for this project and for other surveys within the region. These conversations provided information on plant and animal species likely to be found on the parcels and identified species of interest to state and federal agencies. A list of contacts, including telephone numbers and addresses, is provided in Appendix B.

3.2. Database Queries

A database search request was made to the Minnesota Natural Heritage Program in October 2010 and results were received in November 2010 (MnDNR 2010). The results of that search showed that there are no records for rare wildlife species within the Lake County, Hunting Club, and Wolf Land parcels.

AECOM reviewed the *Canada Lynx Sightings in Minnesota 2000-2007 Database* (MnDNR 2007a) for lynx sightings and the *Wolf Telemetry Database* (International Wolf Center 2010) for wolf sightings on or near the parcels.

3.3. Species of Interest

Based on the above discussions, database queries, and document reviews, the following animal species were identified as species of interest for the 2010 survey on the Lake County, Hunting Club, and Wolf Land parcels (wildlife with a * are identified as Management Indicator Species in the 2004 LRMP for the Superior National Forest [Forest Service 2004]):

Federally Listed Threatened and Endangered Species

- Canada lynx (threatened)
- Gray wolf* (threatened)

State-listed Threatened and Endangered Species

- Wood turtle (threatened)
- Trumpeter swan (threatened)
- Horned grebe (threatened)
- Wilson's phalarope (threatened)
- Common tern (threatened)

Federal Species of Concern

- Black tern
- Northern goshawk*
- Boreal owl
- Great gray owl
- Olive-sided flycatcher
- Black-throated blue warbler
- Bay-breasted warbler
- Connecticut warbler

State Species of Concern

- American white pelican
- Marbled godwit
- Yellow rail
- Bald eagle*
- Northern myotis
- Eastern pipistrelle
- Short-eared owl
- Smokey shrew
- Heather vole
- Least weasel
- Mountain lion

Other Species of Concern (identified as Viability and Management Indicator Species in the 1986 Superior National Forest LRMP)

- Northern leopard frog
- Common loon
- Hooded merganser
- Osprey
- Red-tailed hawk
- Ruffed grouse
- Spruce grouse
- American woodcock
- Killdeer
- Belted kingfisher
- Pileated woodpecker
- American three-toed woodpecker
- Black-backed woodpecker
- Brown creeper
- Golden-crowned kinglet

- Swainson's thrush
- Magnolia warbler
- Pine warbler
- Savannah sparrow
- Beaver
- Porcupine
- White-tailed deer
- Moose

3.4. Field Surveys

Field surveys were conducted on the Wolf Land 4 Parcel on November 17 and 18, Wolf Land 3 Parcel on November 18, Lake County South Parcel on November 19, Lake County North and Wolf Land 1 parcels on November 20 and 21, Hunting Club Parcel on November 22, and Wolf Land 2 Parcel on November 23, 2010. Studies were conducted on foot. Survey methods were selected to maximize our ability to characterize use of the parcel by wildlife and to detect the presence of potential species of interest.

3.4.1. General Survey Methodology

Wildlife surveys were conducted along transects located on primary (parcel access roads and logging roads) and secondary (skid trails, stream corridors, wetlands, other natural corridors) access routes to maximize the amount of area covered during the survey period. Additional surveys were conducted off the primary and secondary access routes.

Wildlife, and their sign observed during transect surveys, were recorded and related to species and number of animals making the sign, habitat associated with the sign, and general activity of the animal (where possible). Most observations were of wildlife sightings, and tracks, scat, and foraging sign.

Recognizable animal tracks observed during surveys were noted. Where feasible, all tracks observed during transect surveys were identified, and this information was used to determine habitat use. Tracks of interest included those of grouse, American marten, Canada lynx, gray wolf, white-tailed deer, and moose. The track surveys focused on locating fresh tracks in soft soil, mud, or snow, which were new enough that they were clearly identifiable. Generally, these tracks were less than 24 hours old. The direction of travel, species and number of animals making the tracks, and habitat use was noted. Techniques used for identifying tracks are given in Rezendes (1992), Halfpenny et al. (1995), and Foresman and Pearson (1998). Recognizable animal calls and visual signs, and evidence of habitat use (foraging sign, bedding sites, etc.), were recorded. Special effort was made during surveys to locate and identify those species of concern listed in Section 3.3.

Most wildlife observations were conducted near primary and secondary survey routes, but other sites of interest were also visited. Binoculars were used to locate and identify wildlife and their habitats. The locations of wildlife, their sign, and their habitats used were recorded using Global Positioning System (GPS) and aerial photographs. Time of day and weather conditions were also recorded during surveys.

3.4.2. Habitat Assessment

Aerial photographs were used to create large maps for use in the field. Infrared aerial photographs were reviewed to identify areas of similar vegetative cover (cover types; habitat types) based on the classification system discussed below. Photographs and field maps were then used in the field to verify cover types. Upon completion of field studies, cover types were mapped as habitat polygons, and polygons were digitized using GIS and overlaid onto habitat maps that were created using aerial photographs (see **Maps 1** and **2** in the back pocket of this report). These maps and the associated GIS database were used to determine the approximate acreage of each habitat type.

Wildlife habitat features on the parcels, including plant species composition and structure and special features (snags, downed woody debris, rock outcrops, wetlands, and deer snow-intercept thermal [SIT] cover) were recorded during field surveys. In particular, we noted the species composition, density, and size (diameter at breast height [dbh]) of trees and shrubs near survey areas, and the use of snags and other special habitat features by wildlife. The location of special features was recorded using GPS units. This information was recorded on aerial photographs, and, in conjunction with information on shrubs and herbaceous vegetation collected during surveys, was used to prepare habitat maps of the project parcels (see Maps 1 through 6 in the back pocket of this report).

Wildlife habitats were primarily characterized based on whether the area was wetland or upland (based on guidance provided in Cowardin et al. 1979), plant types (forbs/grassland, shrubland, or forestland), and percent aerial plant coverage. Areas with >30 percent tree cover were coded as forested. Areas with <30 percent tree cover, but >30 percent shrub cover, were coded as shrubland. Areas with <30 percent shrub cover and <30 percent tree cover were coded as open water, emergent or bog (for wetlands), or disturbed or grassland/forb (for uplands). Forest stands were further characterized based on the percent cover of deciduous and coniferous trees within the stand. Stands with >70 percent cover of deciduous or coniferous trees were coded as forest deciduous or forest coniferous, respectively. Stands with a mixture of coniferous and deciduous trees (30 to 70 percent cover of each tree type) were classified as mixed. Observations of moss, grasses, and forbs were limited because the ground was covered by at least 8 inches of snow on all of the parcels during the survey.

In addition, stands were characterized by predominant tree size. Stands with trees <4 inches dbh were classified as sapling. Sapling trees are generally less than 10 years old (**Table 1**; Forest Service 2004). Stands with trees mostly 5 to 11 inches dbh were classified as pole/young mature forest. Pole/young mature stands are usually from 10 to 60 years in age. Stands dominated by trees 12 inches or greater dbh were classified as mature. These stands are generally 60 years or older. This wildlife habitat classification system is similar to that developed by the MnDNR (1993) Natural Heritage Program, in that it separates plant communities into upland and wetland habitat types based on vegetation characteristics, but differs in that it further divides forest communities based on tree size and evaluates grassland/forb and shrub successional stages associated with recently-logged or disturbed forests.

Table 2 summarizes the habitat classification criteria used to identify habitat cover types found on the parcels and provides corresponding habitat types based on the key to natural communities developed by the MnDNR (1993) Natural Heritage Program. The table also provides the corresponding Management Indicator Habitats that were developed for the 2004 Superior National Forest LRMP (Forest Service 2004).

Table 1
Ages of Forest Stand Types (Years)

Forest Type	Young (seedling)	Sapling/Pole	Mature/Old	Old/Old Growth	Old Growth Multi-ages
Jack Pine	0-9	10-39	40-59	60-79	80+
Red Pine	0-9	10-49	50-119	120-149	150+
Eastern White Pine	0-9	10-49	50-119	120-149	150+
Lowland Spruce/Tamarack	0-19	20-59	60-119	120-149	150+
Spruce/Fir	0-9	10-49	50-89	90-149	150+
Aspen-Birch/Aspen-Birch-Conifer	0-9	10-49	50-79	80+	80+
Source: Forest Service (2004).					

As noted above, information was gathered during field surveys to determine habitat quality and presence/absence of special habitat features used by wildlife. The MnDNR Natural Heritage Program has developed *Element Occurrence Ranking Guidelines* based on several natural community habitat features (MnDNR 1994). These guidelines primarily consider the presence or absence of human-induced disturbances such as logging and development, but also consider the presence or absence of special habitat features, such as a multi-layered forest structure and presence of large downed woody debris. **Table 2** includes Element Occurrence Rankings for habitat types recorded during this study.

3.4.3. Habitat Assessment

Observations of wildlife, their sign, and habitats were recorded on tape recorder and field maps. Photographic records were taken as necessary to record wildlife, their sign, and habitats

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Table 2
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland					
P-0	Open water	14	Lake bed	Not applicable	There was limited open water on the parcels, and it was usually associated with areas dammed by beavers. >70 percent of area dominated by open water with no standing vegetation. Pondweeds, coontail, and bullhead water-lily would typically occur in these areas, but would typically comprise <30 percent of surface of the water body, but up to 70% of the subsurface of the water body. Open water habitat could be used by amphibians, common loon, several species of waterfowl, kingfisher, beaver, mink, and river otter.
P-1	Bog/palustrine emergent	14	Black spruce bog; open sphagnum bog; mixed emergent marsh	AB, B, C	Bog wetlands were rare on the parcels. There were scattered (<5 percent) black spruce and smallish tamarack in bog wetlands. Bog Labrador-tea, bog birch, lowbush blueberry, small-fruited bog cranberry, speckled alder, and small willows covered up to 50 percent of the area. Other species could include cottongrass, bunchberry, and bog rosemary. Emergent wetlands were dominated by sedges, narrow-leaved cattail, and woolly sedge; spikerush, wild iris, and horsetail could also be found in these wetlands (up to 95 percent cover). Willows, tamarack, and speckled alder were often found along the border of these wetlands. Bog/emergent wetlands would provide habitat for several species of amphibians, garter snake, birds including great-blue heron, kingfisher, and sparrows, and mink and moose.
P-2	Palustrine scrub shrub	14	Alder swamp; willow swamp	B, C	Scrub-shrub wetlands were common on the parcels. Wetlands were dominated by speckled alder, pussywillow, red-osier dogwood, and other shrubs. Scrub-shrub wetlands usually consisted of a dense (50 to 90 percent) cover of speckled alder, with alder often 4 feet or taller in height. These wetlands may also have scattered sapling balsam fir, black spruce, willow, and the occasional black ash (up to 10 percent cover). Dominant low shrubs were bog Labrador-tea, leatherleaf, lowbush blueberry, prickly rose, wild raspberry, and red-osier dogwood. Herbaceous layer species included club and sphagnum mosses, woolly sedge, Canada bluejoint, narrow-leaved cattail, horsetail, and bunchberry. Provided forage for snowshoe hare, deer, and moose as well has habitat for numerous bird species.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland (Cont.)					
P-3	Palustrine forest dead trees	Not applicable	Black spruce bog; black spruce swamp	C	Portions of flooded wetlands/bogs with a large number of dead black spruce (wetlands flooded by beavers or man-made structures). Some dead trees are used by cavity-nesting birds as nesting and foraging sites. Tree cover ranges from 10 to 40 percent. This habitat was not mapped on the parcels although several flooded areas had some standing, dead trees.
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	14	Mixed hardwood swamp	C	Wetlands dominated by sapling deciduous trees. Comprised of sapling paper birch, trembling aspen, and mountain maple. Specked alder dominates the dense shrub layer, while twining honeysuckle, interrupted fern, sedges, and mosses are often close to the ground. This habitat was not mapped on the parcels.
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	14	Mixed hardwood swamp	B	Wetlands dominated by pole and young mature-size deciduous trees. Comprised of paper birch, trembling aspen, and mountain maple, with occasional scattered black spruce and balsam fir. Specked alder dominates the shrub layer, but is generally not dense when found in sapling stands. Understory includes bog Labrador-tea, leatherleaf, sphagnum moss, and club moss. Provides habitat for numerous species of birds, small mammals, deer, and moose. This habitat was not mapped on the parcels.
P-6	Palustrine forest deciduous mature (12+ in dbh)	14	Mixed hardwood swamp	AB	Wetlands dominated by mature deciduous trees. Comprised of paper birch, trembling aspen, and black ash, with occasional scattered black spruce and balsam fir. Specked alder, mountain maple, black spruce, and balsam fir are found in the shrub layer. Understory includes bog Labrador-tea, leatherleaf, sphagnum moss, and club moss. Tree coverage averages about 40 percent, shrubs coverage is usually about 70 percent, and ground vegetation coverage is about 80 percent. Provides habitat for numerous species of birds, small mammals, deer, and moose. This habitat was not mapped on the parcels.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland (Cont.)					
P-7	Palustrine forest mixed sapling (0-4 in dbh)	14	Mixed hardwood swamp; black spruce swamp	C	Wetlands dominated by a mixed stand of sapling deciduous and conifer trees. In addition to species listed for palustrine deciduous forest, also includes sapling black spruce and tamarack and a dense shrub cover dominated by speckled alder. Provides important forage for moose and deer, yet limited cover, especially during winter. This habitat was not mapped on the parcels.
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	14	Mixed hardwood swamp; black spruce swamp	B	Wetlands dominated by mixed stand of pole- and young mature-size deciduous and coniferous trees, including black spruce, tamarack, trembling aspen, and paper birch (to 30 percent cover). Bog Labrador-tea, leatherleaf, and speckled alder were prevalent (to 80 percent cover), as was spruce regeneration. The herbaceous layer varied in vegetative cover. In some areas with dense stands of spruce, few shrubs were seen, but sphagnum and club mosses could cover nearly 100 percent of the ground. Common species often include clintonia, Starry false Solomon's seal, horsetail, and creeping snowberry. Some areas would also have cottongrass. Important wildlife species included ruffed grouse, numerous species of songbirds, pileated woodpecker, snowshoe hare, and red squirrel.
P-9	Palustrine forest mixed mature (12+ in dbh)	14	Mixed hardwood swamp; black spruce swamp	AB	Wetlands dominated by a mixed stand of mature deciduous and conifer trees with well-developed midstory of pole-size trees. Wetlands forests dominated black spruce, with scattered other conifer species (e.g., tamarack) or deciduous trees. Bog Labrador-tea and lowbush blueberry are prevalent, as is spruce regeneration. Red squirrel and woodpeckers are common in these forests. This habitat was uncommon on the parcels.
P-10	Palustrine forest conifer sapling (0-4 in dbh)	9, 14	Black spruce swamp	C	This wetland type was found in recently logged areas. Wetlands dominated by sapling conifer trees, primarily black spruce and tamarack to 60 percent cover. Shrubs include leatherleaf and bog Labrador-tea to 70 percent cover, while cottongrass, forbs, grasses, and mosses would be found in the understory and cover up to 95 percent of the ground. Sapling spruce forest was uncommon on the parcels and provided limited wildlife habitat due to the small trees, lack of downed woody material and snags, and wet soil conditions.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Wetland (Cont.)					
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	9, 14	Black spruce swamp	B	This is the most common wetland habitat on the parcels. Wetlands dominated by pole- and young mature-size conifer trees, primarily black spruce, northern white cedar, and tamarack. Tree cover ranged from 30 to 60 percent. Bog Labrador-tea, leatherleaf, willow, speckled alder, mountain maple, prickly rose, and lowbush blueberry were prevalent, as was spruce regeneration, and coverage ranged from 50 to 80 percent. Some tamarack could also be present. The herbaceous layer varied in vegetative cover from 50 to 90 percent. In some areas with dense stands of pole-sized spruce, few shrubs were seen, but sphagnum and club mosses could cover up to 90 percent of the ground. Common low-growing species could include Canada bluejoint, sedges, bunchberry, prickly rose, horsetail, star flower, and creeping snowberry. Stands had good cover for wildlife.
P-12	Palustrine forest conifer mature (12+ in dbh)	9, 14	Black spruce swamp	AB	This habitat was rare on the parcels. Wetlands dominated by mature conifer trees, primarily black spruce, tamarack, and northern white cedar. Bog Labrador-tea is prevalent, as is spruce regeneration. Speckled alder may be present. Mature forests often contain numerous snags and downed woody debris. Pileated woodpecker, black-capped chickadee, and red squirrel are common.
Upland					
U-1	Disturbed	Not applicable	Not applicable	Not applicable	This habitat was not found on the parcels. Recently-disturbed sites or cleared for roads, landings, etc. These areas have little or no vegetation. Vegetation often consists of scattered forbs and grasses, including white clover, cow parsnip, ox-eye daisy, and thistles. Deer, moose, gray wolf, and red fox sign were seen on roads adjacent to the parcels.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-2	Grassland/ Forbs	Not applicable	Not applicable	Not applicable	Recently-disturbed sites that had revegetated and were dominated by grasses and forbs; <30 percent cover of trees and shrubs. Occur in areas recently logged, or rights-of-ways. Scattered shrubs and sapling trees, including trembling aspen, willow, beaked hazel, and bog Labrador-tea, comprised up to 20 percent cover. Canada bluejoint, daisy fleabane, wild raspberry, wild strawberry, thistles, ox-eye daisy, cow parsnip, white clover, thistles, and asters could cover up to 80 percent of the area. American robin, white-tailed deer, gray wolf, and red fox or their sign are often seen in these areas.
U-3	Shrubland	Not applicable	Not applicable	Not applicable	Area dominated by shrubs; >30 percent cover of shrubs and <30 percent cover of trees. Occurs in areas where natural succession of logged/disturbed sites leads to replacement of grassland/forb habitats with habitats dominated by shrubs. Scattered pole and sapling trees (trembling aspen, paper birch, jack pine, and black spruce) are occasionally found in these areas, but shrubs, including beaked hazel, lowbush blueberry, thimbleberry, and wild raspberry could cover up to 80 percent or more of the landscape. Provides forage for white-tailed deer and moose, and nesting and foraging habitats for a variety of birds, including American robin, white-throated and chipping sparrows, and hummingbirds. This habitat was not found on the parcel.
U-4	Forest deciduous sapling (0-4 in dbh)	2	Aspen forest; aspen-birch forest	C	Forests dominated by sapling deciduous trees, primarily trembling aspen, with lesser amounts of paper birch, willow, and spruce from 60 to 80 percent cover. Mountain maple, beaked hazel, willow, lowbush blueberry, bog Labrador-tea, twining honeysuckle, and prickly rose are important shrubs. The ground cover often includes clintonia, bunchberry, large-leaved aster, bracken fern, twinflower, wild strawberry, wild raspberry, bunchberry, woodland anemone, and horsetail. Provides foraging habitat for birds and deer and moose. Shrub cover ranged from 40 to 80 percent while ground cover ranged from 60 to 90 percent.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-5	Forest deciduous pole/young mature (5-12 in dbh)	2	Aspen forest; aspen-birch forest	BC	Forests dominated by pole and young mature-size deciduous trees. Deciduous forests usually dominated by trembling aspen and paper birch. Percent tree cover in pole forests ranged from 60 to 90 percent. Forests usually have a moderately dense (50 to 80 percent cover) midstory of sapling balsam fir and paper birch, beaked hazel, lowbush blueberry, wild raspberry, twining honeysuckle, and prickly rose. The ground cover ranged from 60 to 90 percent and could include clintonia, bunchberry, large-leaved aster, bracken fern, wild strawberry, and club moss. Provided foraging and nesting habitat for a variety of birds and small mammals, roosting habitat for American crow, and shade cover during summer for larger mammals.
U-6	Forest deciduous mature (12+ in dbh)	2	Aspen forest; aspen-birch forest	B	Forest dominated by mature deciduous trees, with well-developed midstory of pole- and young mature-size trees. Usually dominated by trembling aspen to 16 inches dbh, although some forests contained an important paper birch component. Well-developed midstory of sapling to pole-size balsam fir and paper birch and beaked hazel; lowbush blueberry, mountain maple, twining honeysuckle, and prickly rose also found in these habitats. The ground cover could include wild sarsaparilla, bunchberry, large-leaved aster, bracken fern, wild strawberry, clintonia, and horsetail. Trees and stumps used by cavity nesting birds and small mammals, and downed woody material provided habitat. Vegetation cover in the canopy, midstory, and near the ground ranged from 50 to 60 percent.
U-7	Forest mixed sapling (0-4 in dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	C	Forests dominated by a mixed stand of sapling conifer and deciduous trees. Mixed forests contain varying amounts of jack pine, spruce, trembling aspen, paper birch, and balsam fir saplings. Wild sarsaparilla, clintonia, twining honeysuckle, rose twisted stalk, large-leaved aster, and ferns are common herbs. Provides good foraging habitat, but limited cover for wildlife. This habitat type was not mapped on the parcels.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-8	Forest mixed pole/young mature (5-12 in dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	BC	Forests dominated by a mixed stand of pole and young mature-size conifer and deciduous trees. Mixed forests contained varying amounts of jack pine, black spruce, trembling aspen, and paper birch. Beaked hazel was common in the midstory. Common herbs could include wild sarsaparilla, clintonia, twining honeysuckle, bunchberry, rose twisted stalk, and large-leaved aster. Numerous birds would use trees. Forests had scattered woody debris and few snags. Vegetation cover in the canopy, midstory, and near the ground ranged from 50 to 60 percent.
U-9	Forest mixed mature (12+ dbh)	4	Mixed pine-hardwood forest; boreal hardwood-conifer forest	B	Forests dominated by a mixed stand of mature coniferous and deciduous trees, with well-developed midstory of pole and young mature-size trees. Mixed forests contained varying amounts of black spruce, trembling aspen, and paper birch. Pole and young mature-size deciduous and coniferous trees were found in the midstory, including black spruce and balsam fir. Shrubs included beaked hazel and lowbush blueberry. Mature forests usually had a moderate shrub layer. Large deciduous trees could be used by hawks for nests. Dead trees and stumps, especially those of conifers, used by cavity nesting birds and small mammals, and down woody material provided habitat for small mammals, snakes, and amphibians. Canopy and midstory cover ranged from 40 to 70 percent, while ground cover ranged from 30 to 90 percent. This was the most common upland habitat on the parcels.
U-10	Forest conifer sapling (0-4 in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	C	Forests dominated by sapling conifer trees, primarily jack pine and balsam fir, and occasionally black spruce. The shrub layer is usually dense and includes beaked hazel. The herb layer includes ferns, shining clubmoss, bunchberry, and starry false Solomon's seal. Provides limited foraging habitat and cover for wildlife. This habitat was not mapped on the parcels.

Table 2 (Cont.)
Habitat Classification

Code	Habitat Type	Forest Service Management Indicator Habitat Number	Minnesota Natural Heritage Program Natural Community Key[1]	Minnesota Natural Heritage Program Element Occurrence Ranking[2]	Habitat Characteristics
Upland (Cont.)					
U-11	Forest conifer pole/young mature (5-12 in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	BC	Forests dominated by pole- and young mature-size conifer trees, primarily red and white pines, with scattered balsam fir and black spruce. Tree cover ranged from 60 to 70 percent The shrub layer was sparse (to 30 percent), but well-developed in pole forests with openings in the canopy. The herb layer could include bunchberry, wood ferns, twining honeysuckle, wild raspberry, white clover, tall buttercup, and Starry false Solomon's seal and coverage would range from 60 to 80 percent. Pole conifer forests provided forage for conifer-dependent species (red squirrel, spruce grouse) and hiding cover, but poor snow-intercept thermal cover for deer and moose. These forests had few snags or downed woody material.
U-12	Forest mature conifer (12+ in dbh)	5, 8	Jack pine forest; black spruce-feathermoss forest	B	Forests dominated by mature conifer trees, primarily red and white pines, with balsam fir and scattered black spruce. Stands usually consist of trees of nearly uniform age. The shrub layer is usually dense and includes beaked hazel, willow, paper birch, trembling aspen, and balsam fir. The herb layer often includes interrupted fern, shining clubmoss, bunchberry, wood ferns, and Starry false Solomon's seal. These forests provide good foraging habitat for conifer-dependent species, and good snow-intercept thermal cover for deer and moose. Snags and downed woody material are common and provide habitat for amphibians, owls, woodpeckers, and squirrels.

4.0 METHODS - WETLAND ASSESSMENT AND FUNCTIONS AND VALUES ANALYSIS

The evaluation of wetlands and their functions and values on the Lake County, Hunting Club, and Wolf Land parcels was based on a review of studies conducted in the region and field studies.

4.1. Previous Surveys

AECOM reviewed the Wetland Delineation and Wetland Functional Assessment Report (Barr 2006) and Supplemental Information to the Wetland Delineation Report (Barr 2007a) for the Mine Site, and Wetlands in the USFS Land Exchange Area Memo (Barr 2007b) for the Additional Parcel. These reports provided information on wetland habitats likely to be found in the region. The *2009 Hays Lake Parcel and McFarland Parcel Summer Wildlife and Wetland Assessment* provided information on wetland habitats found on these parcels (AECOM 2010).

The initial assessment of the Lake County, Hunting Club, and Wolf Land parcels was based on a review of U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping and aerial photographic interpretation using color infrared photographs. The NWI maps were generated by the U.S. Fish and Wildlife Service from interpretations of black-and-white aerial photographs taken in 1977. The NWI maps generally do not accurately represent wetland resources in the forested areas of northeastern Minnesota, so aerial photographic interpretation and field studies were also conducted to identify wetlands on the parcels.

4.2. Field Surveys

Wetlands on the parcels were identified, characterized, and mapped concurrently with the wildlife habitat assessment. Initially, potential wetland locations were determined by reviewing color infrared aerial photographs, U.S. Geological Survey topographic maps, and NWI maps. Aerial photographs were used to create large maps for use in the field. Infrared aerial photographs were reviewed to identify areas of similar vegetative cover based on the classification system shown in **Table 3**. Aerial photographs and field maps were then used in the field to verify cover types. Upon completion of field studies, cover types were mapped as habitat polygons, and polygons were digitized using GIS and overlaid onto habitat maps that were created using aerial photographs (see Maps 1 through 6 in the back pocket of this report). These maps and the associated GIS database were used to determine the approximate acreage of each wetland and upland habitat types.

Wetland surveys were conducted along transects located on primary (parcel access roads and logging roads) and secondary (skid trails, stream corridors, wetlands, other natural corridors) access routes to maximize the amount of area covered during the survey period. Additional surveys were conducted off of the primary and secondary access routes in an effort to better determine wetland boundaries and types.

4.3. Wetland Delineation and Classification Methods

We did not attempt to delineate the boundary of wetlands in the field using federal and state wetland delineation protocols (e.g., *1987 Corps of Engineers Wetland Delineation Manual* routine wetland delineation procedures; U.S. Army Corps of Engineers 1987). Instead, the boundaries of wetlands were determined based on aerial photograph interpretation and NWI mapping, with some refining of wetland boundaries during field studies. Wetland boundaries were determined in the field based on hydrologic and vegetation characteristics and were more accurate where survey routes crossed or were near wetland boundaries. Wetland boundaries shown on Maps 1 through 6 and acreages given in this report are approximate. However, we did make special effort to have survey routes intercept many of the wetlands on the parcels to better determine their boundaries, characteristics, and functions and values. Surveys covered nearly all portions of the parcels, although not all wetlands were surveyed.

Wetlands were classified using the classification system given in **Table 2**. However, this classification system can be adapted to classify wetlands based on other classification systems, including the Circular 39 Classification System (Shaw and Fredine 1956), the Cowardin System (Cowardin et al. 1979), and the Eggers and Reed (1997) wetland classification systems, as shown in **Table 3**.

Table 3
Comparison of Wetland Classification Systems

Wildlife Habitat[1]	Cowardin et al.[2]	Eggers and Reed[3]	Circular 39[4]	Definition[4]
P-4, P-5, P-6, P-7, P-8, and P-9	PFO1A (Palustrine Forested Broad-Leaved Deciduous Temporarily Flooded)	Floodplain forest; Seasonally flooded basin	Type 1 - Seasonally Flooded Basin or Flat	Soils are usually somewhat well-drained/poorly drained for much of the growing season. These shallow depressions typically have standing water for a few weeks, but dry up for the remainder of the year. Vegetation varies greatly according to season and duration of flooding from bottomland hardwoods (floodplain forests) to herbaceous plants.
P-1	PEMB (Palustrine Emergent Saturated)	Wet to Wet-mesic prairie; Fresh (wet) meadow; Sedge meadow; Calcareous Fen	Type 2 - Inland Fresh Meadow	Soil is usually saturated during most of the growing season. Soil may contain peat or muck. Vegetation includes grasses, sedges, rushes, forbs, and asters. Calcareous fens are the rarest wetland plant communities and can have a disproportionate number of rare, threatened, and endangered plant species compared to other plant communities.
P-1	PEMC (Palustrine Emergent Seasonally Flooded)	Shallow marsh	Type 3 - Inland Shallow Fresh Marsh	Soil is usually covered with less than 6 inches of water and may consist of enough to saturate the soil throughout the growing season. Vegetation consists of emergent plants, such as, narrow-leaved cattail, bulrush, and sedge. Emergent aquatic plants can become established when water levels are low.
P-0, P-1, and P-3	PUBF (Palustrine Unconsolidated Bottom Semi Permanently Flooded)	Deep marsh	Type 4 - Inland Deep Fresh Marsh	Soil is usually covered with 6 inches to 3 feet or more of water during growing season and can fluctuate throughout the year. This type is characterized by emergent, floating, and submergent vegetation including narrow-leaved cattail, bulrush, pondweed, water-lily, and wild rice.
P-0 and P-3	PEM1H/L1UBH (Palustrine Emergent Persistent Permanently Flooded/Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded)	Shallow open water	Type 5 - Inland Open Fresh Water	Water depths are less than 6.6 feet and very rarely fluctuate; therefore, emergent aquatic vegetation cannot become established. This type is characterized by submergent, floating and floating leaved aquatic plants including pondweed, water-lily, watermilfoil, coontail, and duckweed. Size can vary from one-quarter acre pond to a long oxbow of a river or a shallow bay of a lake.

Table 3 (Cont.)
Comparison of Wetland Classification Systems

Wildlife Habitat[1]	Cowardin et al.[2]	Eggers and Reed[3]	Circular 39[4]	Definition[4]
P-2	PSS1, PSS1A/C (Palustrine Scrub-Shrub Broad-Leaved Deciduous, Temporarily Flooded / Seasonally Flooded)	Shrub-Carr Alder thicket	Type 6 - Shrub Swamp	Soil is usually saturated to seasonally flooded conditions during the growing season. Woody vegetation is typically less than 20 feet in height with a dbh of less than 6 inches. Willows and red-osier dogwood generally dominate the shrub layer with a ground layer of ferns, sedges, grasses and forbs. Speckled alder may occur as a monotype.
P-4, P-5, P-6, P-7, P-8, P-9, P-10, P-11, and P-12	PFO1A/B/C, PFO1C (Palustrine Forested Broad-Leaved Deciduous, Temporarily Flooded/Saturated / Seasonally Flooded)	Hardwood swamp Coniferous swamp	Type 7 - Wooded Swamp	Soil is saturated or inundated by as much as a foot of water during the growing season. Soils are usually organic. Forest vegetation includes tamarack and northern white cedar. Sphagnum moss is not usually present. Deciduous trees include black ash and red maple. The ground layer may also include ferns, sedges, grasses and forbs. Tamarack and northern white cedar can be present where calcareous peat soils are found.
P-1, P-10, P-11, and P-12	PFO7B (Palustrine Forested Evergreen Saturated)	Open bog Coniferous bog	Type 8 - Bogs	Soils consist of acid peats that are low in nutrients. Open bog vegetation is typically herbs with low shrubs with scattered immature or stunted black spruce or tamarack. Coniferous bogs consist of sedges, orchids, and purple pitcher plants.

[1] From: Table 2 in this report.
[2] From: Cowardin et al. (1979).
[3] From: Eggers and Reed (1997).
[4] From: Shaw and Fredine (1956).

4.4. Wetland Functional Assessment Methods

During the field surveys, data were collected related to the functions and values of representative wetlands within the parcels. Wetland functions and values were rated using the guidelines in the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.2* (MnRAM 3.2; Minnesota Board of Water and Soil Resources 2008).

Sixty-three questions given in MnRAM 3.2 were addressed, and all factors were evaluated for each wetland surveyed. The primary wetland functions rated by MnRAM 3.2 are:

- Special Features (unique vegetation, fish and wildlife, cultural, and other factors that would result in a functional rating of "exceptional")
- Vegetative Diversity/Integrity
- Hydrology
- Flood Attenuation
- Effect on Water Quality Downstream
- Water Quality in the Wetland
- Shoreline Protection
- Wildlife Habitat Characteristics
- Fish Habitat Characteristics
- Amphibian Habitat Characteristics
- Aesthetics/Recreation/Education/Cultural

The primary wetland functions were evaluated based on a review of the 1) wetland soil, hydrology, and vegetation; 2) outlet characteristics; 3) watershed and adjacent upland land uses and conditions; 4) erosion and sedimentation; and 5) human disturbances. The Eggers and Reed (1997) classification system was used to classify wetland communities for the wetland function and value evaluation. Landscape factors were typically evaluated on a larger scale. For instance, soil and vegetation conditions within the watershed were usually similar for large groups of wetlands. The human disturbance levels were also typically similar across broad areas. Based on the responses to questions posed by MnRAM 3.2 and the assessment of special features, a function value of high, medium, or low was given for each primary function.

5.0 SURVEY RESULTS – WILDLIFE ASSESSMENT

5.1. Introduction

Field surveys were conducted on the Wolf Land 4 Parcel on November 17 and 18, Wolf Land 3 Parcel on November 18, Lake County South Parcel on November 19, Lake County North and Wolf Land 1 parcels on November 20 and 21, Hunting Club Parcel on November 22, and Wolf Land 2 Parcel on November 23, 2010. Temperatures ranged from near 0 degree Fahrenheit (°F) in the morning to the upper 20s °F during the afternoon. Light to moderate snow fell during portions of the day and night from November 18 through 23. The survey was conducted on foot, although Forest Service and other roads were used to access the parcels. Generally, a circular route was taken on foot each day, with the intent of surveying a variety of habitats each day.

5.2. Wildlife Species Survey

We observed or found evidence of 12 bird species, and at least 10 mammal species on the parcels. We did not observe amphibians or reptiles. Several factors accounted for the limited number of species observed, including the time of year and weather conditions during the surveys. Fewer wildlife species are seen in northern Minnesota during late fall and winter than during other seasons, since migratory birds have moved south and reptiles and amphibians and several species of mammals hibernate during winter. One or more inches of snow fell daily during much of the study, and this was also a factor. Birds often roost in trees or shrubs during snowfall, so they were not active and visible during portions of the assessment. Since mammals are typically most active in the evening and at night, mammal tracks are an important source of information during winter. The fresh snow obscured tracks however, and only fresh (within the past 6 to 12 hours) wildlife tracks were seen during the surveys. In addition, most of the survey area consisted of wetland habitat, primarily forested wetland habitat; wetland habitat typically attracts fewer wildlife species during winter than upland habitat.

Amphibians and reptiles were hibernating and were not seen during the survey. American toad, gray treefrog, green frog, spring peeper, western chorus frog, wood frog, garter snake, painted turtle, and snapping turtle are common amphibians and reptiles in the region that would likely occur within the parcels.

Bird species encountered varied according to habitat. Dark-eyed junco and chipping sparrow were seen in shrub habitats and along forest edges. Ruffed grouse and blue and gray jays were seen in forests. Cavity-nesting species seen or heard in forests included downy, hairy, and pileated woodpeckers, black-capped chickadee, and red-breasted nuthatch. Woodpecker cavities and foraging signs were common on larger snags (>6 in dbh) and on stumps A small, unidentified hawk and common raven were seen flying overhead.

Other bird species likely to use habitats within the parcels include: ring-necked duck, hooded merganser, great blue heron, American woodcock, eastern phoebe, red-winged blackbird, and song sparrow in or near wetlands; northern flicker, eastern kingbird, American robin, cedar waxwing, American goldfinch, and white-throated sparrow in shrub habitats; and yellow-bellied sapsucker, barred owl, great-horned owl, spruce grouse, ruby-throated hummingbird, yellow-bellied flycatcher, American crow, winter wren, hermit thrush, Swainson's thrush, ruby-crowned kinglet, pine grosbeak, Philadelphia vireo, red-eyed vireo, Canada warbler, chestnut-sided warbler, golden-winged warbler, yellow warbler, yellow-rumped warbler, and common yellowthroat in forests. Broad-winged hawk, red–tailed hawk, turkey vulture, and common nighthawk would use a variety of habitats.

Mammals seen or identified based on their sign included several rodents, snowshoe hare, gray wolf, red fox, American marten, mink, red squirrel, beaver, white-tailed deer, and moose. Snowshoe hare and their sign were typically seen in shrub areas near roads and wetlands, especially in areas that also had a balsam fir component. Gray wolf and red fox tracks were seen along roads in or adjacent to the parcels. American marten and red squirrel sign was common in spruce forests. Beaver dams and cuttings were found on or near all the parcels and beaver dams created several ponds on the parcels. Mink tracks were seen on the frozen portions of lakes at the Lake

County South parcel. White-tailed deer or their sign were common on all of the parcels, while moose sign was observed at Wolf Land 3 and 4 and Lake County South parcels.

5.3. Species of Concern

Several species of concern were or may be found on the Lake County, Hunting Club, and Wolf Land parcels, although most species listed below are rare visitors to the area or migrate through the area during spring or fall. No records of wildlife species of concern on or within 1 mile of the parcels were reported by the Minnesota Natural Heritage Program or by Forest Service biologist.

5.4. Species of Concern

5.4.1. Federally Listed Threatened and Endangered Species

Canada lynx (threatened). No lynx or their sign were observed during 2010 surveys. Of 437 lynx recorded by the MnDNR between 2000 and 2006, 115 lynx were reported in St. Louis County, and 109 lynx in Lake County (MnDNR 2007), including verified, probable, and unverified sightings. The vast majority of sightings are incidental encounters, and as such, tend to be clustered along roads and other places frequented by observant and interested people. Thus, while these reports tell us something (however incomplete) about where lynx are, they provide no information about where lynx do not occur. Similarly, we cannot know the relationship between the number of reports and the number of lynx in Minnesota at the time of the reports. A review of the Minnesota Lynx Database (MnDNR 2007a) revealed that there are no records of lynx sightings within 5 miles of the parcels

The Canada lynx originally ranged throughout the boreal forest of North America and the mixed coniferous-deciduous forests of the northeastern and Great Lakes states (Hazard 1982). Snowshoe hare and red squirrels are the primary prey item of lynx in northern Minnesota, but they also eat carrion, grouse, and small mammals (Aubry et al. 2000). Snowshoe hare and red squirrel were seen on the parcels, although evidence of their occurrence was generally less than has been seen on other parcels surveyed for the NorthMet Mine Project and other projects in the region. Canada lynx numbers declined sharply in the U.S. and Canada in the mid-1900s due to overtrapping and ecological changes caused by settlement, logging, and agriculture (DeVos and Matel 1952, Todd 1985). Individuals move great distances when prey is scarce, and lynx were seen in many areas of Minnesota during 1962-1963 and 1972-1973, presumably years when snowshoe hares were scarce in Canada (Phillips 1999). Canada lynx numbers in Minnesota appeared to be near a cyclic low in 2009 (AECOM 2009c), but have recently begun rebounding.

On February 25, 2009, the U.S. Fish and Wildlife Service designated approximately 8,226 square miles (mi^2) in portions of Cook, Koochiching, Lake, and St. Louis counties in Minnesota as lynx critical habitat (Federal Register 2009). The parcels are located within the area designated as critical habitat.

Gray wolf (threatened; Superior National Forest Management Indicator Species). Gray wolf tracks were seen in the Wolf Land 3 and 4, and Lake County North parcels during the survey. A review of the International Wolf Center (2009) Minnesota Wolf Telemetry Database revealed that radio-collared wolves have been recorded in the vicinity of the Wolf Land 2 and 3 parcels.

Territory size for wolves in northern Minnesota ranges from 20 to 150 mi^2 and wolf packs tend to avoid areas used by other wolf packs. An estimated 2,900 wolves resided in Minnesota in 2008, similar to numbers recorded in 2004 (MnDNR 2008). The average size of a wolf pack in Minnesota is 5.3 individuals, and average territory size is 40 mi^2 (Erb and Benson 2004).

The number of wolves in Minnesota has increased nearly five-fold since the early 1970s (Berg and Benson 1999, Erb and Benson 2004, MnDNR 2008b). Wolves typically prey on ungulates (hoofed animals), such as white-tailed deer and moose in northeastern Minnesota (MnDNR 1999). Until recently, wolves have been primarily confined to

areas with little human disturbance. During the past 20 years, they have been observed using areas with higher levels of human activity (Mech 1995; Thiel et al. 1998). Wolves also appear to avoid areas with a high density of roads, especially those accessible to two-wheeled (versus four-wheeled and ATV) vehicles, although more wolves have moved into areas with higher road densities in recent years (Mech 1998, MnDNR 1999).

In 1978, critical habitat was designated for the Eastern Distinct Population Segment of gray wolf (Federal Register 1978). That rule identified critical habitat at Isle Royale National Park, Michigan, and Minnesota wolf management zones 1, 2, and 3. Wolf management zones 1, 2, and 3 comprise approximately 9,800 miles^2 in northeastern and north central Minnesota and include all of the Superior National Forest and portions of the Chippewa National Forest. The Hunting Club Parcel is in Zone 1, while the other parcels are in Zone 2.

5.4.2. State-listed Threatened and Endangered Species

No State-listed threatened or endangered species were found on the parcels. Wood turtles, if present, would have been hibernating. The birds are migratory and would have moved south by the time of the survey.

Wood turtle. No wood turtles were found in the parcels. The wood turtle is on the western edge of its range in Minnesota. It occurs north into Ontario, east to Nova Scotia and south from northern Iowa to northern Virginia. There are no Minnesota Natural Heritage Program records of wood turtles near any of the parcels (MnDNR 2010). Because of its dependence on forested riverine systems and well-drained soils, the wood turtle was probably never uniformly distributed in the Upper Great Lakes Region, but was locally abundant in areas with optimal habitat. In Minnesota, factors contributing to its decline include the loss or fragmentation of riverine forests related to agriculture, timber harvest, road construction, and development; siltation of streams caused by excessive runoff; and flooding of nesting areas.

Trumpeter swan. No trumpeter swans were seen during the assessment. The trumpeter swan is primarily found on lakes and ponds in the Rocky Mountains during the breeding season and on the West Coast during winter. The trumpeter swan is a casual visitor to the Superior National Forest, but has been seen on the Hay Lake Parcel (Green 2003, AECOM 2009b, Ryan 2009).

Horned grebe. No horned grebes were seen in the parcels during the surveys. The horned grebe nests on freshwater ponds and lakes throughout central and western Canada and into the Dakotas and Minnesota and winters on salt water and the Great Lakes. The horned grebe is a migrant in Superior National Forest (Green 2003) and could use pond and lake habitat in the study area during migration.

Wilson's phalarope. No Wilson's phalaropes were seen in the parcels during the surveys. The Wilson's phalarope nests on prairie sloughs and ponds found in the interior grasslands of western and central Canada and northern U.S. and the Pacific Northwest (Terres 1982). The bird winters in southern South America and has been reported as a very rare migrant in Superior National Forest (Green 2003).

Common tern. No common terns were seen in the parcels during the surveys. The common tern is found over large inland lakes in Canada and the northern U.S. The bird nests in large colonies on beach sandspits and islands of sand and oyster shells, and winters along the Atlantic and Gulf coasts. The common tern is an occasional visitor to Superior National Forest (Green 2003).

5.4.3. Federal Species of Concern

Boreal and great-horned owls winter in the region where the parcels are found. The remaining species are migratory and would have moved south by the time of the surveys.

Black tern. No black terns were seen in the parcels during the surveys. The black tern is a locally common breeder on prairie sloughs and marshes of the upper Midwest and Canadian Prairies. The black tern breeds in northern

Minnesota and has been seen in Superior National Forest during summer and fall (Green 2003). Breeding habitats favored by black terns are uncommon on the parcels, and it is unlikely that black terns would nest or spend much time on the parcels.

Northern goshawk (Superior National Forest Management Indicator Species). No northern goshawks were seen or heard during the surveys. The Minnesota Natural Heritage Program and Forest Service do not have records of northern goshawk territories on or within 1 mile of the parcels (Grosshuesch 2010, MnDNR 2010).

Northern goshawks are widely distributed across the northern half of eastern North America and in many parts of western North America (Squires and Reynolds 1997), but are generally rare over most portions of their range. Population productivity and nesting densities are related to snowshoe hare and grouse populations. Goshawks in Minnesota favor forest stands with large canopy trees and a brushy understory (Phillips 1999). Territory sizes can range up to 6,000 acres, and logging and other human-related activities can discourage goshawks from using an area.

Goshawk breeding habitat in Superior National Forest is typically older forest with sufficient open space between the bottom live tree branches and the understory for the birds to easily fly (Phillips 1999). Aspen are favored as nest trees. Goshawk pairs observed on or near the NorthMet Mine site used large aspen trees as nest sites, and the midstory canopy was mostly open in the vicinity of the nest. The surrounding forest stand was a mixture of deciduous and coniferous trees, and it was near a recent clear-cut stand and scrub-shrub wetland (ENSR 2000, AECOM 2009a). Most young mature and mature mixed coniferous and deciduous forest habitat has been logged on the parcels, but this habitat is found adjacent to or near all the parcels and could be used by northern goshawks.

Boreal owl. No boreal owls were seen or heard during the surveys. Boreal owls nest in mature conifer and mixed deciduous/conifer forests in northern Canada and are irregular visitors to the northern U.S., including northern Minnesota, during winter. Boreal owls breed in the Superior National Forest, although they are very rare and few boreal owls are expected to occur in or near the parcels (Forest Service 1999, Green 2003, Catton 2007).

Great gray owl. No great gray owls were seen or heard during the surveys. The great gray owl primarily nests at high elevations in the Sierra Nevada and Northern Rocky Mountains, and in pine and spruce forests of western and north central Canada. Great gray owls use stick nests built in tamarack and spruce trees. Great gray owls are very rare in the Superior National Forest (Green 2003), although great gray owls have been seen near the NorthMet Mine Project site (AECOM 2009a).

Olive-sided flycatcher. No olive-sided flycatchers were observed during the surveys. The olive-sided flycatcher is common in coniferous woods of the western U.S. and western and central portions of northern Canada. Flycatchers nest in tamarack and other conifer trees. They are listed as rare migrants in the Superior National Forest (Green 2003).

Black-throated blue warbler. No black-throated blue warblers were seen or heard during the surveys. The black-throated blue warbler is common in conifer and mixed forests, primarily east of Minnesota. These warblers nest as far west as central Minnesota, but are listed as rare in the Superior National Forest (Green 2003).

Bay-breasted warbler. Bay-breasted warblers were not seen or heard during the surveys. The bay-breasted warbler is fairly common in the northern coniferous forests of Canada and has been reported nesting in northeastern Minnesota. It constructs nests in spruce, hemlock, and birch trees or in shrubs. The bay-breasted warbler is a very rare breeder and migrant in the Superior National Forest (Green 2003).

Connecticut warbler. The Connecticut warbler was not seen or heard during the surveys. The Connecticut warbler is an occasional migrant and breeding bird in the vicinity of the study area (Green 2003). This species prefers to nest in spruce-tamarack bogs and in poplar and aspen woods. These warblers winter in Central and South America.

5.4.4. State Species of Concern

Bald eagle, smoky shrew, heather vole, least weasel, and mountain lion could occur in the region during the winter. The bird species are migratory and would have moved south for the winter at the time of the surveys.

American white pelican. No pelicans were seen in the parcels during the surveys, although pelicans could use Greenwood Lake and Pine Lake and other nearby water bodies that support fish. The American white pelican nests on isolated islands in lakes of inland North America, primarily in the Prairie Provinces of Canada. The pelican winters along the Pacific and Gulf coasts. Northeastern Minnesota is on the eastern range of the pelican's migratory route, and the bird is an occasional visitor to the Superior National Forest during migration (Green 2003).

Marbled godwit. No godwits were seen in the parcels during the surveys. The marbled godwit is common in the western U.S. and Canada, nesting on prairies, meadows, and pastures. Godwits winter along the Pacific, Gulf, and Atlantic coasts. Godwits migrating between breeding areas and the Gulf and Atlantic coasts are occasionally seen in the Superior National Forest (Green 2003).

Yellow rail. No yellow rails were seen in the parcels. Yellow rails are a secretive, wetland species, breeding in the northern United States and Canada (MnDNR 2009a). Recent surveys have documented yellow rails in numerous counties in north-central and northwestern Minnesota, indicating that this species is somewhat more widespread in suitable habitat than previously believed. However, yellow rails have very narrow habitat requirements, and even slight changes in water levels in wetlands can render habitat unsuitable. Yellow rails breed in sedge- or grass-dominated wetlands, particularly wet prairie and rich fens with narrow-leaved sedges. The invasion of woody species into wetlands diminishes the habitat quality for yellow rails (Bookhout 1995). The bird is a casual visitor to the Superior National Forest during migration (Green 2003).

Bald eagle (Superior National Forest Management Indicator Species). No bald eagles were observed during the surveys. Bald eagles tend to be associated with larger lakes surrounded by mature forest, where eagles can perch while searching for fish, birds, and other prey items, and where large trees provide suitable structure for nests. No bald eagle nests have been recorded on the parcels (Grosshuesch 2010, MnDNR 2010, Ryan 2011). It is likely that eagles use habitat associated with Pine Lake, which is near the Wolf Land 1 and Lake County North parcels, Greenwood Lake, which is near the Wolf Land 2 Parcel, and the Stony River, which is near the Wolf Land 3 and 4 parcels. Lindquist (1990 *in* Forest Service 2005a) found that 85 percent of nest trees selected by bald eagles in the Superior National Forest were large diameter eastern white pine. Roosting and foraging habitat for an eagle may include an area up to 1.5 miles from its nest (Forest Service 2005b).

Eastern pipistrelle. Bats were not seen on the parcels. The eastern pipistrelle is the smallest of Minnesota's seven bat species (MnDNR 2009b). The eastern pipistrelle, which ranges over most of the eastern United States and southeastern Canada, was first discovered in Minnesota at St. Peter in 1934 (Swanson and Evans 1936). It has never been found in large numbers, and no maternity colony has yet been found in the state. Eastern pipistrelles hibernate in caves, mines, and tunnels. This species is often found hibernating in the same sites as large populations of other bats. Since its designation in Minnesota as a species of special concern in 1984, the eastern pipistrelle has been found to occur regularly, although in low numbers, in caves and mines in the southeastern part of the state. A single hibernating individual was found in 1990 and two were found in 2003 in northeastern Minnesota, several hundred miles north of the previously documented northernmost locality in the state (MnDNR 2009b).

Northern myotis. No bats were seen on the parcels. The northern myotis, also known as the northern long-eared myotis, is widely distributed in Canada and throughout the eastern half of the United States (MnDNR 2009c). It was designated a species of special concern in 1984. It can be found in the state in both summer and winter. A large hibernaculum was discovered in St. Louis County, and northern myotis have been found in most other caves and mines surveyed in Minnesota, although typically in low numbers. In summer, the species is often associated

with forested habitats, especially around wetlands. Summer roosts are believed to include separate day and night roosts. Day roosts may be under loose tree bark, in buildings, or behind signs or shutters, and night roosts may include caves, mines, and quarry tunnels. This bat is frequently found hanging with or near groups of little brown bats.

Smoky shrew. No smoky shrews were found in the parcels. The smoky shrew is a mouse-sized animal with a pointy nose, small eyes, and a long tail (MnDNR 2009d). It is relatively large for a shrew. The presence of smoky shrews in extreme northeastern Minnesota was first documented in 1991 (Jannett and Oehlenschlager 1994) and subsequently further west in Lake County in 2003. Minnesota now represents the western edge of the species' distribution. Throughout its range, smoky shrews occur in deciduous and coniferous forests, bogs, and swamps. Moist habitats are important (McShea et al. 2003) and the preferred microhabitat includes a cool, damp forest floor with a thick litter layer, mossy covered rocks, and decaying debris (Owen 1984). In Minnesota, smoky shrews have been found in glacial boulder streams, second-growth black spruce, fir, paper birch forests (Jannett and Oehlenschlager 1994), talus slopes, and sphagnum bogs. They are active year-round.

Heather vole. No heather vole or their sign were seen in the parcels. The heather vole is extremely rare in northeastern Minnesota (MnDNR 2006a). The heather vole has limited distribution in coniferous forest habitats of northeastern Minnesota along the Canadian border. The project parcel is on the southern edge of its range, which lies primarily in Canada and the Rocky Mountains.

Least weasel. No weasels were seen during the surveys. Least weasels are found in Alaska, throughout Canada, and into the northern U.S. They prefer meadows, fields, and brushy areas (MnDNR 2009e). The least weasel has a sporadic distribution in northern Minnesota. However, most records of this species in Minnesota come from the northwestern portion of the state. Once considered secure in the state, only one least weasel has been recorded in Minnesota since 1967 despite extensive survey work in suitable habitats.

Mountain lion. No mountain lions or their sign were seen in the parcels during the surveys. The mountain lion is a habitat generalist that preys primarily on deer and prefers areas with little human disturbance. Mountain lion sightings are very rare in Minnesota; it is possible that mountain lions inhabit the study area, although no mountain lion have been seen in the study area (Cougar Network 2009). There is currently no estimate of population size in Minnesota.

5.4.5. Other Species of Concern

Several animal species were identified in the 1986 LRMP for the Superior National Forest as Superior National Forest Viability and Management Indicator Species (Forest Service 1986). In 2004, the plan was updated to include only three Viability/Management Indicator Species: bald eagle, gray wolf, and northern goshawk (Forest Service 2004). These three species are discussed above. In addition, this report includes information on those species listed in the 1986 LRMP.

Ruffed grouse, spruce grouse, woodpeckers, beaver, porcupine, white-tailed deer, and moose were seen or would likely be found on the parcels during the survey period. Northern leopard frog could be found on the parcels, but would have been hibernating during the survey period. Other birds listed below would have likely migrated south for the winter.

Northern leopard frog. Northern leopard frogs were not seen or heard in the parcels. The northern leopard frog is found in the Rocky Mountains, upper Midwest U.S., and southern Canada. It breeds in freshwater and brackish marshes. In the Superior National Forest, it uses grass, forb, and low wet meadows near streams, ponds, and open water. Northern leopard frogs have been seen in the region (ENSR 2007).

Common loon. Loons are uncommon in the Superior National Forest (Green 2003). They were not observed on the parcels. The common loon is a common breeder along lakes and rivers in northern Minnesota, west through the

northern U.S, and throughout Canada. Loons winter along the Pacific, Atlantic, and Gulf coasts. Loons forage on small fish and crustaceans and tend to use deep water bodies where they can dive to escape predation.

Hooded merganser. Hooded mergansers were not seen on the parcels, and are uncommon in the Superior National Forest (Green 2003). Hooded mergansers are found on wooded lakes and streams, primarily in the western U.S., and northern Minnesota and most of the eastern U.S. Hooded mergansers nest in tree cavities that are large enough to allow for entrance by the female.

Osprey. Ospreys were not seen during the surveys. The osprey is a raptor that is found along the seacoast, lakes, and rivers. It ranges from Alaska, through western and southern Canada, into the northern U.S., and along U.S. and Canadian coastlines. Though uncommon in the Superior National Forest (Green 2003), ospreys can be found on large lakes and rivers where mature white and red pines are found within a quarter mile of fish-bearing streams and lakes.

Red-tailed hawk. Red-tailed hawk was not observed during the surveys. Red-tailed hawks are found throughout North America. They nest in woodlands and feed in open country on rabbits, rodents, and snakes. They are rare in the Superior National Forest (Green 2003).

Ruffed grouse. Ruffed grouse were seen and heard during the survey, especially in mixed and deciduous forest habitats near the edges of wetlands. Drumming counts indicate that ruffed grouse populations fluctuate cyclically over 10-year intervals in Minnesota, and northeast Minnesota has greater ruffed grouse density than other portions of the state (MnDNR 2007b). Ruffed grouse favor young aspen/birch forests less than 25 years in age. Most forest stands on the project parcel are more than 25 years old.

Spruce grouse. Spruce grouse were not seen during the survey, but spruce grouse occur throughout the region in conifer forests (Green 2003). Approximately half of the spruce grouse in Minnesota are found in the northeastern portion of the state. Spruce grouse primarily use mature jack pine and spruce forests, which were present but not common in the study area.

American woodcock. American woodcock were not seen on the parcels, but is expected to occur on the parcels during the breeding season in areas with scrub-shrub wetlands dominated by speckled alder. The American woodcock is a rare breeder in the Superior National Forest (Green 2003). Woodcock are mostly found in the eastern and southern U.S. American woodcock live in moist woods and thickets.

Killdeer. Killdeer were not seen during the surveys. Killdeer are common in meadows, pastures, fields, and dry uplands throughout North America. They are considered rare in the Superior National Forest (Green 2003) and would not likely use the study area to any great extent due to the lack of meadows, pastures, and fields they favor for nesting and foraging.

Belted kingfisher. Belted kingfisher were not seen during the surveys. The belted kingfisher is uncommon in the Superior National Forest (Green 2003), but has been seen using open water habitat associated with streams and wetlands in the region. The belted kingfisher is the most common kingfisher in North America. It is commonly seen singly or in pairs along streams and ponds, often perching at the edge of the pond and then diving into the water for fish.

Pileated woodpecker. Pileated woodpecker and their sign were observed in the parcels in older pole and mature mixed forests with snags and stumps on all the parcels. Pileated woodpeckers are found in the Pacific Northwest, throughout much of Canada, into Minnesota, and throughout much of the eastern U.S. Pileated woodpeckers favor large expanses of deciduous or mixed forests with mature trees and down woody material, snags, and large stumps.

American three-toed woodpecker. No American three-toed woodpeckers were observed during the surveys. American three-toed woodpeckers are very rare in the Superior National Forest (Green 2003) and prefer mature boreal forest habitats where snags are common.

Black-backed woodpecker. Black-backed woodpeckers were not observed during the surveys. Black-backed woodpeckers are very rare in the Superior National Forest (Green 2003) and prefer upland and wetland spruce/fir mixed forests and conifer stands with scattered snags.

Brown creeper. The brown creeper is uncommon in the Superior National Forest (Green 2003) and was not seen on the parcels during the survey. The brown creeper is a common woodland bird found throughout North American. Creepers favor both deciduous and coniferous mature forests, and have been seen in mature red and eastern white pine stands in the region.

Golden-crowned kinglet. Golden-crowned kinglets were not seen during the surveys. They are common in the Superior National Forest (Green 2003). Golden-crowned kinglets are found throughout North America, primarily in mature lowland coniferous forests.

Swainson's thrush. Swainson's thrushes were not observed on the parcels. Swainson's thrushes summer in the spruce, cedar, and fir forests of Alaska, Canada, and the northern U.S. They are common breeders in the Superior National Forest (Green 2003).

Magnolia warbler. Magnolia warblers were not observed during the surveys. Magnolia warblers breed in spruce, balsam fir, and hemlock forests of southern Canada and the northern U.S., and winter in Central America. Magnolia warblers are abundant residents of the Superior National Forest (Green 2003), selecting sparsely stocked spruce and fir sampling stands, and mature and immature pine stands.

Pine warbler. Pine warblers were not observed on the parcels during the surveys. The pine warbler nests in open groves of mature pine and is found nesting primarily to the east of Minnesota in the northeastern and eastern U.S. and southern Canada. Pine warblers also select mature aspen trees near lowland conifer foraging habitat. They are uncommon migrants and breeders in the Superior National Forest (Green 2003).

Savannah sparrow. The savannah sparrow is listed as rare in the Superior National Forest (Green 2003) and was not seen during the surveys. The savannah sparrow is common throughout North America and prefers large fields with short or sparse grass or weeds, although savannah sparrows also use sedge marshes and wet meadows.

Beaver. Beaver dams or sign of beaver were found on or near all the parcels. Several beaver dams were observed on the Hunting Club and Lake County South parcels. Open water bodies on the parcels were created by beaver dams, and beaver lodges were also seen on large water bodies. Beavers are found near aquatic habitats in the Superior National Forest, including rivers, streams, lakes, ponds, and marshes.

Porcupine. No porcupines were observed in the parcels during the surveys. Porcupines are most often found in woody areas, but have adapted to a wide range of habitats, from tundra to desert chaparral and rangelands. They are found throughout Alaska, Canada, and the western U.S. In the Superior National Forest, porcupines are most closely identified with mature pine forests. They are considered scarce in the Boundary Waters Canoe Area Wilderness north and east of the study area.

White-tailed deer. White-tailed deer were common on the parcels. White-tailed deer tracks and droppings were found in the parcels in virtually all habitat types. Deer were especially common in recently logged areas and shrublands near mixed and conifer pole/young mature and mature forest habitats. During winter, deer favor mature forest stands with large conifer trees or dense pole-size spruce and balsam fir stands for cover, and forage in nearby wetlands and shrublands. Deer trails in forests often followed the edge of wetlands, about 20 feet from the wetland edge. An estimated 15 to 28 deer are found per square mile in the study area (MnDNR 2006a). Based on

population surveys and hunter kill rates, deer population densities in Minnesota are lower in northeastern Minnesota than in central and southeastern Minnesota (MnDNR 2005, 2006b).

Moose. Moose sign (droppings, tracks, and evidence of browsing) were observed on the Wolf Land 3 and 4 and Lake County South parcels in areas with abundant shrubs and in speckled alder wetlands. Moose were more likely than deer to move through wetlands. Moose populations in the Superior National Forest have fluctuated considerably since the early 1900s and have shown their greatest increases during periods of intense timber harvest (Huempfner 1978). A 2010 aerial survey by the MnDNR produced a population estimate of 5,528 moose, down from 7,593 moose in 2009 in northeastern Minnesota, although the differences between years were not statistically significant. The moose population in the region has generally trended downwards since 2004, although it is higher than numbers recorded in the early 1990s (Lenarz 2010).

5.5. Wildlife Habitat Assessment

Habitat types within the parcels are consistent with habitats in much of the Iron Range and northeastern Minnesota, including coniferous, deciduous, and mixed coniferous and deciduous forest, and a variety of wetland habitats. Generally, the parcels consist of a mosaic of slightly elevated upland areas surrounded by wetlands.

At the time of the surveys, the majority of the parcels' area (82 percent; 1,740 acres) was wetland habitat; upland habitat (18 percent; 378 acres) comprised about a third of the area or less for all parcels except the Hunting Club Parcel (60 percent upland habitat; **Table 4**).

Table 4
Wetland and Upland Acreage for the Parcels

Parcel	Acres		
	Wetland	Upland (acres)	Total
Wolf Land 1	90	36	126
Wolf Land 2	707	61	768
Wolf Land 3	233	44	277
Wolf Land 4	363	42	405
Lake County North	209	56	265
Lake County South	74	43	117
Hunting Club	64	96	160
Total	**1,740**	**378**	**2,118**

Forest habitat—both wetland and upland—dominated on the parcels, although wetland and upland shrubland and herbaceous areas were also important cover types (**Table 5**). Nearly all wetland forest stands contained coniferous trees that were 8 inches dbh or less, while most of the upland trees were deciduous trees 11 inches dbh or greater. Because coniferous trees were generally of small size, their branches did not capture much snow and coniferous forest stands provided little thermal intercept cover for white-tailed deer and moose.

5.5.1. Wolf Land 1 Parcel

The Wolf Land 1 Parcel covers approximately 126 acres, of which about 90 acres were wetland (**Map 1, Table 6**). Most upland habitat consisted of mature mixed forest, while most wetland habitat consisted of pole coniferous forest. The parcel is relatively flat but slopes gently downward toward the southwest. The parcel is adjacent to the Lake County North parcel (**Figure 1**).

Table 5
Habitat Classification and Combined Acreage for the Wolf Land, Lake County, and Hunting Club Parcels

Code	Habitat Type	Total Acreage
P-0	Open water	8
P-1	Bog/palustrine emergent wetland	39
P-2	Palustrine scrub-shrub	355
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	28
P-9	Palustrine forest mixed mature (12+ in dbh)	23
P-10	Palustrine forest conifer sapling (0-4 in dbh)	5
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	1,276
P-12	Palustrine forest conifer mature (12+ in dbh)	5
U-1	Disturbed	0
U-2	Grassland/Forbs	49
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	121
U-5	Forest deciduous pole/young mature (5-12 in dbh)	9
U-6	Forest deciduous mature (12+ in dbh)	30
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	54
U-9	Forest mixed mature (12+ dbh)	110
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	1
U-12	Forest mature (12+ in dbh)	5
Total		**2,118**

At the time of the survey, wetland communities were comprised primarily of sapling and pole forests in nearly equal amounts. Sapling forests were comprised of short black spruce, with scattered northern white cedar and tamarack. Sapling forests had characteristics of more open bogs, as tree cover was sparse at about 30 percent, while 80 percent of the area was covered by bog Labrador-tea and leatherleaf, and sphagnum moss covered most of the ground. In pole forests, tree cover ranged from 60 to 80 percent, with a canopy dominated by 6 to 10 inch dbh black spruce, with tamarack and northern white cedar also present. The midstory consisted of balsam fir and black spruce (about 40 percent cover), while speckled alder, leatherleaf, bog Labrador-tea, and red-osier dogwood dominated the shrub layer (40 percent cover) and club moss and sphagnum moss covered most of the ground.

Upland mixed young mature forest was found in the southwestern portion of the parcel. Paper birch and trembling aspen covered about 50 percent of the area, while the midstory consisted of mostly balsam fir (about 50 percent cover). Beaked hazel and red-osier dogwood were important shrubs (50 percent cover).

Hairy and pileated woodpeckers, gray jay, black-capped chickadee, and red nuthatch were seen in forests while chipping sparrows used upland shrublands. Pileated woodpecker holes were common on snags and stumps.

Snowshoe hare tracks were seen in areas with dense balsam fir, while deer tracks were seen throughout the parcel although less so in more open bog wetlands with deeper snow. Red squirrels were seen in spruce forests.

5.5.2. Wolf Land 2 Parcel

The Wolf Land 2 Parcel is approximately 768 acres, of which about 707 acres were wetland (**Map 2, Table 7**). The parcel consists of gently undulating terrain and slopes toward the southwest. Water generally flows to the southwest and to Mary Ann Creek, Wenho Creek, and Greenwood Lake. The parcel consisted primarily of wetlands comprised of pole black spruce and northern white cedar forest, with a black ash component in a few drainages; shrubland comprised of speckled alder was also common on the parcel. Most upland habitat consisted of pole mixed forest. Several drainages were dominated by speckled alder, while emergent wetland habitat was associated with beaver ponds. Black spruce was the dominant tree in wetlands in the northern and eastern portions of the parcel, while northern white cedar was more prevalent in other portions of the parcel.

Table 6
Habitat Classification and Acreage for the Wolf Land 1 Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	0
P-1	Bog/palustrine emergent wetland	3
P-2	Palustrine scrub-shrub	12
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	0
P-9	Palustrine forest mixed mature (12+ in dbh)	0
P-10	Palustrine forest conifer sapling (0-4 in dbh)	2
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	73
P-12	Palustrine forest conifer mature (12+ in dbh)	0
U-1	Disturbed	0
U-2	Grassland/Forbs	0
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	0
U-5	Forest deciduous pole/young mature (5-12 in dbh)	0
U-6	Forest deciduous mature (12+ in dbh)	0
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	2
U-9	Forest mixed mature (12+ dbh)	34
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	0
U-12	Forest mature (12+ in dbh)	0
Total		**126**

Wetland pole forests were of three types: black spruce dominant, a mix of black spruce and northern white cedar, or northern white cedar dominant. Canopy trees ranged from 4 to 8 inches dbh, with total canopy cover from 70 to 80 percent. The midstory consisted of sapling black spruce, northern white cedar, and balsam fir. Midstory cover was patchy, ranging from10 to 40 percent. Bog Labrador-tea comprised 10 to 30 percent of the low shrub cover, while sphagnum moss often covered more than 80 percent of the ground. In areas with a dense canopy, the midstory and ground cover were poorly developed and it was easy to walk in these forests.

One area with pole black spruce had a lot of tree blowdown, although the area was not near a clearcut or other opening where tree blowdown typically occurs. In addition to black spruce, trembling aspen were in the area, and a dense stand of sapling balsam fir dominated the midstory. There was abundant down woody material and sphagnum moss covered most of the ground. Other wetlands had 40 to 60 percent coverage of black spruce over a well-developed shrub layer dominated by speckled alder (40 to 60 percent cover) and bog Labrador-tea (40 to 60 percent cover). Sphagnum moss covered most of the ground.

Several drainages were dominated by scrub-shrub vegetation. These parcels generally had a sparse overstory, with approximately 20 percent aerial cover of black spruce, northern white cedar, and tamarack. Speckled alder and sapling trees usually covered 60 percent or more of the midstory, while low shrub cover consisted of bog Labrador-tea (40 to 60 percent cover).

Beaver dams and ponds were found in the southeastern portion of the parcel. Typically, open water was adjacent to the dams, with emergent wetland surrounding the open water and scrub-shrub wetland upstream of the dams.

An upland area in the northern portion of the parcel had been logged and during the survey consisted of an overstory of mixed young mature coniferous and deciduous forest over a shrub layer of beaked hazel. Canopy cover was about 30 percent. Upland habitat was also found in the southern portion of the parcel and was comprised of paper birch, trembling aspen, and black spruce, over a midstory of balsam fir and shrub layer of beaked hazel.

Wildlife found in the forested areas included gray jay, black-capped chickadee, red nuthatch, American marten, snowshoe hare, red squirrel, and white-tailed deer.

5.5.3. Wolf Land 3 Parcel

The Wolf Land 3 Parcel is approximately 277 acres, of which about 233 acres were wetland (**Map 3, Table 8**). The parcel is relatively flat. Coyote Creek begins its flow north within the parcel. Uplands consisted of mostly shrubland and pole deciduous forest, while wetlands were dominated by shrubland and pole coniferous habitats.

About half of the parcel had been recently logged. Logged wetlands were dominated by grasses, forbs, and low growing shrubs, including red-osier dogwood and speckled alder, while grasses, forbs, and beaked hazel were found on logged uplands. In scrub-shrub wetlands, speckled alder covered from 20 to 80 percent of the area. In some areas, bog Labrador-tea covered 80 to 90 percent of the ground, especially in areas with a dense cover of speckled alder. In areas with less speckled alder, grasses, forbs, and ferns were the dominant vegetation, but because of the snow cover it was not possible to determine percent ground cover or species composition. Scattered sapling black spruce and paper birch were also seen on logged wetlands. Woody debris from logging was abundant in logged areas.

In the unlogged areas, wetland forests were comprised of pole black spruce. In the northern part of the parcel, the black spruce was co-dominant with tamarack; in the rest of the parcel, tamarack was present in the canopy but in much lower amounts. Total canopy cover ranged from 60 to 80 percent, with canopy trees ranging from 4 to 10 inches dbh. The midstory consisted of balsam fir and black spruce (20 to 30 percent cover), while the shrub layer was dominated by bog Labrador-tea (80 percent), over a ground layer of nearly continuous (80 percent cover or more) sphagnum moss with scattered grasses and forbs. There were numerous downed trees and woody debris associated with tree blowdown in areas adjacent to clearings.

Coyote Creek was bordered by emergent sedge meadow wetland comprised of sedges, narrow-leaved cattail, and Canada bluejoint (collectively about 90 percent cover). There were also scattered sapling tamarack and northern white cedar, as well as scattered patches of speckled alder and bog Labrador-tea. The emergent wetland was bordered by dense (80 percent cover) speckled alder. There were scattered northern white cedar and tamarack among the alders, and also patches of bog Labrador-tea. Water depth in the emergent and scrub-shrub wetlands was about 18 to 24 inches.

Table 7
Habitat Classification and Acreage for the Wolf Land 2 Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	<1
P-1	Bog/palustrine emergent wetland	<1
P-2	Palustrine scrub-shrub	73
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	5
P-9	Palustrine forest mixed mature (12+ in dbh)	0
P-10	Palustrine forest conifer sapling (0-4 in dbh)	3
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	625
P-12	Palustrine forest conifer mature (12+ in dbh)	0
U-1	Disturbed	0
U-2	Grassland/Forbs	0
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	0
U-5	Forest deciduous pole/young mature (5-12 in dbh)	4
U-6	Forest deciduous mature (12+ in dbh)	0
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	52
U-9	Forest mixed mature (12+ dbh)	5
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	0
U-12	Forest mature (12+ in dbh)	0
Total		**768**

Logging roads on the parcel had become emergent wetland habitat dominated by narrow-leaved cattail, woolgrass, Canada bluejoint, and scattered sedges and speckled alder. Herbaceous vegetation covered about 70 to 80 percent of the wetland area, while alder shrubs covered about 10 percent of the wetlands.

Upland areas within the parcel had been logged recently. Most of these areas had few trees remaining, though some areas still supported paper birch up to 16 inches dbh over scattered balsam fir. The upland habitat bordering most of the parcel consisted of both young and mature paper birch with scattered black spruce and northern white cedar, over an understory comprised of balsam fir. Presumably logged uplands within the parcel consisted of similar habitat prior to logging.

Few wildlife or their sign were seen on the parcel. Moose tracks were seen in emergent and speckled alder wetlands, while deer tracks were seen over much of the parcel, although not in great abundance. Ruffed grouse, black-capped chickadee, and red nuthatch were seen in pole black spruce forests.

Table 8
Habitat Classification and Acreage for the Wolf Land 3 Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	0
P-1	Bog/palustrine emergent wetland	5
P-2	Palustrine scrub-shrub	145
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	0
P-9	Palustrine forest mixed mature (12+ in dbh)	0
P-10	Palustrine forest conifer sapling (0-4 in dbh)	0
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	83
P-12	Palustrine forest conifer mature (12+ in dbh)	0
U-1	Disturbed	0
U-2	Grassland/Forbs	11
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	26
U-5	Forest deciduous pole/young mature (5-12 in dbh)	0
U-6	Forest deciduous mature (12+ in dbh)	<1
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	0
U-9	Forest mixed mature (12+ dbh)	7
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	0
U-12	Forest mature (12+ in dbh)	0
Total		**277**

5.5.4. Wolf Land 4 Parcel

This parcel is approximately 405 acres. Nearly 90 percent (363 acres) of this parcel was wetland. Coyote Creek bisects the parcel, while the Stony River is found about 2,000 feet northwest of the parcel. Timber harvests recently occurred the western border of the parcel. Upland habitats consisted primarily of mature deciduous forest, while pole coniferous forest and shrubland dominated wetland habitats.

Conifer forests dominate the wetland habitat (**Map 4, Table 9**). Black spruce forests predominate in the northern half of the parcel, while northern white cedar was more prevalent in the southern half of the parcel. Pole-size trees prevailed over most of the parcel, but patches of sapling spruce were common in the northeastern portion of the

parcel, and sapling cedar and spruce in the southwestern portion of the parcel. Emergent communities comprised of sedges and Canada bluejoint and scrub-shrub communities comprised primarily of speckled alder were found in floodplains that border Coyote Creek. Scrub-shrub also occurred in two drainages to Coyote Creek in the southeastern portion of the parcel and in a drainage to the Stony River in the northeastern portion of the parcel.

Pole black spruce and black spruce/northern white cedar wetlands were dominated by trees ranging from 4 to 8 inches dbh, with a patchy canopy cover of about 50 percent. Scattered pole and sapling tamarack were also found in these wetlands. The low shrub layer was nearly continuous (80 to 90 percent cover), and was comprised of leatherleaf, bog Labrador-tea, and other vegetation. Sphagnum and club mosses covered most of the ground. Other pole forests had a more developed midstory, with 60 percent cover by black spruce, northern white cedar, tamarack, and speckled alder, and a similarly dense shrub layer, with 60 to 70 percent cover by leatherleaf and bog Labrador-tea.

Scrub-shrub wetlands were dominated by speckled alder (60 to 80 percent cover), with scattered black spruce, tamarack, and northern white cedar in the overstory. Leatherleaf and bog Labrador-tea covered about 40 to 50 percent of the shrub layer.

Upland habitat consisted of young mature paper birch and some black spruce. Trees were up to 18 inches dbh, although a 30 inch dbh jack pine, and several large red pines to 24 inches dbh were seen. Canopy cover was approximately 50 percent. Balsam fir cover was about 50 percent in the midstory, while beaked hazel and raspberry were important shrubs. In areas that had been logged recently sapling paper birch was common, over a shrub layer of beaked hazel, raspberry, and bog Labrador-tea. Vegetation cover was about 50 percent in the canopy and 80 percent in the shrub layer.

Wildlife seen on the parcel included red squirrels, blue and gray jays, hairy woodpecker, black-capped chickadee, and red nuthatch. White-tailed deer and moose tracks were seen where wetland and upland forest were in close proximity to speckled alder wetlands, or in areas where forest habitat was near shrub habitat. Red fox tracks were seen on trails in the clearcut and along access roads to the parcel.

5.5.5. Lake County North Parcel

The Lake County North Parcel is approximately 265 acres, of which about 209 acres were wetland (**Map 1, Table 10**). The parcel has moderate topography, with the terrain generally sloping toward the southwest and Pine Lake. The parcel consists of two smaller subparcels to the north, and a single, small subparcel to the south that is adjacent to the Wolf Land 1 Parcel (**Figure 1**). At the time of the survey, the subparcels were comprised of mostly wetland habitat, except for an area of upland habitat in the northern portion of the northern subparcel and in portions of the southern subparcel. Portions of the subparcels have recently been logged. Wetland habitat consisted mostly of pole coniferous forest, with lesser amounts of mature mixed forest and shrubland. Upland habitat was dominated by mature deciduous and pole deciduous forests.

Wetlands were comprised primarily of pole northern white cedar and black spruce with lesser amounts of tamarack, although several drainages also contained black ash. Northern white cedar was predominant in the more southerly portions of the northern two subparcels, while black spruce was more common in the northern and northwestern portion of these two subparcels. Canopy cover ranged from 50 to 80 percent and most canopy trees were 6 to 10 inches dbh. The midstory consisted of balsam fir and black spruce (about 40 percent cover), while speckled alder, leatherleaf, and bog Labrador-tea were found in the shrub layer (40 percent cover) and club moss and sphagnum moss covered most of the ground.

Table 9
Habitat Classification and Acreage for the Wolf Land 4 Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	0
P-1	Bog/palustrine emergent wetland	<1
P-2	Palustrine scrub-shrub	42
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	0
P-9	Palustrine forest mixed mature (12+ in dbh)	0
P-10	Palustrine forest conifer sapling (0-4 in dbh)	0
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	320
P-12	Palustrine forest conifer mature (12+ in dbh)	0
U-1	Disturbed	0
U-2	Grassland/Forbs	0
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	9
U-5	Forest deciduous pole/young mature (5-12 in dbh)	5
U-6	Forest deciduous mature (12+ in dbh)	28
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	0
U-9	Forest mixed mature (12+ dbh)	0
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	0
U-12	Forest mature (12+ in dbh)	0
Total		**405**

A pole/young mature black spruce and northern white cedar wetland forest was found in the southern subparcel with northern white cedar to 20 inches dbh and black spruce to 14 inches dbh. Canopy cover was 50 percent, while the midstory cover was 60 percent and comprised of pole balsam fir. The nearly continuous ground cover was dominated by sphagnum moss and club moss. Another young mature forested wetland in the northern subparcel had black ash trees to 16 inches dbh.

One sapling/pole spruce forest was more open and bog like. It had an open canopy of only about 30 percent cover, with an 80 percent cover of speckled alder and bog Labrador-tea in the shrub layer. One area had a dense cover (90 percent) of pole and young mature northern white cedar to 16 inches dbh, over an understory of 10 percent cover by balsam fir. Another area had dense (80 percent cover) pole black spruce forest with numerous black spruce saplings in the understory and a dense mat of sphagnum moss. A moderate amount of downed wood was found in these wetland forests, except near openings, where numerous trees had blown down and there was much downed woody material.

Scrub-shrub and emergent wetland habitats were also found on the subparcels. Scrub-shrub habitat was associated with several drainages, a beaver pond, a bog area, and recently logged areas, while emergent wetland habitat was

found near the beaver pond and in recently logged areas. Scrub-shrub wetlands were dominated by speckled alder (to 80 percent cover). Two wetlands were classified as scrub-shrub because speckled alder covered 70 percent of the area, but the wetlands also had open bog characteristics since bog Labrador-tea also covered 70 to 80 percent of the wetlands, and sphagnum moss covered most of the ground. Scattered sapling black spruce, northern white cedar, and red-osier dogwood were also found in this wetland. Vegetation in the emergent wetlands consisted of sedges and Canada bluejoint (40 percent cover), with scattered black spruce, northern white cedar, tamarack, and speckled alder.

Upland habitats were comprised of pole and young mature paper birch and black spruce, while recently logged areas supported sapling paper birch stands or shrub habitat. Pole and young mature forest had a canopy cover of about 60 percent. Midstory cover was about 60 to 70 percent comprised of balsam fir, black spruce, and beaked hazel. In areas that had been recently logged, sapling paper birch with scattered sapling trembling aspen and scattered pole paper birch formed a canopy with 50 to 70 percent cover. Beaked hazel (about 30 percent cover) formed the patchy shrub layer, with various grasses and forbs in the ground layer. Shrub habitat consisted of beaked hazel (30 percent cover), forbs, and grasses (70 to 80 percent cover), with scattered paper birch, trembling aspen, and black spruce.

Older forests contained large amounts of down woody material; this was mostly absent in logged areas. Tree blowdown was common in forest stands adjacent to the clearcuts, and walking in these forests was difficult due to the large amounts of downed trees and woody debris, and the dense stand of balsam fir, black spruce, and northern white cedar in the midstory.

White-tailed deer tracks were common on the parcel, especially where pole/young mature forest and sapling forest/shrubland were in close proximity. Gray jay, black-capped chickadee, hairy and pileated woodpeckers, red nuthatch, red squirrel, and American marten were seen in the forests. Snowshoe hare tracks were seen in areas with a well-developed balsam fir midstory. Chipping sparrows used shrublands. Common ravens were seen flying overhead in a variety of habitat types.

5.5.6. Lake County South Parcel

The Lake County South Parcel is approximately 117 acres, of which about 74 acres were wetland (**Map 5, Table 11**). The parcel is relatively flat in the northwestern section, rises in elevation to the northeast, and then falls in elevation to the southeast. Water flows from west to east. At the time of the survey a series of beaver dams and ponds dominated the landscape, as did areas that had been recently logged. Although shrubland dominated upland habitats, several habitat types comprised wetland habitats.

Forested wetlands dominated the western and southeastern portions of the parcel and were comprised of pole and young mature black spruce and northern white cedar, although pole tamarack was found in some forest stands and pole black ash was an important component of several drainages. The overstory cover was about 50 to 70 percent, while the midstory coverage of balsam fir and black spruce was about 20 percent. Speckled alder, leatherleaf, bog Labrador-tea, and red-osier dogwood were common shrubs (to 80 percent cover), while sphagnum moss covered most of the ground. Forests in the northwestern section contained a dense mix of northern white cedar and black spruce with scattered black ash in the canopy (50 percent cover), and black spruce, northern white cedar, balsam fir, and speckled alder in the midstory and shrub layer (80 percent cover). Lots of down woody material was found in these areas and made walking difficult. The northwest portion of this section was dominated by young mature northern white cedar

Five beaver ponds were found on the parcel, comprised of open water with scattered dead spruce surrounded by emergent wetland dominated by sedges and narrow-leaved cattail, woolgrass, and Canada bluejoint, or by dense stands of speckled alder in more shallow areas. Shallower drainages, especially in areas that had been logged, were covered by speckled alder, sedges, and narrow-leaved cattail.

Table 10
Habitat Classification and Acreage for the Lake County North Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	<1
P-1	Bog/palustrine emergent wetland	4
P-2	Palustrine scrub-shrub	35
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	12
P-9	Palustrine forest mixed mature (12+ in dbh)	23
P-10	Palustrine forest conifer sapling (0-4 in dbh)	0
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	132
P-12	Palustrine forest conifer mature (12+ in dbh)	3
U-1	Disturbed	0
U-2	Grassland/Forbs	1
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	20
U-5	Forest deciduous pole/young mature (5-12 in dbh)	0
U-6	Forest deciduous mature (12+ in dbh)	0
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	0
U-9	Forest mixed mature (12+ dbh)	35
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	0
U-12	Forest mature (12+ in dbh)	0
Total		**265**

Most upland areas had been recently clearcut, with the exception of the southwest portion of the parcel. This area had been partially thinned, leaving areas where young mature paper birch, black spruce, jack pine, eastern white pine, and northern white cedar trees remained, ranging from 12 to 24 inches dbh and with a canopy cover ranging from 10 to 60 percent. Balsam fir and beaked hazel were found in the midstory and understory and covered from to 40 to 80 percent of the area, while forbs and grasses covered about 40 percent of the ground layer. Because of recent logging activity, woody debris and large downed trees were abundant. Stands of young mature and mature paper birch, black spruce, and northern white cedar were seen north and west of the parcel, and presumably similar trees had covered the upland portions of the parcel prior to logging.

Moose tracks were seen throughout the parcel and especially in emergent and scrub-shrub wetlands where the moose had browsed on speckled alder, beaked hazel, red-osier dogwood, and raspberry. White-tailed deer tracks were also common, especially in upland shrublands near forests. Mink tracks were seen on snow covered wetlands. Ruffed grouse, black-capped chickadees, red nuthatches, red squirrel, and American marten were found in wetland forests. Small rodent tracks were seen in logged areas and a small hawk was seen flying through the parcel.

Table 11
Habitat Classification and Acreage for the Lake County South Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	3
P-1	Bog/palustrine emergent wetland	12
P-2	Palustrine scrub-shrub	16
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	10
P-9	Palustrine forest mixed mature (12+ in dbh)	0
P-10	Palustrine forest conifer sapling (0-4 in dbh)	0
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	31
P-12	Palustrine forest conifer mature (12+ in dbh)	2
U-1	Disturbed	0
U-2	Grassland/Forbs	37
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	0
U-5	Forest deciduous pole/young mature (5-12 in dbh)	0
U-6	Forest deciduous mature (12+ in dbh)	1
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	0
U-9	Forest mixed mature (12+ dbh)	5
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	<1
U-12	Forest mature (12+ in dbh)	0
Total		**117**

5.5.7. Hunting Club Parcel

The Hunting Club Parcel is approximately 160 acres, of which about 64 acres were wetland (**Map 6, Table 12**). A series of wetlands bisects the parcel and drain to the north and then northeast. From this low area, the land slopes upward to the east and west. Several beaver dams were found along the creek on or near the parcel. The parcel consisted primarily of wetland shrublands, with lesser amounts of emergent and scrub-shrub wetland, and upland pole and mature deciduous forests.

Beaver ponds and dams were the dominant wetland features on the parcel. Open water habitat was typical near the dams. Emergent vegetation, consisting of Canada bluejoint, narrow-leaved cattail, and sedges (80 percent cover), was found in water from 12 to 24 inches deep, while speckled alder scrub-shrub wetlands were found near ponds at water depths from 6 to 18 inches. Up to 80 percent of scrub-shrub wetlands were covered by speckled alder. A large pole black spruce forest was found in the middle of the parcel. Overstory cover was about 60 percent, with most of the cover from black spruce, with scattered tamarack. The midstory consisted of speckled alder (50 percent cover), while leatherleaf and bog Labrador-tea (80 percent cover) and sphagnum moss (about 80 percent cover) were found below the speckled alder. Pole black ash was found in a drainage.

Habitat in the northwestern and northeastern portions, and near the southern boundary, of the parcel was comprised of upland mature mixed forest, dominated by eastern white pine to 24 inches dbh, and paper birch and trembling aspen to 12 inches dbh. Canopy cover was about 60 percent. The midstory consisted primarily of balsam fir with a cover of about 60 percent. Beaked hazel was found in the shrub layer, with coverage from 40 to 60 percent.

The eastern and southern portions of the parcel consisted of patches of upland sapling (bluish areas on **Map 6**) and pole (pinkish areas on **Map 6**) trembling aspen to about 80 percent cover. Midstory coverage was about 40 to 60 percent beaked hazel, with scattered black spruce and balsam fir. There was little ground cover.

An "island" of trembling aspen-eastern white pine forest was found within the sapling/pole trembling aspen forest. It was young mature forest comprised of trembling aspen and eastern white pine to 16 inches dbh and black spruce to 12 inches dbh; canopy cover was 60 percent. The midstory was comprised of beaked hazel (50 percent cover). There was a large amount of downed trees and woody debris on the ground.

Only a few wildlife or their sign were seen in the parcel, but recent snowfalls would have obscured most tracks. Red fox and American marten tracks were seen in young mature forests, while snowshoe hare tracks were seen in areas with balsam fir. Gray jay, black-capped chickadee, red nuthatch, and red squirrel were seen in conifer trees. Pileated woodpecker holes were seen on snags and old stumps. Few tracks or other wildlife sign were seen in sapling and pole trembling aspen forests, probably because these forest stands provided limited cover or food for wildlife.

Table 12
Habitat Classification and Acreage for the Hunting Club Parcel

Code	Habitat Type	Total Acreage
P-0	Open water	3
P-1	Bog/palustrine emergent wetland	13
P-2	Palustrine scrub-shrub	32
P-3	Palustrine forest dead trees	0
P-4	Palustrine forest deciduous sapling (0-4 in dbh)	0
P-5	Palustrine forest deciduous pole/young mature (5-12 in dbh)	0
P-6	Palustrine forest deciduous mature (12+ in dbh)	0
P-7	Palustrine forest mixed sapling (0-4 in dbh)	0
P-8	Palustrine forest mixed pole/young mature (5-12 in dbh)	<1
P-9	Palustrine forest mixed mature (12+ in dbh)	0
P-10	Palustrine forest conifer sapling (0-4 in dbh)	0
P-11	Palustrine forest conifer pole/young mature (5-12 in dbh)	15
P-12	Palustrine forest conifer mature (12+ in dbh)	0
U-1	Disturbed	0
U-2	Grassland/Forbs	0
U-3	Shrubland	0
U-4	Forest deciduous sapling (0-4 in dbh)	66
U-5	Forest deciduous pole/young mature (5-12 in dbh)	0
U-6	Forest deciduous mature (12+ in dbh)	0
U-7	Forest mixed sapling (0-4 in dbh)	0
U-8	Forest mixed pole/young mature (5-12 in dbh)	0
U-9	Forest mixed mature (12+ dbh)	25
U-10	Forest conifer sapling (0-4 in dbh)	0
U-11	Forest conifer pole/young mature (5-12 in dbh)	0
U-12	Forest mature (12+ in dbh)	5
Total		**160**

6.0 SURVEY RESULTS – WETLAND ASSESSMENT

6.1. Introduction

Field surveys were conducted on the Wolf Land 4 Parcel on November 17 and 18, Wolf Land 3 Parcel on November 18, Lake County South Parcel on November 19, Lake County North and Wolf Land 1 parcels on November 20 and 21, Hunting Club Parcel on November 22, and Wolf Land 2 Parcel on November 23. Temperatures ranged from near 0 degree Fahrenheit (°F) in the morning to the upper 20s °F during the afternoon. Light to moderate snow fell during portions of the day and night from November 18 through 23. The survey was conducted on foot, although Forest Service and other roads were used to access the parcels. Generally, a circular route was taken on foot each day, with the intent of surveying a variety of wetlands each day.

6.2. Wetland Assessment

The approximate boundaries of wetlands were determined based on aerial photographic, topographic, and NWI mapping, and field truthing, as discussed in Section 4.0. Approximate wetland boundaries and wetland types based on habitat mapping are shown on **Maps 1** through **6**.

Wetlands were classified using the classification system given in **Table 2**. However, this classification system can be adapted to classify wetlands based on other classification systems, including the Circular 39 Classification System (Shaw and Fredine 1956), the Cowardin System (Cowardin et al. 1979), and the Eggers and Reed (1998) wetland classification systems, as shown in **Table 3**.

The Wolf Land 1 Parcel is approximately 126 acres, of which about 90 acres were wetland (**Map 1, Table 6**). Wetlands types on the Wolf Land 1 Parcel consisted of palustrine evergreen sapling (2 percent of total wetland acreage) and evergreen pole/young mature (81 percent) forest comprised primarily of black spruce, palustrine scrub-shrub comprised primarily of speckled alder (13 percent), and palustrine emergent (open bog) comprised of bog Labrador-tea, leatherleaf, and sphagnum moss and club moss. The parcel is relatively flat but slopes gently toward the southwest. The eastern half of the parcel is wetland, while upland comprises most of the western portion of the parcel. Pine Lake is about ½ mile northwest of the parcel.

The Wolf Land 2 Parcel is approximately 768 acres, of which about 707 acres were wetland (**Map 2, Table 7**). Upland was primarily limited to the north central and southern portions of the parcel. The parcel consists of gently undulating terrain and slopes toward the southwest. Water generally flows to the southwest and to Mary Ann Creek, Wenho Creek, and Greenwood Lake. The parcel consisted of mostly palustrine evergreen forest comprised of pole black spruce and northern white cedar forest (88 percent), with lesser amounts of palustrine scrub-shrub comprised of speckled alder (10 percent), and a small amount of palustrine emergent, palustrine emergent persistent permanently flooded, palustrine evergreen and broad-leaved forest, and palustrine evergreen pole forest (about 1 percent each). Emergent wetland habitat was associated with beaver ponds. Black spruce was the dominant tree in wetlands in the northern and eastern portions of the parcel, while northern white cedar was more prevalent in other portions of the parcel (**Map 2**, **Table 7**).

The Wolf Land 3 Parcel is approximately 277 acres, of which about 233 acres were wetland (**Map 3, Table 8**). The parcel is relatively flat. Coyote Creek begins its flow north within the parcel. Wetland types included palustrine scrub-shrub comprised primarily of speckled alder (63 percent), palustrine evergreen pole forest comprised of black spruce (35 percent), and palustrine emergent comprised of sedges and narrow-leaved cattail (2 percent). About half of the parcel had been recently logged. Logged wetlands were dominated by grasses, forbs, and low growing shrubs, including red-osier dogwood and speckled alder. In the unlogged areas, wetland forests were comprised of pole black spruce. In the northern part of the parcel, the black spruce was co-dominant with tamarack; in the rest of the parcel, tamarack was present in the canopy but in much lower levels.

The Wolf Land 4 Parcel is approximately 405 acres. Nearly 90 percent (363 acres) of this parcel was wetland. Coyote Creek bisects the parcel, while the Stony River is found about 2,000 feet northwest of the parcel. Timber harvests recently occurred the western border of the parcel (**Map 4, Table 9**). Wetland types include palustrine evergreen pole forest (88 percent), scrub-shrub (12 percent) and emergent (open bog; < 1 percent). There were scattered patches of palustrine evergreen sapling and emergent wetland within these dominant wetland types. Black spruce forests predominated in the northern half of the parcel, while northern white cedar was more prevalent in the southern half of the parcel. Scrub-shrub communities comprised primarily of speckled alder were found in floodplains that border Coyote Creek. Scrub-shrub also occurred in two drainages to Coyote Creek in the southeastern portion of the parcel and in a drainage to the Stony River in the northeastern portion of the parcel.

The Lake County North Parcel is approximately 265 acres, of which about 209 acres were wetland (**Map 1, Table 10**). The parcel has moderate topography, with the terrain generally sloping toward the southwest and Pine Lake. The parcel consists of two smaller subparcels to the north, and a single, small subparcel to the south that is adjacent to the Wolf Land 1 Parcel (**Figure 1**). At the time of the survey, the subparcels were comprised of mostly wetland habitat, except for an area of upland habitat in the northern portion of the northern subparcel and in portions of the southern subparcel. The Lake County North Parcel was comprised of several wetland types, including palustrine evergreen pole (63 percent) and mature (1 percent) forest, evergreen and broad-leaved pole (6 percent) and mature (11 percent) forest, scrub-shrub (17 percent), emergent (2 percent), and emergent persistent permanently flooded (< 1 percent). Wetland forests were comprised primarily of pole northern white cedar and black spruce with lesser amounts of tamarack, although several drainages also contained black ash. Cedar was predominant in the more southerly portions of the northern two subparcels, while black spruce was more common in the northern and northwestern portion of these two subparcels. Scrub-shrub habitat was associated with several drainages, a beaver pond, a bog area, and recently logged areas, while emergent wetland habitat was found near the beaver pond and in recently logged areas. Scrub-shrub wetlands were dominated by speckled alder. Vegetation in the emergent wetlands consisted of sedges and Canada bluejoint, with scattered black spruce, northern white cedar, tamarack, and speckled alder.

The Lake County South Parcel is approximately 117 acres, of which about 74 acres were wetland (**Map 5, Table 11**). The parcel is relatively flat in the northwestern section, rises in elevation to the northeast, and then falls in elevation to the southeast. Water flows from west to east. At the time of the survey a series of beaver dams and ponds dominated the landscape, as did areas that had been recently logged. The Lake County South Parcel was comprised of several wetland types, including palustrine evergreen pole (42 percent) and mature (3 percent) forests, evergreen and broad-leaved pole forest (14 percent), scrub-shrub (22 percent), emergent (16 percent), and emergent persistently flooded (4 percent). Forested wetlands dominated the western and southeastern portions of the parcel and were comprised of pole and young mature black spruce and northern white cedar, although pole tamarack was found in some forest stands and pole black ash was an important component of several drainages. Forests in the northwestern section contained a dense mix of northern white cedar and black spruce with scattered black ash. Five beaver ponds were found on the parcel, comprised of open water with scattered dead spruce surrounded by emergent wetland dominated by sedges and narrow-leaved cattail, woolgrass, and Canada bluejoint, or by dense stands of speckled alder in more shallow areas.

The Hunting Club Parcel is approximately 160 acres, of which about 64 acres were wetland (**Map 6, Table 12**). A series of wetlands bisects the parcel and drain to the north and then northeast. Wetlands on the parcel were associated with this creek. From this low area, the land slopes upward to the east and west. The parcel consisted of palustrine scrub-shrub (50 percent), forested evergreen pole forest (23 percent, emergent (20 percent), emergent persistent permanently flooded (5 percent), and less than 1 percent of broad-leaved and evergreen pole forest. Beaver ponds and dams were the dominant wetland features on the parcel. Open water habitat was typical near the dams. Emergent vegetation, consisting of Canada bluejoint, narrow-leaved cattail, and sedges, was found in water from 12 to 24 inches deep, while speckled alder scrub-shrub wetlands were found near ponds at water depths from 6 to 18 inches. A large pole black spruce forest was found in the middle of the parcel. Overstory cover was about 60 percent, with most of the cover from black spruce, with scattered tamarack.

6.3. Wetland Function and Values Assessment

During the field surveys, data were collected related to the functions and values of 37 representative wetland locations in the parcels. A few survey locations were for individual wetlands, while for larger wetland complexes several locations were surveyed. An attempt was made to survey a variety of wetland types across the entire parcel. Survey locations for the wetland functions and values assessment are shown on **Figures 2 to 7**.

Wetland functions and values were rated using the guidelines in the *Minnesota Routine Assessment Method for Evaluating Wetland Functions, Version 3.2* (MnRAM 3.2; Minnesota Board of Water and Soil Resources 2008). As discussed in Section 4.4, MnRAM considers numerous factors in determining the rating, or value, of a wetland. Sixty-three questions given in MnRAM 3.2 were addressed, and all factors were evaluated for each wetland surveyed. As discussed in Section 4.4, the Eggers and Reed (1998) classification system was used to classify wetland communities for the wetland function and value evaluation.

Table 13 summarizes the functional value ratings for the primary wetland functions rated by MnRAM 3.2. Wetlands were rated high for nearly all wetland functional values. Vegetation diversity/integrity was rated high for all wetlands. The overall rating for vegetation diversity/integrity was based on the highest rated community for vegetation diversity and integrity, rather than the average or weighted value for community vegetation diversity and integrity. MnRAM 3.2 guidance states that this is the appropriate measure for assessing wetland quality for regulatory purposes (Minnesota Board of Water and Soil Resources 2008).

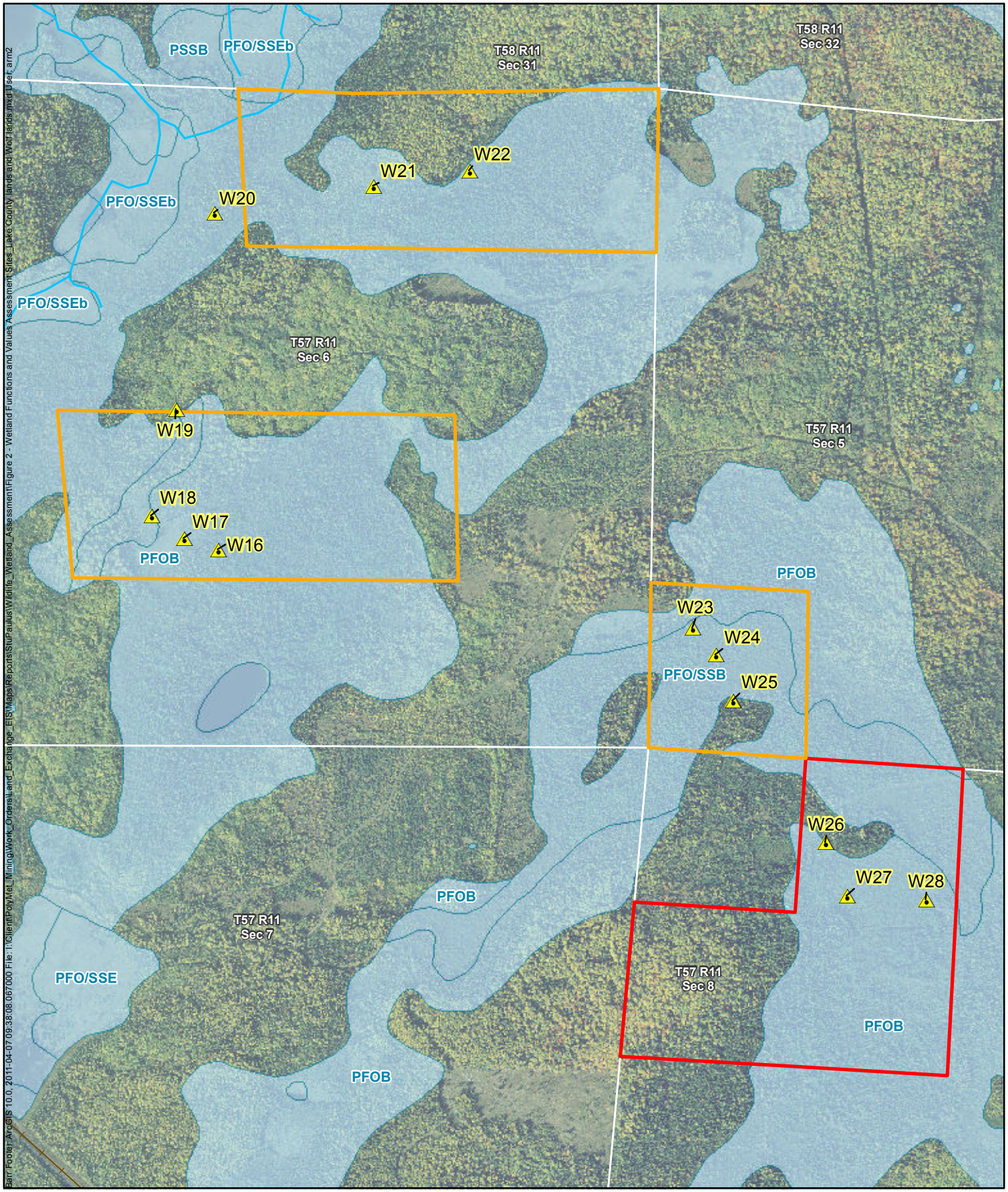
Wetland hydrology and water quality were rated high for all wetlands, and high for all wetlands except one for downstream water quality. Most wetlands provided moderate flood attenuation value, with two wetlands rated high for this function.

Wildlife habitat was rated high for all wetlands, as natural wildlife corridors and upland communities were relatively untouched by recent human disturbances or impacts, and there were no barriers to wildlife movement.

Fish habitat was rated high for wetlands that provide fish habitat. Fish habitat was rated as not applicable for some wetlands. This indicates that the wetland does not have enough standing water throughout the year to support fish. Some other characteristics that might limit wetland value for fish would include isolated wetlands that are not permanently flooded, or forested wetlands where the water table was below the surface for all or part of the year.

Amphibian habitat was rated high for most wetlands. This indicated that the wetland stayed inundated long enough in most years to allow amphibians to successfully breed. Amphibian habitat was rated medium for some wetlands if ideal conditions needed to support amphibian breeding did not occur at the parcels. Forested wetlands with little or no standing water or not enough woody vegetation during the breeding season would likely not support amphibians. Wetlands with predatory fish may also not support amphibians. Other wetlands were rated not applicable for amphibian habitat, indicating that the parcel was not inundated long enough in most years to support successful breeding.

Aesthetics, recreation, education, and cultural values were rated medium. All wetlands were aesthetically pleasing, and could be used for recreation, education, and cultural purposes. However, access by the general public access was limited to overland by foot or on snowmobile/all-terrain vehicle from Forest Service roads. Due to their remote locations, the wetlands had little human influence on the viewshed.



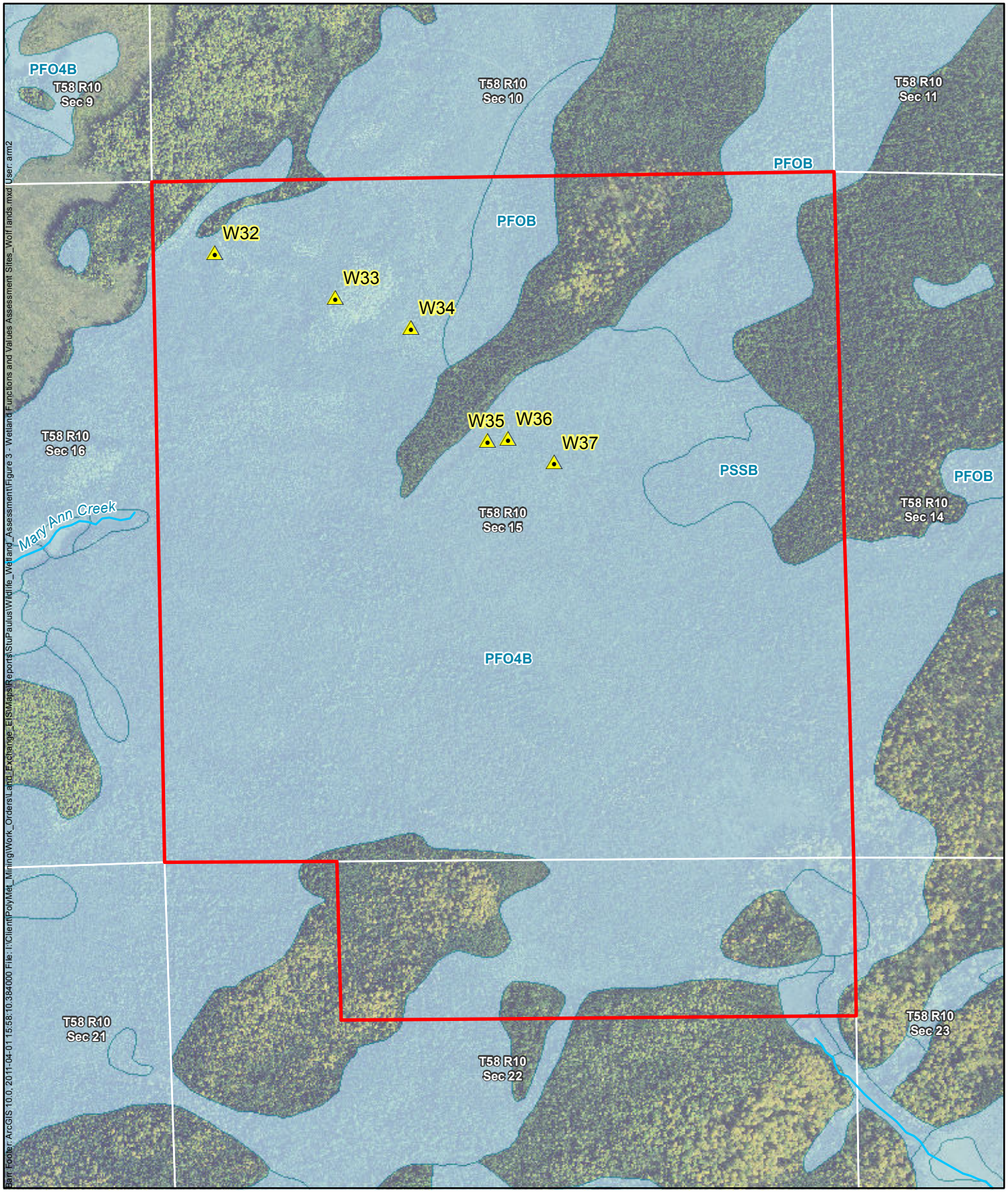
Wetland Functions and Values Assessment Sites
Lake County lands
Wolf lands
Section Lines
Wetlands (NWI)
Rivers and Streams

N

1,100 550 0 1,100

Feet

Figure 2
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
Lake County lands North & Wolf lands 1
Lake County, MN



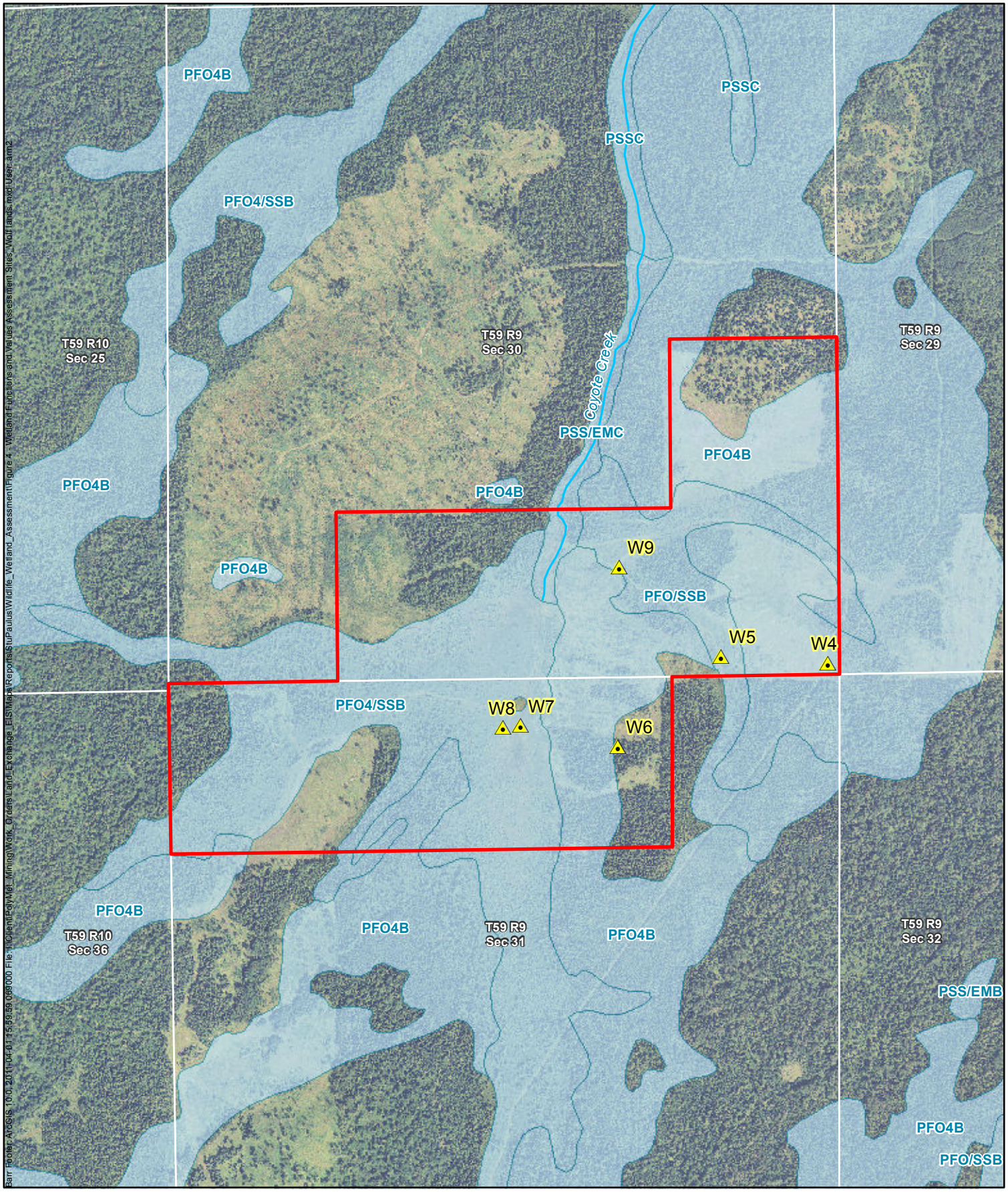
Wetland Functions and Values Assessment Sites
Wolf lands
Section Lines
Wetlands (NWI)
Rivers and Streams

N

1,000 500 0 1,000

Feet

Figure 3
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
Wolf lands 2
Lake County, MN



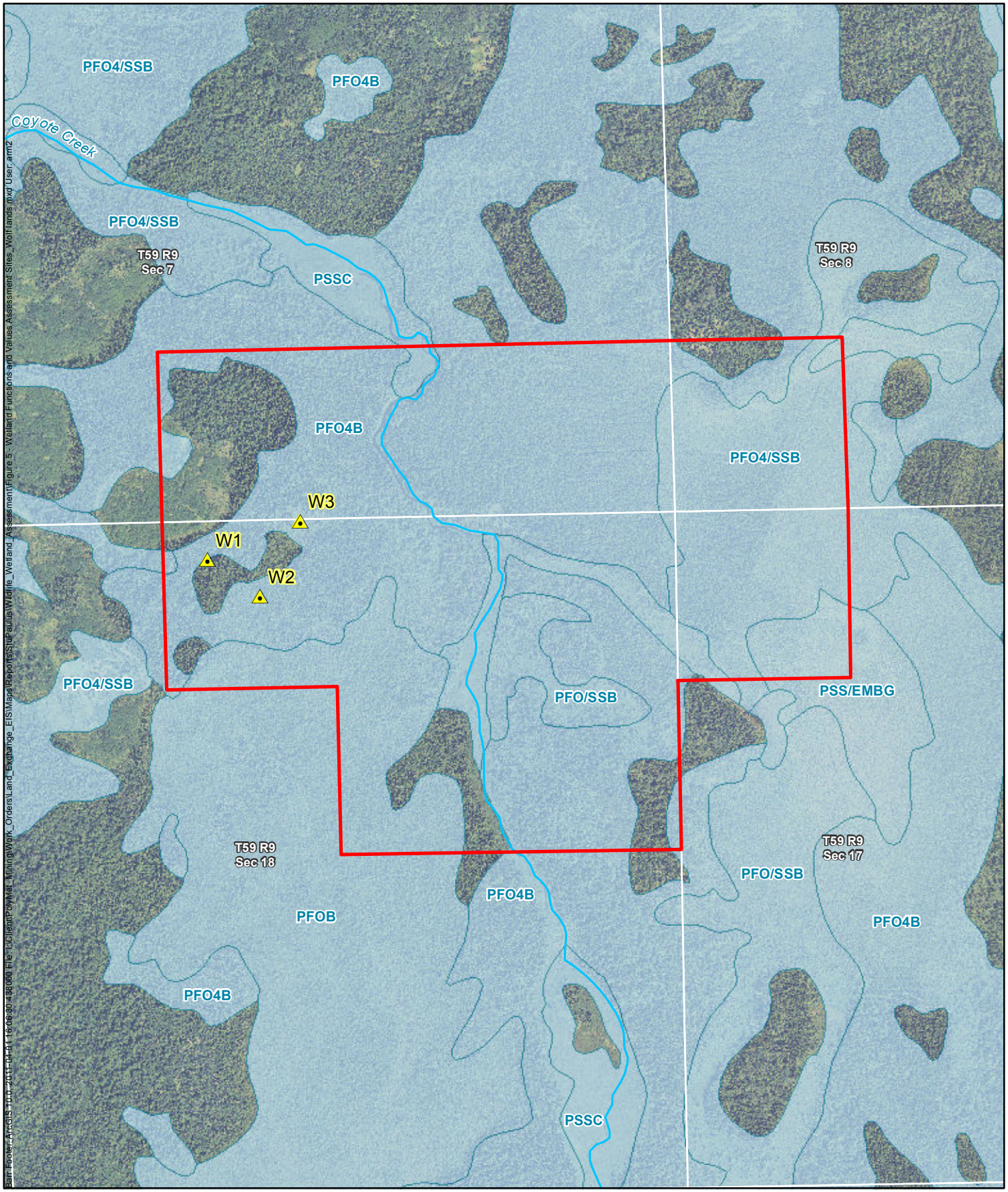
Wetland Functions and Values Assessment Sites
Wolf lands
Section Lines
Wetlands (NWI)
Rivers and Streams

N

1,000 500 0 1,000

Feet

Figure 4
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
Wolf lands 3
Lake County, MN



Wetland Functions and Values Assessment Sites

Wolf lands

Section Lines

Wetlands (NWI)

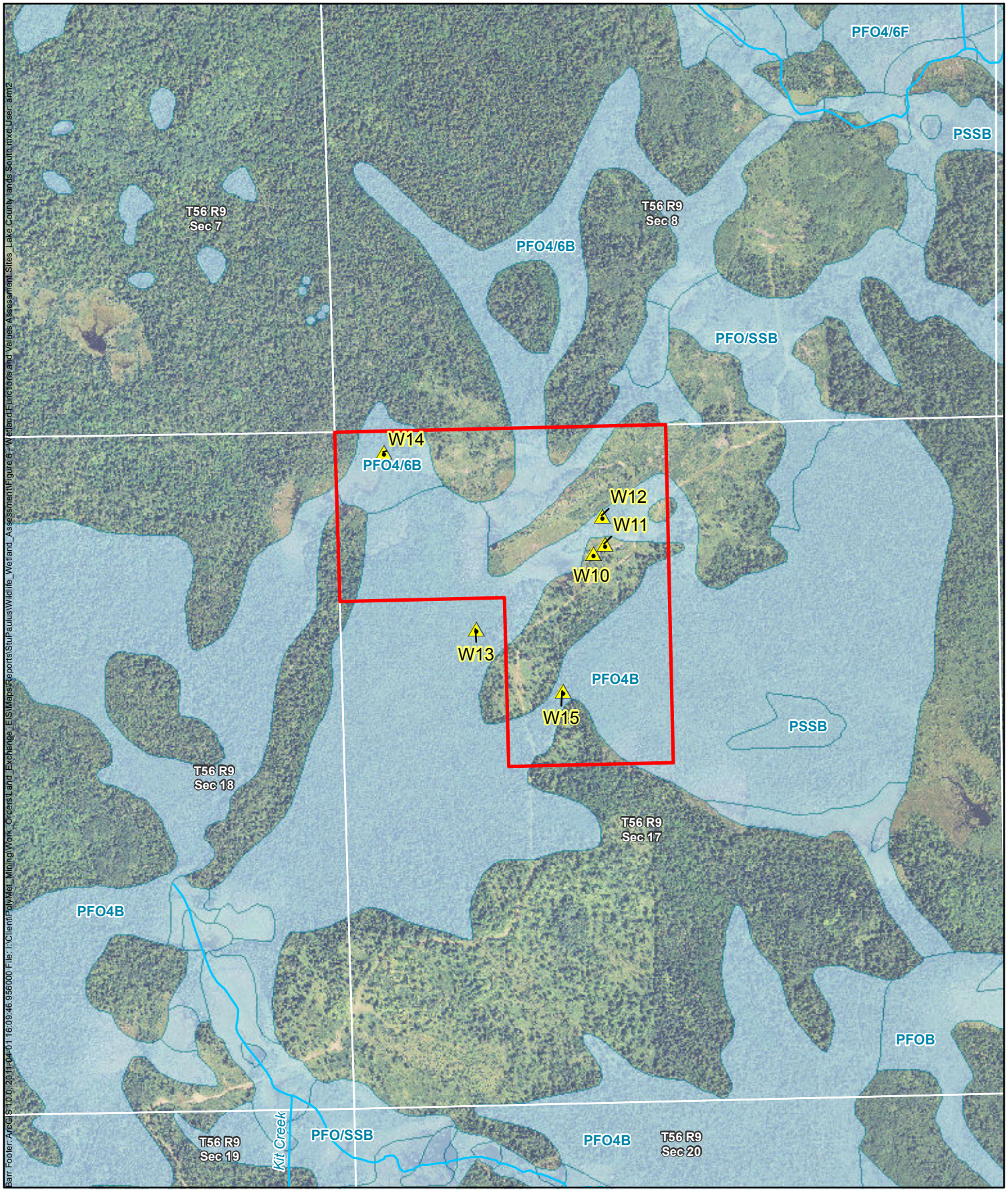
Rivers and Streams

N

1,000 500 0 1,000

Feet

Figure 5
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
Wolf lands 4
Lake County, MN



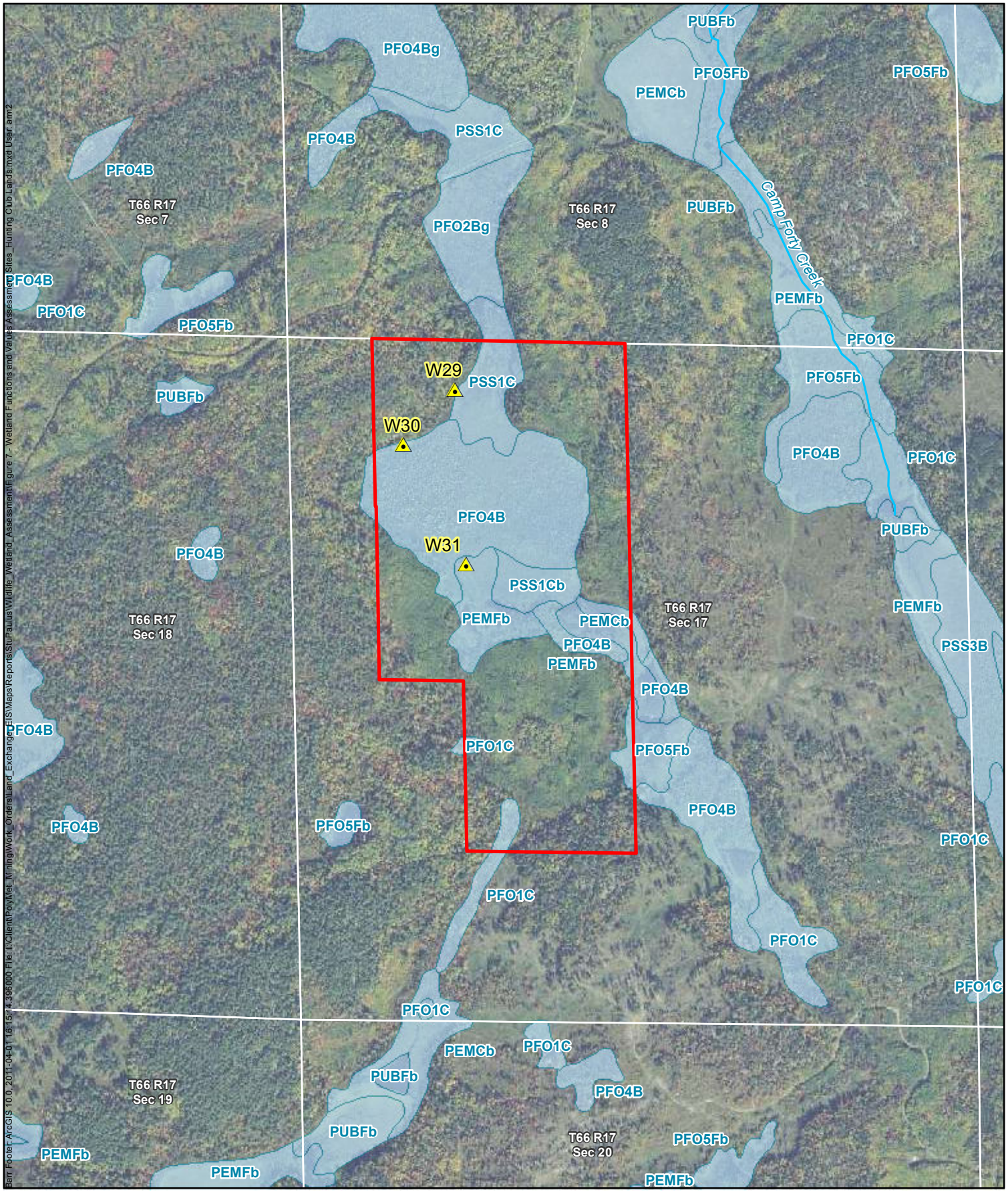
Wetland Functions and Values Assessment Sites
Lake County lands
Section Lines
Wetlands (NWI)
Rivers and Streams

N

1,000 500 0 1,000

Feet

Figure 6
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
Lake County lands South
Lake County, MN



Wetland Functions and Values Assessment Sites
Hunting Club lands
Section Lines
Wetlands (NWI)
Rivers and Streams

N

1,000 500 0 1,000

Feet

Figure 7
WETLAND FUNCTIONS AND VALUES ASSESSMENT SITES
Hunting Club lands
Saint Louis County, MN

Table 13
Wetland Functional Value Assessment for the Lake County, Hunting Club, and Wolf Land Parcels

Wetland Number	Primary Community Type	Functional Value Ratings								
		Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
WOLF LAND 1										
26	Coniferous Bog	High	High	Medium	High	High	High	Not Applicable	High	Medium
27	Coniferous Bog	High	High	Medium	High	High	High	High	Not Applicable	Medium
28	Coniferous Swamp	High	High	Medium	High	High	High	High	High	Medium
WOLF LAND 2										
33	Coniferous bog	High	High	High	High	High	High	Not Applicable	Not Applicable	Medium
34	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium
35	Coniferous Swamp	High	High	Medium	High	High	High	High	High	Medium
36	Coniferous Bog	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
37	Coniferous Bog	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
WOLF LAND 3										
4	Alder Thicket	High	High	Medium	High	High	High	Not Applicable	High	Medium
5	Alder Thicket	High	High	Medium	High	High	High	Not Applicable	High	Medium
6	Coniferous Bog	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
7	Sedge Meadow	High	High	Medium	High	High	High	High	Low	Medium
8	Alder Thicket	High	High	Medium	High	High	High	High	Medium	Medium
9	Sedge Meadow	High	High	Medium	High	High	High	High	Medium	Medium

Table 13 (Cont.)
Wetland Functional Value Assessment for the Lake County, Hunting Club, and Wolf Land Parcels

Wetland Number	Primary Community Type	Functional Value Ratings								
		Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
WOLF LAND 4										
1	Coniferous bog	High	High	Medium	High	High	High	Not Applicable	High	Medium
2	Coniferous Swamp	High	High	Medium	High	High	High	High	High	Medium
3	Alder Thicket	High	High	Medium	High	High	High	Not Applicable	High	Medium
LAKE COUNTY NORTH										
16	Coniferous Swamp	High	High	Medium	High	High	High	High	High	Medium
17	Deep Marsh	High	High	Medium	High	High	High	High	High	Medium
18	Hardwood Swamp	High	High	Medium	Medium	High	High	High	High	Medium
19	Hardwood Swamp	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
20	Coniferous Bog	High	High	Medium	High	High	High	High	High	Medium
21	Coniferous Swamp	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
22	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium
23	Coniferous Bog	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
24	Alder Thicket	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium
25	Coniferous Swamp	High	High	Medium	High	High	High	High	High	Medium

Table 13 (Cont.)
Wetland Functional Value Assessment for the Lake County, Hunting Club, and Wolf Land Parcels

Wetland Number	Primary Community Type	Functional Value Ratings								
		Vegetation Diversity / Integrity	Hydrology	Flood Attenuation	Downstream Water Quality	Wetland Water Quality	Wildlife Habitat	Fish Habitat	Amphibian Habitat	Aesthetics / Education / Cultural
LAKE COUNTY SOUTH										
10	Deep Marsh	High	High	Medium	High	High	High	High	High	Medium
11	Shallow Marsh	High	High	Medium	High	High	High	High	High	Medium
12	Coniferous Bog	High	High	Medium	High	High	High	Not Applicable	Medium	Medium
13	Coniferous Swamp	High	High	Medium	High	High	High	Not Applicable	High	Medium
14	Alder Thicket	High	High	Medium	High	High	High	High	Medium	High
15	Hardwood Swamp	High	High	Medium	High	High	High	Not Applicable	High	Medium
HUNTING CLUB PARCEL										
29	Shallow Marsh	High	High	Medium	High	High	High	High	Medium	Medium
30	Coniferous Swamp	High	High	Medium	High	High	High	High	Not Applicable	Medium
31	Alder Thicket	High	High	Medium	High	High	High	High	High	Medium
32	Coniferous Swamp	High	High	Medium	High	High	High	Not Applicable	Not Applicable	Medium

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APPENDIX A

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Plants	
Balsam Fir	*Abies balsamea*
Beaked Hazel	*Corylus cornuta*
Black Ash	*Fraxinus nigra*
Black Spruce	*Picea mariana*
Bog Birch	*Betula pumila*
Bog Cranberry	*Vaccinium oxycoccus*
Bog Labrador-tea	*Ledum groenlandicum*
Bog Rosemary	*Andromeda glaucophylla*
Bracken Fern	*Pteridium aquilinum*
Bunchberry	*Cornus canadensis*
Canada Bluejoint	*Calamagrostis canadensis*
Cattail	*Typha* spp.
Clintonia	*Clintonia borealis*
Club Moss	*Lycopodium* spp.
Coontail	*Ceratophyllum demersum*
Cottongrass	*Eriophorum* sp.
Cow Parsnip	*Heracleum lanatum*
Creeping Snowberry	*Gaultheria hispidula*
Daisy Fleabane	*Erigeron philadelphicus*
Duckweed	*Lemma minor*
Eastern White Pine	*Pinus strobus*
Horsetail	*Equisetum* spp.
Interrupted Fern	*Osmunda claytoniana*
Jack Pine	*Pinus banksiana*
Large-leaved Aster	*Aster macrophyllus*
Leatherleaf	*Chamaedaphne calyculata*
Lowbush Blueberry	*Vaccinium angustifolium*
Mountain Maple	*Acer spicatum*
Narrow-leaved Cattail	*Typha angustifolia*
Northern White Cedar	*Thuja occidentalis*
Ox-eye Daisy	*Leucanthemum vulgare*
Paper Birch	*Betula papyrifera*
Pondweed	*Potamogeton* spp.
Prickly Rose	*Rosa acicularis*
Pussywillow	*Salix discolor*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Plants (Cont.)	
Red Maple	*Acer rubrum*
Red-osier Dogwood	*Cornus stolinifera*
Red Pine	*Pinus resinosa*
Rose Twisted Stalk	*Streptopus roseus*
Sedge	*Carex* spp.
Small-fruited Bog Cranberry	*Vaccinium oxycoccus*
Speckled Alder	*Alnus rugosa*
Spikerush	*Eleocharis* spp.
Star Flower	*Trientalis borealis*
Starry False Solomon's Seal	*Maianthemum stellatum*
Tall Buttercup	*Ranunculus acris*
Tamarack	*Larix laricina*
Thimbleberry	*Rubus parviflorus*
Trembling Aspen	*Populus tremuloides*
Twinflower	*Linnaea borealis*
Twining Honeysuckle	*Lonicera dioica*
White Clover	*Trifolium repens*
Wild Iris	*Iris versicolor*
Wild Raspberry	*Rubus* spp.
Wild Rice	*Zizania palustris*
Wild Sarsaparilla	*Aralia nudicaulis*
Wild Strawberry	*Fragaria virginiana*
Willow	*Salix* spp.
Wood Fern	*Dryopteris* spp.
Wool Grass	*Scirpus cyperinus*
Woolly Sedge	*Carex pellita*
Amphibians and Reptiles	
American Toad	*Bufo americanus*
Garter Snake	*Thamnophis* sp.
Gray Treefrog	*Hyla versicolor*
Green Frog	*Rana clamitans*
Northern Leopard Frog	*Rana pipiens*
Painted Turtle	*Chrysemys picta*
Snapping Turtle	*Chelydra serpentina*
Spring Peeper	*Pseudacris crucier*
Western Chorus Frog	*Pseudacris triseriata*
Wood Frog	*Rana sylvatica*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Amphibians and Reptiles (Cont.)	
Wood Turtle	*Glyptemys insculpta*
Birds	
American Crow	*Corvus branchyrhynchos*
American Goldfinch	*Carduelis tristis*
American Robin	*Turdus americanus*
American Three-toed Woodpecker	*Picoides dorsalis*
American White Pelican	*Pelecanus erythrorhynchos*
American Woodcock	*Scolopax minor*
Bald Eagle	*Haliaeetus leucocephalus*
Barred Owl	*Strix varia*
Bay-breasted Warbler	*Dendroica castanea*
Belted Kingfisher	*Megaceryle alcyon*
Black-backed Woodpecker	*Picoides arcticus*
Black-capped Chickadee	*Poecile atricapillus*
Black Tern	*Chlidonias niger*
Black-throated Blue Warbler	*Dendroica caerulescens*
Blue Jay	*Cyanocitta cristata*
Boreal Owl	*Aegolius funereus*
Broad-winged Hawk	*Buteo platypterus*
Brown Creeper	*Certhia americana*
Canada Warbler	*Wilsonia canadensis*
Cedar Waxwing	*Bombycilla cedrorum*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Chipping Sparrow	*Spizella passerina*
Common Nighthawk	*Chordeiles minor*
Common Loon	*Gavia immer*
Common Raven	*Corvus corax*
Common Tern	*Sterna hirundo*
Common Yellowthroat	*Geothlypis trichas*
Connecticut Warbler	*Oporornis agilis*
Dark-eyed Junco	*Junco hyemalis*
Eastern Phoebe	*Sayornis phoebe*
Golden-crowned Kinglet	*Regulus satrapa*
Golden-winged Warbler	*Vermivora chrysoptera*
Gray Jay	*Perisoreus canadensis*
Great Blue Heron	*Ardea herodias*
Great Gray Owl	*Strix nebulosa*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Birds (Cont.)	
Hairy Woodpecker	*Picoides villosus*
Hermit Thrush	*Catharus guttatus*
Hooded Merganser	*Lophodytes cucullatus*
Horned Grebe	*Podiceps auritus*
Killdeer	*Charadrius vociferus*
Magnolia Warbler	*Dendroica magnolia*
Marbled Godwit	*Limos fedoa*
Northern Flicker	*Colaptes auratus*
Northern Goshawk	*Accipiter gentilis*
Olive-sided Flycatcher	*Contopus cooperi*
Osprey	*Pandion haliaetus*
Philadelphia Vireo	*Vireo philadelphicus*
Pileated Woodpecker	*Dryocopus pileatus*
Pine Grosbeak	*Pinicola enucleator*
Pine Warbler	*Dendroica pinus*
Red-breasted Nuthatch	*Sitta canadensis*
Red-eyed Vireo	*Vireo olivaceus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Sturnella agelaius*
Ring-necked Duck	*Aythya collaris*
Ruby-crowned Kinglet	*Regulus calendula*
Ruby-throated Hummingbird	*Archilochus colubris*
Ruffed Grouse	*Bonasa umbellus*
Savannah Sparrow	*Passerculus sandwichensis*
Short-eared Owl	*Asio flammeus*
Song Sparrow	*Melospiza melodia*
Spruce Grouse	*Falcipennis canadensis*
Swainson's Thrush	*Catharus ustulatus*
Trumpeter Swan	*Cygnus buccinator*
Turkey Vulture	*Cathartes aura*
White-throated Sparrow	*Zonotrichia albicollis*
Wilson's Phalarope	*Phalaropus tricolor*
Winter Wren	*Troglodytes troglodytes*
Yellow-bellied Flycatcher	*Empidonax flaviventris*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Yellow Rail	*Coturnicops noveboracensis*
Yellow-rumped Warbler	*Dendroica coronata*

APPENDIX A (Cont.)

Common and Scientific Names of Plants and Animals Given in the Report

Common Name	Scientific Name
Birds (Cont.)	
Yellow Warbler	*Dendroica petechia*
Mammals	
American Marten	*Martes americana*
Beaver	*Castor canadensis*
Canada Lynx	*Lynx canadensis*
Eastern Pipistrelle	*Pipistrellus subflavus*
Gray Wolf	*Canis lupus*
Heather Vole	*Phenacomys ungava*
Least Weasel	*Mustela nivalis*
Little Brown Bat	*Myotis lucifugus*
Moose	*Alces alces*
Mountain Lion	*Puma concolor*
Northern Myotis	*Myotis septentrionalis*
Porcupine	*Erethizon dorsatum*
Red Fox	*Vulpes vulpes*
Red Squirrel	*Tamiasciurus hudsonicus*
River Otter	*Lutra canadensis*
Smokey Shrew	*Sorex fumeus*
Snowshoe Hare	*Lepus canadensis*
White-tailed Deer	*Odocoileus virginianus*

APPENDIX B
Agency and Organization Contacts (2000-2008 Surveys)

Linda Aylsworth	Information Resources Coordinator, International Wolf Center, 1396 Highway 169, Ely 55731 (218-365-4695)
Susan Catton	Wildlife Biologist, Superior National Forest, 1393 Highway 169, Ely, MN 55731 (218) 365-7572
David Grosshuesch	Wildlife Biologist, Superior National Forest, Grand Marais, MN (218-387-3236).
Lisa Joyal	Endangered Species Environmental Review Coordinator. Minnesota Department of Natural Resources Division of Ecological Resources, St. Paul 55155 (651-259-5109)
Yvette Monstad	Division of Ecological Services, Minnesota Department of Natural Resources, 500 Lafayette Rd., Box 25, St. Paul, MN 55155
Daniel Ryan	Wildlife Biologist, Forest Service Laurentian Ranger District, 318 Forestry Drive, Aurora, MN 55705 (218-229-8809)

APPENDIX C
Superior National Forest
Regional Forester Sensitive Species

Tuesday, October 5, 2006

Scientific Name	Common Name
MAMMALS	
Phenacomys intermedius	Heather Vole
BIRDS	
Accipiter gentilis	Northern Goshawk
Aegolius funereus	Boreal Owl
Ammodramus leconteii	Le Conte's Sparrow
Contopus cooperi	Olive-sided Flycatcher
Coturnicops noveboracensis	Yellow Rail
Dendroica caerulescens	Black-throated Blue Warbler
Dendroica castanea	Bay-breasted Warbler
Falco peregrinus anatum	American Peregrine Falcon
Oporornis agilis	Connecticut Warbler
Picoides tridactylus	Three-toed Woodpecker
Strix nebulosa	Great Gray Owl
Tympanuchus phasianellus	Sharp-tailed Grouse
REPTILES	
Clemmys insculpta (Glyptemys)	Wood Turtle
FISH	
Acipenser fulvescens	Lake Sturgeon
Coregonus zenithicus	Cisco or Lake Herring
Ichthyomyzon fossor	Northern Brook Lamprey
MOLLUSKS	
Lasmigona compressa	Creek Heelsplitter
Ligumia recta	Black Sandshell

APPENDIX D

WETLAND ASSESSMENT DATA FORMS

MNRAM 3.2 Digital/Manual Worksheet, Side 1

If the site presents more than one Special Feature, the digital calculation may not adequately evaluate function.

	Wetland ID	1	2	3	4
	Survey Date	11/17/2010	11/17/2010	11/17/2010	11/17/2010
	UTM Coordinates	*610755 / 5273195*	*610880 / 5273108*	*610975 / 5273287*	*611904 / 5268523*
	photo ID	photo 2506-07 / Wolf Land 4	photo 2508-2510 / Wolf Land 4	photo 2511-12 / Wolf Land 4	photo 2514-15 / Wolf Land 3
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4B Coniferous Bog	4B Coniferous Swamp	8A Alder thicket	8A Alder thicket
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	BLACK SPRUCE 4 LABRADOR TEA 5 SPHAGNUM MOSS 6 LEATHERLEAF 3 CLUB MOSS 3	SPRUCE 4 TAMARACK 2 WHITE CEDAR 2 SPECKLED ALDER 2 LEATHERLEAF 4 LABRADOR TEA 4 SPHAGNUM MOSS 6	SPRUCE 2 LARCH 2 SPECKLED ALDER 5 LEATHERLEAF 3 LABRADOR TEA 3 CLUB MOSS 2	SPECKLED ALDER 4 TAMARACK 2 BLACK SPRUCE 2 GRASSES 4 RASPBERRY 2 LABRADOR TEA 5
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
#4	Listed, rare, special plant species?	n Y N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n Y N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n Y N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.2 Digital Worksheet, Side 2

		Question Description	User entry	Rating						
	1	Veg. Table 2, Option 4		1.00						
		TOTAL VEG Rating	1	High						
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next						
	5	Rare community or habitat?	n	next						
	6	Pre-European-settlement conditions?	n	next						
	7	hydrogeo & topo	O	Other						
	8	Water depth (inches)	6							
		Water depth (% inundation)	30%							
	9	Local watershed/immedita drainage (acres)								
	10	Existing wetland size								
	11	SOILS: Up/Wetland (survey classification + site)								
	12	Outlet characteristics for flood retention	N/A	N/A						
	13	Outlet characteristics for hydrologic regime	A	1						
	14	Dominant upland land use (within 500 ft)	A	1		0.1				
	15	Soil condition (wetland)	A	1						
	16	Vegetation (% cover)	80%	H		1				
	17	Emerg. veg. flood resistance	A	1						
	18	Sediment delivery	A	1						
	19	Upland soils (based on soil group)	B	0.5						
	20	Stormwater runoff pretreatment & detention	C	0.1		1				
	21	Subwatershed wetland density	C	0.1						
	22	Channels/sheet flow	A	1						
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1	
	24	Buffer Area Management: % Full	100%	1		1	**1**			
		buffer area mgmt: % Manicured	0%	0						
		buffer area mgmt: % Bare	0%	0						
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**			
		buffer area diversity: % Mixed	0%	0						
		buffer area diversity: % Sparse/Inv./Exotic	0%	0						
	26	Adjacent Area Slope: % Gentle	100%	1		1	**1**			
		adjacent area slope: % Moderate	0%	0						
		adjacent area slope: % Steep	0%	0						
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1						
	28	Nutrient loading	A	1						
	29	Shoreline wetland?	N	N						
	30	Rooted shoreline vegetation (%cover)		Enter a percentage						
	31	Wetland in-water width (in feet, average)		Enter a percentage						
	32	Emergent vegetation erosion resistance		Enter valid choice						
	33	Shoreline erosion potential		Enter valid choi						
	34	Bank protection/upslope veg.		Enter valid choice						
	35	Rare Wildlife	N	N						
	36	Scarce/Rare/S1/S2 local community	N	N						
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A					
	38	Community interspersion (see diagram 2)	1	L		0.1				0
	39	Wetland detritus	A	1						
	40	Wetland interspersion on landscape	A	1		1				
	41	Wildlife barriers	A	1						
	42	Amphibian breeding potential-hydroperiod	A	1						
	43	Amphibian breeding potential--fish presence	A	1						
	44	Amphibian & reptile overwintering habitat	C	0.1						
	45	Wildlife species (list)								
	46	Fish habitat quality	N/A	N/A						
	47	Fish species (list)								
	48	Unique/rare educ./cultural/rec.opportunity	N	N						
	49	Wetland visibility	C	0.1						
	50	Proximity to population	N	0.1						
	51	Public ownership	C	0.1						
	52	Public access	B	0.5						
	53	Human influence on wetland	A	1						
	54	Human influence on viewshed	A	1						
	55	Spatial buffer	A	1						
	56	Recreational activity potential	C	0.1						
	57	Commercial crop--hydrologic impact	N/A	N/A						
	58	*GW - Wetland soils*	R	R or D		0.1				
	59	*GW - Subwatershed land use*	D	R or D		1				
	60	*GW - Wetland size and soil group*	D	R or D		1				
	61	GW - Wetland hydroperiod	R	R or D		0.1				

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	A	B	C	D	E	F	G	H	I	J	K
77	**Additional questions**	62	GW - Inlet/Outlet configuration	R	R or D	0.1					
78		63	GW - Surrounding upland topographic relief	R	R or D	0.1					
79		64	Restoration potential w/o flooding		Y or N	2.4					
80		65	*Landowners affected by restoration*		*E a b c*	Enter valid choice					
81		66A	*Existing wetland size (acres) [from #10]*	0	__ acres						
82		66B	Total wetland restoration size (acres)		__ acres	0.1					
83		66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained:		#DIV/0!			
84		67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width	value:	#DIV/0!			
85		68	Likelihood of restoration success		a b c	Enter valid choice					
86		69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling						
87		70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8						
88		71	Wetland sensitivity to stormwater		E a b c						
89		72	Additional stormwater treatment needs		a b c						
90											
93											
94											
95			**Function Name**	Raw score	**Final Rating**	**Rating Category**		**Formula shown to the right.**			
96	**Functional Rating Summaries**		Vegetative Diversity/Integrity		1.00	High					
97											
98			Hydrology - Characteristic		1.00	High					
99											
100			Flood Attenuation		0.60	Med					
101											
102			Water Quality--Downstream		0.85	High					
103											
104			Water Quality--Wetland		1.00	High					
105											
106			Shoreline Protection		N/A	N/A					
107											
108			Characteristic Wildlife Habitat Structure	0.90	0.90	High					
109											
110			Maintenance of Characteristic Fish Habitat	########	N/A	N/A					
111											
112			Maintenance of Characteristic Amphibian Habitat		0.85	High					
113											
114			Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med					
115											
116			Commercial use		N/A	N/A		0			
117											
118			Special Features listing:			-					
119											
120			Groundwater Interaction		recharge						
121			Groundwater Functional Index			no special indicators					
122											
123			Restoration Potential (draft formula)		#VALUE!	#VALUE!					
124			Stormwater Sensitivity (not active)								

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

		Question Description	User entry	Rating					
	1	Veg. Table 2, Option 4		1.00					
		TOTAL VEG Rating	1	High					
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next					
	5	Rare community or habitat?	n	next					
	6	Pre-European-settlement conditions?	n	next					
	7	hydrogeo & topo	O	Other					
	8	Water depth (inches)	12						
		Water depth (% inundation)	40%						
	9	Local watershed/immedita drainage (acres)							
	10	Existing wetland size							
	11	SOILS: Up/Wetland (survey classification + site)							
	12	Outlet characteristics for flood retention	N/A	N/A					
	13	Outlet characteristics for hydrologic regime	A	1					
	14	Dominant upland land use (within 500 ft)	A	1		0.1			
	15	Soil condition (wetland)	A	1					
	16	Vegetation (% cover)	80%	H		1			
	17	Emerg. veg. flood resistance	A	1					
	18	Sediment delivery	A	1					
	19	Upland soils (based on soil group)	B	0.5					
	20	Stormwater runoff pretreatment & detention	C	0.1		1			
	21	Subwatershed wetland density	C	0.1					
	22	Channels/sheet flow	A	1					
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
	24	Buffer Area Management: % Full	100%	1		1	**1**		
		buffer area mgmt: % Manicured	0%	0					
		buffer area mgmt: % Bare	0%	0					
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
		buffer area diversity: % Mixed	0%	0					
		buffer area diversity: % Sparse/Inv./Exotic	0%	0					
	26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
		adjacent area slope: % Moderate	0%	0					
		adjacent area slope: % Steep	0%	0					
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1					
	28	Nutrient loading	A	1					
	29	Shoreline wetland?	N	N					
	30	Rooted shoreline vegetation (%cover)	Enter a percentage						
	31	Wetland in-water width (in feet, average)	Enter a percentage						
	32	Emergent vegetation erosion resistance	Enter valid choice						
	33	Shoreline erosion potential	Enter valid choi						
	34	Bank protection/upslope veg.	Enter valid choice						
	35	Rare Wildlife	N	N					
	36	Scarce/Rare/S1/S2 local community	N	N					
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
	38	Community interspersion (see diagram 2)	1	L		0.1			0
	39	Wetland detritus	A	1					
	40	Wetland interspersion on landscape	A	1		1			
	41	Wildlife barriers	A	1					
	42	Amphibian breeding potential-hydroperiod	A	1					
	43	Amphibian breeding potential--fish presence	A	1					
	44	Amphibian & reptile overwintering habitat	C	0.1					
	45	Wildlife species (list)							
	46	Fish habitat quality	C	0.1					
	47	Fish species (list)							
	48	Unique/rare educ./cultural/rec.opportunity	N	N					
	49	Wetland visibility	C	0.1					
	50	Proximity to population	N	0.1					
	51	Public ownership	C	0.1					

	52	Public access	B	0.5	
	53	Human influence on wetland	A	1	
	54	Human influence on viewshed	A	1	
	55	Spatial buffer	A	1	
	56	Recreational activity potential	C	0.1	
	57	Commercial crop--hydrologic impact	N/A	N/A	
	58	*GW - Wetland soils*	R	R or D	0.1
	59	*GW - Subwatershed land use*	D	R or D	1
	60	*GW - Wetland size and soil group*	D	R or D	1
Additional questions	61	GW - Wetland hydroperiod	R	R or D	0.1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	R	R or D	0.1
	64	Restoration potential w/o flooding	-	Y or N	2.4
	65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
	66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
	66B	Total wetland restoration size (acres)		__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
	67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width value: ####
	68	Likelihood of restoration success		a b c	Enter valid choice
	69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater		E a b c	
	72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	
Groundwater Interaction		recharge		
Groundwater Functional Index			no special indicators	
Restoration Potential (draft formula)		#VALUE!	#VALUE!	
Stormwater Sensitivity (not active)				

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
Digital worksheet, section I								
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	30%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	90%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
Digital worksheet, section II								
27	Downstream sensitivity/WQ protection	A	1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)	Enter a percentage						
31	Wetland in-water width (in feet, average)	Enter a percentage						
32	Emergent vegetation erosion resistance	Enter valid choice						
33	Shoreline erosion potential	Enter valid choi						
34	Bank protection/upslope veg.	Enter valid choice						
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	C	0.1					

	52	Public access	B	0.5	
	53	Human influence on wetland	A	1	
	54	Human influence on viewshed	A	1	
	55	Spatial buffer	A	1	
	56	Recreational activity potential	C	0.1	
	57	Commercial crop--hydrologic impact	N/A	N/A	
	58	*GW - Wetland soils*	D	R or D	1
	59	*GW - Subwatershed land use*	D	R or D	1
	60	*GW - Wetland size and soil group*	D	R or D	1
Additional questions	61	GW - Wetland hydroperiod	R	R or D	0.1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	R	R or D	0.1
	64	Restoration potential w/o flooding	-	Y or N	3.3
	65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
	66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
	66B	Total wetland restoration size (acres)		__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
	67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width value: ####
	68	Likelihood of restoration success		a b c	Enter valid choice
	69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater		E a b c	
	72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction		indeterminate GW source
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

		Question Description	User entry	Rating					
	1	Veg. Table 2, Option 4		1.00					
		TOTAL VEG Rating	1	High					
	4	Listed, rare, special plant species?	n	next					
	5	Rare community or habitat?	n	next					
	6	Pre-European-settlement conditions?	n	next					
	7	hydrogeo & topo	O	Other					
	8	Water depth (inches)	6						
		Water depth (% inundation)	30%						
	9	Local watershed/immedita drainage (acres)							
	10	Existing wetland size							
Digital worksheet, section I	11	SOILS: Up/Wetland (survey classification + site)							
	12	Outlet characteristics for flood retention	N/A	N/A					
	13	Outlet characteristics for hydrologic regime	A	1					
	14	Dominant upland land use (within 500 ft)	A	1		0.1			
	15	Soil condition (wetland)	A	1					
	16	Vegetation (% cover)	75%	M		0.5			
	17	Emerg. veg. flood resistance	A	1					
	18	Sediment delivery	A	1					
	19	Upland soils (based on soil group)	B	0.5					
	20	Stormwater runoff pretreatment & detention	C	0.1		1			
	21	Subwatershed wetland density	C	0.1					
	22	Channels/sheet flow	A	1					
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
	24	Buffer Area Management: % Full	100%	1		1	**1**		
		buffer area mgmt: % Manicured	0%	0					
		buffer area mgmt: % Bare	0%	0					
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
		buffer area diversity: % Mixed	0%	0					
		buffer area diversity: % Sparse/Inv./Exotic	0%	0					
	26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
		adjacent area slope: % Moderate	0%	0					
		adjacent area slope: % Steep	0%	0					
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1					
	28	Nutrient loading	A	1					
	29	Shoreline wetland?	N	N					
	30	Rooted shoreline vegetation (%cover)	Enter a percentage						
	31	Wetland in-water width (in feet, average)	Enter a percentage						
	32	Emergent vegetation erosion resistance	Enter valid choice						
	33	Shoreline erosion potential	Enter valid choi						
	34	Bank protection/upslope veg.	Enter valid choice						
	35	Rare Wildlife	N	N					
	36	Scarce/Rare/S1/S2 local community	N	N					
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
	38	Community interspersion (see diagram 2)	2	M		0.5			0
	39	Wetland detritus	A	1					
	40	Wetland interspersion on landscape	A	1		1			
	41	Wildlife barriers	A	1					
	42	Amphibian breeding potential-hydroperiod	A	1					
	43	Amphibian breeding potential--fish presence	A	1					
	44	Amphibian & reptile overwintering habitat	C	0.1					
	45	Wildlife species (list)							
	46	Fish habitat quality	N/A	N/A					
	47	Fish species (list)							
	48	Unique/rare educ./cultural/rec.opportunity	N	N					
	49	Wetland visibility	C	0.1					
	50	Proximity to population	N	0.1					
	51	Public ownership	C	0.1					

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	52	Public access	B	0.5	
	53	Human influence on wetland	A	1	
	54	Human influence on viewshed	A	1	
	55	Spatial buffer	A	1	
	56	Recreational activity potential	C	0.1	
	57	Commercial crop--hydrologic impact	N/A	N/A	
	58	*GW - Wetland soils*	D	R or D	1
	59	*GW - Subwatershed land use*	D	R or D	1
	60	*GW - Wetland size and soil group*	D	R or D	1
Additional questions	61	GW - Wetland hydroperiod	R	R or D	0.1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	R	R or D	0.1
	64	Restoration potential w/o flooding	-	Y or N	3.3
	65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
	66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
	66B	Total wetland restoration size (acres)		__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
	67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width value: ####
	68	Likelihood of restoration success		a b c	Enter valid choice
	69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater		E a b c	
	72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.81	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	#VALUE!	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	indeterminate GW source	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

	Wetland ID	5	6	7	8
	Survey Date	11/18/2010	11/18/2010	11/18/2010	11/18/2010
	UTM Coordinates	611650 / 5268540	611405 / 5268325	611173 / 5268375	611131 / 5268370
	Photo ID	2516-17 / Wolf Land 3	2518-18 / Wolf Land 3	2520-21 / Wolf Land 3	2522-23 / Wolf Land 3
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, **13A**, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3		~ Describe each community type individually below ~		~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	8A alder thicket	4A conifer bog	13A sedge meadow	8A alder thicket
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	SPECKLED ALDER 5 BLACK SPRUCE 2 LABRADOR TEA 5 GRASSES 2 SEDGES 2 PAPER BIRCH 2	BLACK SPRUCE 5 BALSAM FIR 3 LABRADOR TEA 3 SPHAGNUM MOSS 6 FORBS 2	WOOLGRASS 4 CANADA BLUEJOINT 3 LABRADOR TEA 2 SPECKLED ALDER 1 TAMARACK 1 WHITE CEDAR 1	SPECKLED ALDER 6 WHITE CEDAR 2 TAMARACK 2 LABRADOR TEA 4 CANADA BLUEJOINT 2
	Invasive/exotic Vegetation / Cover Class			NARROW-LEAVED CATTAIL 3	
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
#4	Listed, rare, special plant species?	n Y N	n Y N	n Y N	n Y N
#5	**Rare community or habitat?**	**n Y N**	**n Y N**	**n Y N**	**n Y N**
#6	Pre-European-settlement conditions?	n Y N	n Y N	n Y N	n Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating				
	Digital worksheet, section I						
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	6					
	Water depth (% inundation)	30%					
9	Local watershed/immedita drainage (acres)	N/A					
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
	Digital worksheet, section II						
27	Downstream sensitivity/WQ protection	A	1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)	Enter a percentage					
31	Wetland in-water width (in feet, average)	Enter a percentage					
32	Emergent vegetation erosion resistance	Enter valid choice					
33	Shoreline erosion potential	Enter valid choi					
34	Bank protection/upslope veg.	Enter valid choice					
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	2	M		0.5		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	N/A	N/A				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	R	R or D	0.1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding	-	Y or N	2.4
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widtl value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	#######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	recharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	30%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	80%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	A	1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	1	L		0.1			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	I	0					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	C	0.1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	R	R or D	0.1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding	-	Y or N	2.4
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	#######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	recharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
Digital worksheet, section I								
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	FLOOD	Floodplain					
8	Water depth (inches)	18						
	Water depth (% inundation)	100%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	90%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	C	0.1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
Digital worksheet, section II								
27	Downstream sensitivity/WQ protection	A	1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid cho					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	C	0.1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	A	1					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	C	0.1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wi value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category
Vegetative Diversity/Integrity		1.00	High
Hydrology - Characteristic		1.00	High
Flood Attenuation		0.53	Med
Water Quality--Downstream		0.85	High
Water Quality--Wetland		1.00	High
Shoreline Protection		N/A	N/A
Characteristic Wildlife Habitat Structure	0.94	0.94	High
Maintenance of Characteristic Fish Habitat	1.00	1.00	High
Maintenance of Characteristic Amphibian Habitat		0.09	Low
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med
Commercial use		N/A	N/A

Formula shown to the right.

0

Special Features listing: -

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	FLOOD	Floodplain				
8	Water depth (inches)	18					
	Water depth (% inundation)	100%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
Digital worksheet, section I							
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	90%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
Digital worksheet, section II							
27	Downstream sensitivity/WQ protection	A	1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	B	0.5				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	B	0.5				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	D	R or D	1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	5.1
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.43	Med	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

		Wetland name / ID	Wetland name / ID	Wetland name / ID	Wetland name / ID
	Wetland ID	**9**	**10**	**11**	**12**
	Survey Date	11/18/2010	11/19/2010	11/19/2010	11/19/2010
	UTM Coordinates	611408 / 5268752	612728 / 5244070	612756 / 5244093	612750 / 5244160
	Photo ID	2524 / Wolf Land 3	2529-30 / Lake South	2530-32 / Lake South	2533-34 / Lake South
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, **13A**, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, **12B**, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, **13B**, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	13A SEDGE MEADOW	12B DEEP MARSH	13B SHALLOW MARSH	4A CONIFER BOG
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	WOOLGRASS 4 SPECKLED ALDER 2	WOOLGRASS 4 CANADA BLUEJOINT 3	WOOLGRASS 2 OTHER SCIRPUS 2 SEDGES 5 CANADA BLUEJOINT 3 SPECKLED ALDER 2	BLACK SPRUCE 2 TAMARACK 5 LEATHERLEAF 4 SPHAGNUM MOSS 6 SPECKLED ALDER 5
	Invasive/exotic Vegetation / Cover Class	NARROW-LEAVED CATTAIL 3	NARROW -LEAVED CATTAIL		
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
#4	Listed, rare, special plant species?	n Y N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n Y N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n Y N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

		Question Description	User entry	Rating					
	1	Veg. Table 2, Option 4		1.00					
		TOTAL VEG Rating	1	High					
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next					
	5	Rare community or habitat?	n	next					
	6	Pre-European-settlement conditions?	n	next					
	7	hydrogeo & topo	O	Other					
	8	Water depth (inches)	12						
		Water depth (% inundation)	80%						
	9	Local watershed/immedita drainage (acres)							
	10	Existing wetland size							
	11	SOILS: Up/Wetland (survey classification + site)							
	12	Outlet characteristics for flood retention	N/A	N/A					
	13	Outlet characteristics for hydrologic regime	A	1					
	14	Dominant upland land use (within 500 ft)	A	1		0.1			
	15	Soil condition (wetland)	A	1					
	16	Vegetation (% cover)	90%	H		1			
	17	Emerg. veg. flood resistance	A	1					
	18	Sediment delivery	A	1					
	19	Upland soils (based on soil group)	B	0.5					
	20	Stormwater runoff pretreatment & detention	C	0.1		1			
	21	Subwatershed wetland density	C	0.1					
	22	Channels/sheet flow	B	0.5					
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
	24	Buffer Area Management: % Full	100%	1		1	**1**		
		buffer area mgmt: % Manicured	0%	0					
		buffer area mgmt: % Bare	0%	0					
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
		buffer area diversity: % Mixed	0%	0					
		buffer area diversity: % Sparse/Inv./Exotic	0%	0					
	26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
		adjacent area slope: % Moderate	0%	0					
		adjacent area slope: % Steep	0%	0					
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	A	1					
	28	Nutrient loading	A	1					
	29	Shoreline wetland?	N	N					
	30	Rooted shoreline vegetation (%cover)		Enter a percentage					
	31	Wetland in-water width (in feet, average)		Enter a percentage					
	32	Emergent vegetation erosion resistance		Enter valid choice					
	33	Shoreline erosion potential		Enter valid choi					
	34	Bank protection/upslope veg.		Enter valid choice					
	35	Rare Wildlife	N	N					
	36	Scarce/Rare/S1/S2 local community	N	N					
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
	38	Community interspersion (see diagram 2)	2	M		0.5			0
	39	Wetland detritus	A	1					
	40	Wetland interspersion on landscape	A	1		1			
	41	Wildlife barriers	A	1					
	42	Amphibian breeding potential-hydroperiod	A	1					
	43	Amphibian breeding potential--fish presence	B	0.5					
	44	Amphibian & reptile overwintering habitat	C	0.1					
	45	Wildlife species (list)							
	46	Fish habitat quality	C	0.1					
	47	Fish species (list)							
	48	Unique/rare educ./cultural/rec.opportunity	N	N					
	49	Wetland visibility	C	0.1					
	50	Proximity to population	N	0.1					
	51	Public ownership	C	0.1					
	52	Public access	B	0.5					
	53	Human influence on wetland	A	1					
	54	Human influence on viewshed	A	1					
	55	Spatial buffer	C	0.1					
	56	Recreational activity potential	C	0.1					
	57	Commercial crop--hydrologic impact	N/A	N/A					

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.43	Med	
Aesthetics/Recreation/Education/Cultural	0.38	0.38	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	12					
	Water depth (% inundation)	80%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	B	0.5				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1	0.1			
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	70%	M	0.5			
17	Emerg. veg. flood resistance	B	0.5				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1	1			
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	C	0.1				
23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1
24	Buffer Area Management: % Full	100%	1	1	**1**		
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**		
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	0%	0	1	**0.5**		
	adjacent area slope: % Moderate	100%	0.5				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	3	M	0.5			
38	Community interspersion (see diagram 2)	2	M	0.5			0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1	1			
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	B	0.5				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	C	0.1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.45	Med	
Water Quality--Downstream		0.63	Med	
Water Quality--Wetland		0.98	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.92	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	12					
	Water depth (% inundation)	80%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	B	0.5				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1	0.1			
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	90%	H	1			
17	Emerg. veg. flood resistance	B	0.5				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1	1			
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	B	0.5				
23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1 H	1	
24	Buffer Area Management: % Full	100%	1	1	**1**		
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**		
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	0%	0	1	**0.5**		
	adjacent area slope: % Moderate	100%	0.5				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	3	M	0.5			
38	Community interspersion (see diagram 2)	2	M	0.5			0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1	1			
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	C	0.1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widtl value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.51	Med	
Water Quality--Downstream		0.67	High	
Water Quality--Wetland		0.98	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating					
	Digital worksheet, section I							
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	80%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	80%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	B	0.5					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	0%	0		1	**0.5**		
	adjacent area slope: % Moderate	100%	0.5					
	adjacent area slope: % Steep	0%	0					
	Digital worksheet, section II							
27	Downstream sensitivity/WQ protection	B	0.5					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	1	L		0.1			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	I	0					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	C	0.1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential width value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.74	High	
Water Quality--Wetland		0.98	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

	Wetland ID	13	14	15	16
	Survey Date	11/19/2010	11/19/2010	11/19/2010	11/20/2010
	Lat/long	612450 / 5243890	612231 / 5244311	612656 / 5243743	592060 / 5255805
	Photo ID	2535-36 / Lake South	2539-40 / Lake South	2541-42 / Lake South	2543-45 / Lake North
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, **3B**, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4B Coniferous Swamp	8A Alder Thicket	3B Hardwood Swamp	4B Coniferous Swamp
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	WHITE CEDAR 4 BLACK ASH 3 BLACK SPRUCE 2 BALSAM FIR 2 SPECKLED ALDER 3	WHITE CEDAR 1 SPECKLED ALDER 5 CANADA BLUEJOINT 5 SEDGE 3	BLACK ASH 4 WHITE CEDAR 4 BALSAM FIR 2 DOGWOOD 3 SPECKLED ALDER 3 DOGWOOD 3	WHITE CEDAR 5 BLACK SPRUCE 3 BALSAM FIR 3 PAPER BIRCH 2 SPECKLED ALDER 3 CLUB MOSS 4 LABRADOR TEA 3 LEATHERLEAF 3
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
#4	Listed, rare, special plant species?	n Y N	n Y N	n Y N	n Y N
#5	**Rare community or habitat?**	**n Y N**	**n Y N**	**n Y N**	**n Y N**
#6	Pre-European-settlement conditions?	n Y N	n Y N	n Y N	n Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating					
	Digital worksheet, section I							
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	12%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	90%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	B	0.5					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
	Digital worksheet, section II							
27	Downstream sensitivity/WQ protection	B	0.5					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)	Enter a percentage						
31	Wetland in-water width (in feet, average)	Enter a percentage						
32	Emergent vegetation erosion resistance	Enter valid choice						
33	Shoreline erosion potential	Enter valid choi						
34	Bank protection/upslope veg.	Enter valid choice						
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: #DIV/0!
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: #DIV/0!
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.77	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	########	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6 TO 12						
	Water depth (% inundation)	80%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	90%	H		1			
17	Emerg. veg. flood resistance	B	0.5					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	B	0.5					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	B	0.5					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	B	0.5					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: #DIV/0!
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: #DIV/0!
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.73	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.43	Med	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	50%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	70%	M		0.5			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	B	0.5					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: #DIV/0!
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: #DIV/0!
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.73	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	########	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	4 TO 10						
	Water depth (% inundation)	60%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	80%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	A	1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	1	L		0.1			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	C	0.1					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.85	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

		Wetland name / ID	Wetland name / ID	Wetland name / ID	Wetland name / ID
	Wetland ID	**17**	**18**	**19**	**20**
	Survey Date	11/20/2010	11/20/2010	11/20/2010	11/20/2010
	Lat/long	591970 / 5255834	591885 / 5255893	594800 / 5256172	592050 / 5256685
	Photo ID	2546-47 / Lake North	2548-49 / Lake North	1550-51 / Lake North	2553-54 / Lake North
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, **12B**, 14A, 15A, 15B, 16A, 16B	3A, **3B**, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, **3B**, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	12B Deep Marsh	3B Hardwood Swamp	3B Hardwood Swamp	4A Coniferous Bog
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	SEDGE 6 CANADA BLUEJOINT 2 BLACK SPRUCE 2 WHITE CEDAR 2 TAMARACK 1	BLACK ASH 5 DOGWOOD 2 SPECKLED ALDER 4 RASPBERRY 3 GRASSES 4 FORBS 4 WHITE CEDAR 2	PAPER BIRCH 2 QUAKING ASPEN 4 WHITE CEDAR 2 SPECKLED ALDER 3 RED OSIER DOGWOOD 1 RASPBERY 1 GRASSES 4	SPHAGNUM MOSS 6 BLACK SPRUCE 5
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
#4	Listed, rare, special plant species?	n Y N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n Y N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n Y N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

		Question Description	User entry	Rating					
	1	Veg. Table 2, Option 4	h	1.00					
		TOTAL VEG Rating	1	High					
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next					
	5	Rare community or habitat?	n	next					
	6	Pre-European-settlement conditions?	n	next					
	7	hydrogeo & topo	O	Other					
	8	Water depth (inches)	24						
		Water depth (% inundation)	90%						
	9	Local watershed/immedita drainage (acres)							
	10	Existing wetland size							
	11	SOILS: Up/Wetland (survey classification + site)							
	12	Outlet characteristics for flood retention	N/A	N/A					
	13	Outlet characteristics for hydrologic regime	A	1					
	14	Dominant upland land use (within 500 ft)	A	1		0.1			
	15	Soil condition (wetland)	A	1					
	16	Vegetation (% cover)	80%	H		1			
	17	Emerg. veg. flood resistance	A	1					
	18	Sediment delivery	A	1					
	19	Upland soils (based on soil group)	B	0.5					
	20	Stormwater runoff pretreatment & detention	C	0.1		1			
	21	Subwatershed wetland density	C	0.1					
	22	Channels/sheet flow	A	1					
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
	24	Buffer Area Management: % Full	100%	1		1	**1**		
		buffer area mgmt: % Manicured	0%	0					
		buffer area mgmt: % Bare	0%	0					
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
		buffer area diversity: % Mixed	0%	0					
		buffer area diversity: % Sparse/Inv./Exotic	0%	0					
	26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
		adjacent area slope: % Moderate	0%	0					
		adjacent area slope: % Steep	0%	0					
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	C	0.1					
	28	Nutrient loading	A	1					
	29	Shoreline wetland?	N	N					
	30	Rooted shoreline vegetation (%cover)		Enter a percentage					
	31	Wetland in-water width (in feet, average)		Enter a percentage					
	32	Emergent vegetation erosion resistance		Enter valid choice					
	33	Shoreline erosion potential		Enter valid choi					
	34	Bank protection/upslope veg.		Enter valid choice					
	35	Rare Wildlife	N	N					
	36	Scarce/Rare/S1/S2 local community	N	N					
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
	38	Community interspersion (see diagram 2)	1	L		0.1			0
	39	Wetland detritus	A	1					
	40	Wetland interspersion on landscape	A	1		1			
	41	Wildlife barriers	A	1					
	42	Amphibian breeding potential-hydroperiod	A	1					
	43	Amphibian breeding potential--fish presence	A	1					
	44	Amphibian & reptile overwintering habitat	C	0.1					
	45	Wildlife species (list)							
	46	Fish habitat quality	C	0.1					
	47	Fish species (list)							
	48	Unique/rare educ./cultural/rec.opportunity	N	N					
	49	Wetland visibility	C	0.1					
	50	Proximity to population	N	0.1					
	51	Public ownership	A	1					
	52	Public access	B	0.5					
	53	Human influence on wetland	A	1					
	54	Human influence on viewshed	A	1					
	55	Spatial buffer	A	1					
	56	Recreational activity potential	C	0.1					
	57	Commercial crop--hydrologic impact	N/A	N/A					

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	8 TO 12					
	Water depth (% inundation)	60%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	70%	M		0.5		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

70

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding		Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.66	Med	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	30%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	80%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	C	0.1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	I	0					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	R	R or D	0.1
64	Restoration potential w/o flooding		Y or N	3.3
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	#VALUE!	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction		indeterminate GW source
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	6 TO 12					
	Water depth (% inundation)	80%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

	Wetland ID	21	22	23	24
	Survey Date	11/20/2010	11/20/2010	11/21/2010	11/21/2010
	Lat/long	592465 / 5256755	592717 / 5256795	593300 / 5255600	593360 / 5255530
	Photo ID	2557-58 / Lake North	2559-60 / Lake North	2561-62 / Lake North	2563-64 / Lake North
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4B Coniferous Swamp	8A Alder Thicket	4A Coniferous Bog	8A Alder Thicket
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	WHITE CEDAR 6 BALSAM FIR 2	BLACK SPRUCE 2 TAMARACK 2 PAPER BIRCH 2 WHITE CEDAR 2 SPECKLED ALDER 5 RED OSIER DOGWOOD 3 LABRADOR TEA 5 SPHAGNUM MOSS 5	BLACK SPRUCE 5 TAMARACK 3 SPECKLED ALDER 6 LABRADOR TEA 4	BLACK SPRUCE 1 WHITE CEDAR 1 SPECKLED ALDER 6
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
#4	Listed, rare, special plant species?	n Y N	N Y N	N Y N	N Y N
#5	**Rare community or habitat?**	**n Y N**	**N Y N**	**N Y N**	**N Y N**
#6	Pre-European-settlement conditions?	n Y N	N Y N	N Y N	N Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	6					
	Water depth (% inundation)	60%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	90%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)	Enter a percentage					
31	Wetland in-water width (in feet, average)	Enter a percentage					
32	Emergent vegetation erosion resistance	Enter valid choice					
33	Shoreline erosion potential	Enter valid choi					
34	Bank protection/upslope veg.	Enter valid choice					
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	I	0				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	N/A	N/A				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	56	Recreational activity potential	C	0.1	
	57	Commercial crop--hydrologic impact	N/A	N/A	
Additional questions	58	*GW - Wetland soils*	D	R or D	1
	59	*GW - Subwatershed land use*	D	R or D	1
	60	*GW - Wetland size and soil group*	D	R or D	1
	61	GW - Wetland hydroperiod	R	R or D	0.1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	D	R or D	1
	64	Restoration potential w/o flooding	-	Y or N	4.2
	65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
	66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
	66B	Total wetland restoration size (acres)		__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
	67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: ####
	68	Likelihood of restoration success		a b c	Enter valid choice
	69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater		E a b c	
	72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.77	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Digital worksheet, section I

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	14					
	Water depth (% inundation)	90%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				

Digital worksheet, section II

27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)	Enter a percentage					
31	Wetland in-water width (in feet, average)	Enter a percentage					
32	Emergent vegetation erosion resistance	Enter valid choice					
33	Shoreline erosion potential	Enter valid choi					
34	Bank protection/upslope veg.	Enter valid choice					
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	2	M		0.5		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				

51	Public ownership	A	1		
52	Public access	B	0.5		
53	Human influence on wetland	A	1		
54	Human influence on viewshed	A	1		
55	Spatial buffer	A	1		
56	Recreational activity potential	C	0.1		
57	Commercial crop--hydrologic impact	N/A	N/A		
58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	R	R or D	0.1	
62	GW - Inlet/Outlet configuration	R	R or D	0.1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding	-	Y or N	4.2	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	0	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid	value: ####
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Additional questions

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.77	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	____

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	3						
	Water depth (% inundation)	50%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
Digital worksheet, section I								
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	90%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
Digital worksheet, section II								
27	Downstream sensitivity/WQ protection	C	0.1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)	Enter a percentage						
31	Wetland in-water width (in feet, average)	Enter a percentage						
32	Emergent vegetation erosion resistance	Enter valid choice						
33	Shoreline erosion potential	Enter valid cho						
34	Bank protection/upslope veg.	Enter valid choice						
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	I	0					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	A	1					
52	Public access	B	0.5					

	53	Human influence on wetland	A	1	
	54	Human influence on viewshed	A	1	
	55	Spatial buffer	A	1	
	56	Recreational activity potential	C	0.1	
	57	Commercial crop--hydrologic impact	N/A	N/A	
	58	*GW - Wetland soils*	D	R or D	1
	59	*GW - Subwatershed land use*	D	R or D	1
	60	*GW - Wetland size and soil group*	D	R or D	1
Additional questions	61	GW - Wetland hydroperiod	R	R or D	0.1
	62	GW - Inlet/Outlet configuration	R	R or D	0.1
	63	GW - Surrounding upland topographic relief	D	R or D	1
	64	Restoration potential w/o flooding	-	Y or N	4.2
	65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
	66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
	66B	Total wetland restoration size (acres)		__ acres	0.1
	66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
	67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
	68	Likelihood of restoration success		a b c	Enter valid choice
	69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
	71	Wetland sensitivity to stormwater		E a b c	
	72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction		discharge
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)		#VALUE! #VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	0 TO 6						
	Water depth (% inundation)	50%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
Digital worksheet, section I								
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	90%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
Digital worksheet, section II								
27	Downstream sensitivity/WQ protection	C	0.1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)	Enter a percentage						
31	Wetland in-water width (in feet, average)	Enter a percentage						
32	Emergent vegetation erosion resistance	Enter valid choice						
33	Shoreline erosion potential	Enter valid choi						
34	Bank protection/upslope veg.	Enter valid choice						
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	I	0					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					

50	Proximity to population	N	0.1		
51	Public ownership	A	1		
52	Public access	B	0.5		
53	Human influence on wetland	A	1		
54	Human influence on viewshed	A	1		
55	Spatial buffer	A	1		
56	Recreational activity potential	C	0.1		
57	Commercial crop--hydrologic impact	N/A	N/A		
58	*GW - Wetland soils*	D	R or D	1	
59	*GW - Subwatershed land use*	D	R or D	1	
60	*GW - Wetland size and soil group*	D	R or D	1	
61	GW - Wetland hydroperiod	R	R or D	0.1	
62	GW - Inlet/Outlet configuration	R	R or D	0.1	
63	GW - Surrounding upland topographic relief	D	R or D	1	
64	Restoration potential w/o flooding	-	Y or N	4.2	
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice	
66A	*Existing wetland size (acres) [from #10]*	0	__ acres		
66B	Total wetland restoration size (acres)		__ acres	0.1	
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####	
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####	
68	Likelihood of restoration success		a b c	Enter valid choice	
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8		
71	Wetland sensitivity to stormwater		E a b c		
72	Additional stormwater treatment needs		a b c		

Additional questions

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	____

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

	Wetland ID	25	26	27	28
	Survey Date	11/21/2010	11/21/2010	11/21/2010	11/21/2010
	UTM Coordinates	593405 / 5255410	593648 / 5255040	593704 / 5254900	593910 / 5254890
	Photo ID	2565-66 / Lake North	2567-68 / Wolf Land 1	2569-70 / Wolf Land 1	2571-72 / Wolf Land 1
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, **7A**, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4B Coniferous Swamp	4A Coniferous Bog	4A Coniferous Bog	4B Coniferous Swamp
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	BLACK SPRUCE 4 WHITE CEDAR 2 PAPER BIRCH 1 TAMARACK 1 BALSAM FIR 4 CLUB MOSS 2 SPHAGNUM MOSS 6	BLACK SPRUCE 5 LABRADOR TEA 6 SPHAGNUM MOSS 6	BLACK SPRUCE 4 LEATHERLEAF 4 LABRADOR TEA 4 SPHAGNUM MOSS 6	BLACK SPRUCE 3 TAMARACK 1 WHITE CEDAR 1 LEATHERLEAF 5 LABRADOR TEA 3 SPHAGNUM MOSS 6
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
#4	Listed, rare, special plant species?	n Y N	N Y N	N Y N	N Y N
#5	**Rare community or habitat?**	**n Y N**	**N Y N**	**N Y N**	**N Y N**
#6	Pre-European-settlement conditions?	n Y N	N Y N	N Y N	N Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	12					
	Water depth (% inundation)	50%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1	0.1			
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H	1			
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1	1			
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1
24	Buffer Area Management: % Full	100%	1	1	**1**		
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**		
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1	1	**1**		
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L	0.1			0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1	1			
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	A	1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.60	0.60	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating				
	Digital worksheet, section I						
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	6					
	Water depth (% inundation)	80%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
	Digital worksheet, section II						
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	N/A	N/A				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	12					
	Water depth (% inundation)	60%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	I	0				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	12						
	Water depth (% inundation)	90%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	N/A	N/A					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	80%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	C	0.1					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	A	1					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	C	0.1					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	C	0.1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ######
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential widt value: ######
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

		Wetland name / ID	Wetland name / ID	Wetland name / ID	Wetland name / ID
	Wetland ID	**29**	**30**	**31**	**32**
	Survey Date	11/22/2010	11/22/2010	11/22/2010	11/22/2010
	Lat/long	532813 / 5339377	532690 / 5339246	5328391 / 5338962	
	Photo ID	2573-74 / Hunting Club	2575-76 / Hunting Club	NO PHOTO	2577-78 / Wolf Land 2
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, **13B**, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A,** 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3		~ Describe each community type individually below ~		~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	13B Shallow Marsh	4B Coniferous Swamp	8A Alder Thicket	4B Coniferous Swamp
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	CANADA BLUEJOINT 5	BLACK SPRUCE 5 TAMARACK 2 SPECKLED ALDER 4 LABRADOR TEA 4 LEATHERLEAF 4 SPHAGNUM MOSS 6 CANADA BLUEJOINT 2	BLACK SPRUCE 2 SPECKLED ALDER 5 LABRADOR TEA 4 LEATHERLEAF 3 MOSS 3	BLACK SPRUCE 6 LABRADOR TEA 3 SPHAGNUM MOSS 6 BALSAM FIR 2
	Invasive/exotic Vegetation / Cover Class	NARROW LEAVED CATTAIL 3			
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	1.00 High
#4	Listed, rare, special plant species?	n Y N	N Y N	N Y N	N Y N
#5	**Rare community or habitat?**	**n Y N**	**N Y N**	**N Y N**	**N Y N**
#6	Pre-European-settlement conditions?	n Y N	N Y N	N Y N	N Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	FT	Depress'l/Flow-through				
8	Water depth (inches)	12					
	Water depth (% inundation)	100%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	A	1				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1	0.1			
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H	1			
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1	1			
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1
24	Buffer Area Management: % Full	100%	1	1	**1**		
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**		
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	0%	0	1	**0.5**		
	adjacent area slope: % Moderate	100%	0.5				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	4	M	0.5			
38	Community interspersion (see diagram 2)	1	L	0.1			0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1	1			
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	B	0.5				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	B	0.5				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

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Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.68	High	
Water Quality--Downstream		0.72	High	
Water Quality--Wetland		0.98	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.86	0.86	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.43	Med	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	FLOOD	Floodplain				
8	Water depth (inches)	12					
	Water depth (% inundation)	50%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
Digital worksheet, section I							
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	90%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
Digital worksheet, section II							
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	I	0				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	B	0.5				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.83	0.83	High	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

	Question Description	User entry	Rating				
	Digital worksheet, section I						
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	FLOOD	Floodplain				
8	Water depth (inches)	12					
	Water depth (% inundation)	90%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
	Digital worksheet, section II						
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?		Enter Y or N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	6					
	Water depth (% inundation)	30%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
27	Downstream sensitivity/WQ protection	C	0.1				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L		0.1		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	I	0				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	N/A	N/A				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.70	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

	Wetland ID	33	34	35	36
	Survey Date	11/23/2010	11/23/2010	11/23/2010	11/23/2010
	UTM Coordinates	605940 / 5263302	606120 / 5263230	606302 / 5262962	606351 / 5262967
	Photo ID	2579-80 / Wolf Land 2	2581-82 / Wolf Land 2	2583-84 / Wolf Land 2	2585-86 / Wolf Land 2
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, **8A**, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, **4B**, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, **4A**, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4A Coniferous Bog	8A Alder Thicket	4B Coniferous Swamp	4A Coniferous Bog
	Community Proportion (% of total)	100%	100%	100%	100%
	Dominant Vegetation / Cover Class	BLACK SPRUCE 4 QUAKING ASPEN 4 BALSAM FIR 4 SPHAGNUM MOSS 6	BLACK SPRUCE 2 TAMARACK 2 SPECKLED ALDER 5 LABRADOR TEA 5	WHITE CEDAR 4 BLACK SPRUCE 2 SPECKLED ALDER 4 BALSAM FIR 3 SPHAGNUM MOSS 4	BLACK SPRUCE 5 SPECKLED ALDER 4 LABRADOR TEA 5 SPHAGNUM MOSS 6 TAMARACK 2
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	H 1	H 1	H 1
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	1 High	1 High	1 High
Average vegetative diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
Weighted Average veg. diversity/integrity:		1.00 High	1.00 High	1.00 High	### High
#4	Listed, rare, special plant species?	n Y N	n Y N	n Y N	n Y N
#5	**Rare community or habitat?**	**n Y N**	**n Y N**	**n Y N**	**n Y N**
#6	Pre-European-settlement conditions?	n Y N	n Y N	n Y N	n Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

	Question Description	User entry	Rating					
1	Veg. Table 2, Option 4		1.00					
	TOTAL VEG Rating	1	High					
4	Listed, rare, special plant species?	n	next					
5	Rare community or habitat?	n	next					
6	Pre-European-settlement conditions?	n	next					
7	hydrogeo & topo	O	Other					
8	Water depth (inches)	6						
	Water depth (% inundation)	40%						
9	Local watershed/immedita drainage (acres)							
10	Existing wetland size							
11	SOILS: Up/Wetland (survey classification + site)							
12	Outlet characteristics for flood retention	A	1					
13	Outlet characteristics for hydrologic regime	A	1					
14	Dominant upland land use (within 500 ft)	A	1		0.1			
15	Soil condition (wetland)	A	1					
16	Vegetation (% cover)	80%	H		1			
17	Emerg. veg. flood resistance	A	1					
18	Sediment delivery	A	1					
19	Upland soils (based on soil group)	B	0.5					
20	Stormwater runoff pretreatment & detention	C	0.1		1			
21	Subwatershed wetland density	C	0.1					
22	Channels/sheet flow	A	1					
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
24	Buffer Area Management: % Full	100%	1		1	**1**		
	buffer area mgmt: % Manicured	0%	0					
	buffer area mgmt: % Bare	0%	0					
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
	buffer area diversity: % Mixed	0%	0					
	buffer area diversity: % Sparse/Inv./Exotic	0%	0					
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
	adjacent area slope: % Moderate	0%	0					
	adjacent area slope: % Steep	0%	0					
27	Downstream sensitivity/WQ protection	B	0.5					
28	Nutrient loading	A	1					
29	Shoreline wetland?	N	N					
30	Rooted shoreline vegetation (%cover)		Enter a percentage					
31	Wetland in-water width (in feet, average)		Enter a percentage					
32	Emergent vegetation erosion resistance		Enter valid choice					
33	Shoreline erosion potential		Enter valid choi					
34	Bank protection/upslope veg.		Enter valid choice					
35	Rare Wildlife	N	N					
36	Scarce/Rare/S1/S2 local community	N	N					
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
38	Community interspersion (see diagram 2)	2	M		0.5			0
39	Wetland detritus	A	1					
40	Wetland interspersion on landscape	A	1		1			
41	Wildlife barriers	A	1					
42	Amphibian breeding potential-hydroperiod	I	0					
43	Amphibian breeding potential--fish presence	A	1					
44	Amphibian & reptile overwintering habitat	C	0.1					
45	Wildlife species (list)							
46	Fish habitat quality	N/A	N/A					
47	Fish species (list)							
48	Unique/rare educ./cultural/rec.opportunity	N	N					
49	Wetland visibility	C	0.1					
50	Proximity to population	N	0.1					
51	Public ownership	C	0.1					
52	Public access	B	0.5					
53	Human influence on wetland	A	1					
54	Human influence on viewshed	A	1					
55	Spatial buffer	A	1					
56	Recreational activity potential	C	0.1					
57	Commercial crop--hydrologic impact	N/A	N/A					

Digital worksheet, section I

Digital worksheet, section II

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.68	High	
Water Quality--Downstream		0.80	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yell are used in calculations.

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	12					
	Water depth (% inundation)	80%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
Digital worksheet, section I							
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	90%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1 H	1
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
Digital worksheet, section II							
27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	2	M		0.5		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.77	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.94	0.94	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.85	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at

Enter data startin
are used in calcul

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	12					
	Water depth (% inundation)	80%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
Digital worksheet, section I							
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1		0.1		
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	80%	H		1		
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1		1		
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	50	M		WQ	0.5 M	0.5
24	Buffer Area Management: % Full	100%	1		1	**1**	
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**	
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1		1	**1**	
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				
Digital worksheet, section II							
27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choic				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	2	M		0.5		0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1		1		
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	A	1				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	C	0.1				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wic value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile, Ditch, GW pump, Wtrshd div., Filling	
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.74	High	
Water Quality--Wetland		0.98	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.93	0.93	High	
Maintenance of Characteristic Fish Habitat	0.70	0.70	High	
Maintenance of Characteristic Amphibian Habitat		0.68	High	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yell are used in calculations.

		Question Description	User entry	Rating					
	1	Veg. Table 2, Option 4		1.00					
		TOTAL VEG Rating	1	High					
Digital worksheet, section I	4	Listed, rare, special plant species?	n	next					
	5	Rare community or habitat?	n	next					
	6	Pre-European-settlement conditions?	n	next					
	7	hydrogeo & topo	O	Other					
	8	Water depth (inches)	6						
		Water depth (% inundation)	80%						
	9	Local watershed/immedita drainage (acres)							
	10	Existing wetland size							
	11	SOILS: Up/Wetland (survey classification + site)							
	12	Outlet characteristics for flood retention	N/A	N/A					
	13	Outlet characteristics for hydrologic regime	A	1					
	14	Dominant upland land use (within 500 ft)	A	1		0.1			
	15	Soil condition (wetland)	A	1					
	16	Vegetation (% cover)	90%	H		1			
	17	Emerg. veg. flood resistance	A	1					
	18	Sediment delivery	A	1					
	19	Upland soils (based on soil group)	B	0.5					
	20	Stormwater runoff pretreatment & detention	C	0.1		1			
	21	Subwatershed wetland density	C	0.1					
	22	Channels/sheet flow	A	1					
	23	Adjacent naturalized buffer average width (feet)	500	H		WQ	1	H	1
	24	Buffer Area Management: % Full	100%	1		1	**1**		
		buffer area mgmt: % Manicured	0%	0					
		buffer area mgmt: % Bare	0%	0					
	25	Adjacent Area Diversity & Structure: % Native	100%	1		1	**1**		
		buffer area diversity: % Mixed	0%	0					
		buffer area diversity: % Sparse/Inv./Exotic	0%	0					
	26	Adjacent Area Slope: % Gentle	100%	1		1	**1**		
		adjacent area slope: % Moderate	0%	0					
		adjacent area slope: % Steep	0%	0					
Digital worksheet, section II	27	Downstream sensitivity/WQ protection	B	0.5					
	28	Nutrient loading	A	1					
	29	Shoreline wetland?	N	N					
	30	Rooted shoreline vegetation (%cover)		Enter a percentage					
	31	Wetland in-water width (in feet, average)		Enter a percentage					
	32	Emergent vegetation erosion resistance		Enter valid choice					
	33	Shoreline erosion potential		Enter valid choi					
	34	Bank protection/upslope veg.		Enter valid choice					
	35	Rare Wildlife	N	N					
	36	Scarce/Rare/S1/S2 local community	N	N					
	37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A				
	38	Community interspersion (see diagram 2)	1	L		0.1			0
	39	Wetland detritus	A	1					
	40	Wetland interspersion on landscape	A	1		1			
	41	Wildlife barriers	A	1					
	42	Amphibian breeding potential-hydroperiod	I	0					
	43	Amphibian breeding potential--fish presence	A	1					
	44	Amphibian & reptile overwintering habitat	C	0.1					
	45	Wildlife species (list)							
	46	Fish habitat quality	N/A	N/A					
	47	Fish species (list)							
	48	Unique/rare educ./cultural/rec.opportunity	N	N					
	49	Wetland visibility	C	0.1					
	50	Proximity to population	N	0.1					
	51	Public ownership	C	0.1					
	52	Public access	B	0.5					
	53	Human influence on wetland	A	1					
	54	Human influence on viewshed	A	1					
	55	Spatial buffer	A	1					
	56	Recreational activity potential	C	0.1					
	57	Commercial crop--hydrologic impact	N/A	N/A					

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: ####
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: ####
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.60	Med	
Water Quality--Downstream		0.77	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		

MNRAM 3.2 Digital/Manual Worksheet, Side 1

		Wetland name / ID	Wetland name / ID	Wetland name / ID	Wetland name / ID
	Wetland ID	**37**	ID	ID	ID
	Survey Date	11/23/2010			
	UTM Coordinates	606460 / 5262910			
	Photo ID	photo 2587-88 / Wolf Land 2			
	Special Features (from list, p.2--enter letter/s)	- ____	- ____	- ____	- ____
#1	Community Number (circle each community which represents at least 10% of the wetland)	3A, 3B, **4A,** 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A, 15B, 16A, 16B
#2 & #3	~ Describe each community type individually below ~			~ Describe each community type individually below ~	
Plant Community #1	Community Type (wet meadow, marsh)	4a Coniferous Bog	- -	- -	- -
	Community Proportion (% of total)	100%			
	Dominant Vegetation / Cover Class	BLACK SPRUCE 5 BALSAM FIR 4 LABRADOR TEA 5 SPHAGNUM MOSS 6			
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	H 1	0	0	0
Plant Community #2	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
Plant Community #3	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	0	0	0	0
Plant Community #4*	Community Type (wet meadow, marsh)	- -	- -	- -	- -
	Community Proportion (% of total)				
	Dominant Vegetation / Cover Class				
	Invasive/exotic Vegetation / Cover Class				
	Community Quality (E, H, M, L)	- 0	0	0	0
	Circular 39 Types (primary <TAB> others)				
	Cowardin Types				
	Photo ID				
Highest rated community veg. div./integ:		1.0 High	0 -	0 -	0 -
Average vegetative diversity/integrity:		1.00 High	- -	- -	- -
Weighted Average veg. diversity/integrity:		1.00 High	0.00 -	0.00 -	### -
#4	Listed, rare, special plant species?	n Y N	Y N	Y N	Y N
#5	**Rare community or habitat?**	**n Y N**	**Y N**	**Y N**	**Y N**
#6	Pre-European-settlement conditions?	n Y N	Y N	Y N	Y N

Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] * Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] * Seasonally Flooded Basin [16B]

Cover Class	Class Range
1	0 - 3%
2	3 - 10%
3	10 - 25%
4	25 - 50%
5	50 - 75%
6	75 - 100%

*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.

MnRAM 3.2 Digital Worksheet, Side 2

This comes in from Side 1 automatically using the weighted average. To use the highest rated veg. Community rating, please manually overwrite that value (shown to the right) into the field at E5.

Enter data starting here. Yellow boxes are used in calculations.

Digital worksheet, section I

	Question Description	User entry	Rating				
1	Veg. Table 2, Option 4		1.00				
	TOTAL VEG Rating	1	High				
4	Listed, rare, special plant species?	n	next				
5	Rare community or habitat?	n	next				
6	Pre-European-settlement conditions?	n	next				
7	hydrogeo & topo	O	Other				
8	Water depth (inches)	6					
	Water depth (% inundation)	50%					
9	Local watershed/immedita drainage (acres)						
10	Existing wetland size						
11	SOILS: Up/Wetland (survey classification + site)						
12	Outlet characteristics for flood retention	N/A	N/A				
13	Outlet characteristics for hydrologic regime	A	1				
14	Dominant upland land use (within 500 ft)	A	1	0.1			
15	Soil condition (wetland)	A	1				
16	Vegetation (% cover)	70%	M	0.5			
17	Emerg. veg. flood resistance	A	1				
18	Sediment delivery	A	1				
19	Upland soils (based on soil group)	B	0.5				
20	Stormwater runoff pretreatment & detention	C	0.1	1			
21	Subwatershed wetland density	C	0.1				
22	Channels/sheet flow	A	1				
23	Adjacent naturalized buffer average width (feet)	500	H	WQ	1	H	1
24	Buffer Area Management: % Full	100%	1	1	**1**		
	buffer area mgmt: % Manicured	0%	0				
	buffer area mgmt: % Bare	0%	0				
25	Adjacent Area Diversity & Structure: % Native	100%	1	1	**1**		
	buffer area diversity: % Mixed	0%	0				
	buffer area diversity: % Sparse/Inv./Exotic	0%	0				
26	Adjacent Area Slope: % Gentle	100%	1	1	**1**		
	adjacent area slope: % Moderate	0%	0				
	adjacent area slope: % Steep	0%	0				

Digital worksheet, section II

27	Downstream sensitivity/WQ protection	B	0.5				
28	Nutrient loading	A	1				
29	Shoreline wetland?	N	N				
30	Rooted shoreline vegetation (%cover)		Enter a percentage				
31	Wetland in-water width (in feet, average)		Enter a percentage				
32	Emergent vegetation erosion resistance		Enter valid choice				
33	Shoreline erosion potential		Enter valid choi				
34	Bank protection/upslope veg.		Enter valid choice				
35	Rare Wildlife	N	N				
36	Scarce/Rare/S1/S2 local community	N	N				
37	Vegetation interspersion cover (see diagram 1)	N/A	N/A	N/A			
38	Community interspersion (see diagram 2)	1	L	0.1			0
39	Wetland detritus	A	1				
40	Wetland interspersion on landscape	A	1	1			
41	Wildlife barriers	A	1				
42	Amphibian breeding potential-hydroperiod	I	0				
43	Amphibian breeding potential--fish presence	A	1				
44	Amphibian & reptile overwintering habitat	C	0.1				
45	Wildlife species (list)						
46	Fish habitat quality	N/A	N/A				
47	Fish species (list)						
48	Unique/rare educ./cultural/rec.opportunity	N	N				
49	Wetland visibility	C	0.1				
50	Proximity to population	N	0.1				
51	Public ownership	C	0.1				
52	Public access	B	0.5				
53	Human influence on wetland	A	1				
54	Human influence on viewshed	A	1				
55	Spatial buffer	A	1				
56	Recreational activity potential	C	0.1				
57	Commercial crop--hydrologic impact	N/A	N/A				

Additional questions

58	*GW - Wetland soils*	D	R or D	1
59	*GW - Subwatershed land use*	D	R or D	1
60	*GW - Wetland size and soil group*	D	R or D	1
61	GW - Wetland hydroperiod	R	R or D	0.1
62	GW - Inlet/Outlet configuration	R	R or D	0.1
63	GW - Surrounding upland topographic relief	D	R or D	1
64	Restoration potential w/o flooding	-	Y or N	4.2
65	*Landowners affected by restoration*		*E a b c*	Enter valid choice
66A	*Existing wetland size (acres) [from #10]*	0	__ acres	
66B	Total wetland restoration size (acres)		__ acres	0.1
66C	(Calculated) Potential New Wetland Area [B-A]	0	__ acres	% effectively drained: #DIV/0!
67	Average width of naturalized upland buffer (potential)		__ feet	Enter potential wid value: #DIV/0!
68	Likelihood of restoration success		a b c	Enter valid choice
69	Hydrologic alteration type		Outlet, Tile,	Ditch, GW pump, Wtrshd div., Filling
70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5, 6, 7, 8	
71	Wetland sensitivity to stormwater		E a b c	
72	Additional stormwater treatment needs		a b c	

Functional Rating Summaries

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
Vegetative Diversity/Integrity		1.00	High	
Hydrology - Characteristic		1.00	High	
Flood Attenuation		0.56	Med	
Water Quality--Downstream		0.73	High	
Water Quality--Wetland		1.00	High	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	0.90	0.90	High	
Maintenance of Characteristic Fish Habitat	######	N/A	N/A	
Maintenance of Characteristic Amphibian Habitat		0.00	N/A	
Aesthetics/Recreation/Education/Cultural	0.49	0.49	Med	
Commercial use		N/A	N/A	0
Special Features listing:			-	

Groundwater Interaction	discharge	
Groundwater Functional Index		no special indicators
Restoration Potential (draft formula)	#VALUE!	#VALUE!
Stormwater Sensitivity (not active)		