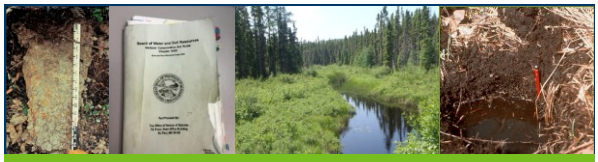
Day Four

Quote of the Day

Not everyone is a fan, of course. When John James Audubon visited Florida in 1832, he was blown away by the flocks of roseate spoonbills and other wading birds he found but couldn't deal with how wet [the] landscape was.

"The general wildness, the eternal labyrinth of waters and marshes, interlocked and apparently never ending, the whole surrounded by the interminable swamps – all these things had a tendency to depress my spirits." (JJ Audubon letter to editor, 1832)

1



MN Wetland Professional Certification Program
Introduction Class- Day 4

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Professional Certification Program

2

Quiz

1) The Wetland Conservation Act is a:

a) Federal Law passed in 1972.

b) State Rule, passed as a bipartisan statute in 1991, implemented by Local Government Units.

c) State Rule, passed in 1991, which is administered by the MNDNR.

d) Recommended set of best management practices for activities in wetlands.

2) When describing a soil profile, which of the following steps should a delineator do first?

a) Texture all layers in profile

b) Determine matrix and redoximorphic colors of all layers

c) Apply hydric soil indicator

d) Determine all hydrology indicators present within the borehole

3

Quiz

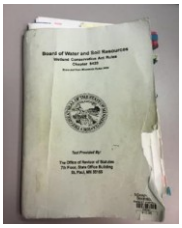
3) Which Agency has administrative oversight and Rulemaking authority for the WCA?

a) Local Government Units

b) MN Board of Water and Soil Resources

c) MN Department of Natural Resources

d) Local Soil & Water Conservation Districts



4

Quiz

4) While most wetlands are non-navigable, they still may be considered the following and thus regulated under the Federal Clean Water Act:

a) Incidental wetlands

b) Perpetual Conservation Easement

c) Upland

d) Waters of the United States

5) Which regulatory program defines it's jurisdictional boundary by the ordinary high water level?

a) Section 404 of Clean Water Act

b) Wetland Conservation Act

c) Section 401 of Clean Water Act

d) Public Water Works Permitting Program

5

Quiz

6) Which Federal regulatory program regulates the discharge of dredged or fill material:

a) Food Security Act

b) Rules of the Department of the Interior

c) Section 401 of the Clean Water Act

d) Section 404 of the Clean Water Act

7) The WCA regulates:

a) Peat mining

b) Normal farming practices

c) Draining, filling of all wetland types

d) Incidental wetlands

6

Quiz

8) An exemption is:

a) An activity that no matter how large of an impact requires replacement.

b) A regulated activity that does not require replacement.

c) An activity that requires an application everywhere in the State.

d) An activity occurring in a calcareous fen.

9) Which Agency is responsible for adopting state water quality standards and issuing Section 401 certifications outside of tribal land?

a) Army Corps of Engineers

b) MN Board of Water & Soil Resources

c) MN Department of Natural Resources

d) MN Pollution Control Agency

7

Quiz

10) Before issuing a Notice of Application (NOA), a LGU should:

a) Make a final determination whether the activity qualifies for the decision requested

b) Tell the applicant that the application is going to be approved within 15 days

c) Determine whether the application is complete and notify the applicant of any missing information within 15 business days

d) Determine whether the application is complete within 60 business days

11) For a project in a shoreland area, the Technical Evaluation Panel consists of:

a) The LGU, Army Corps and DNR.

b) The LGU, SWCD, BWSR and Army Corps.

c) The LGU, SWCD, BWSR and DNR.

d) The Army Corps and DNR.

8

Quiz

12) What are the 3 general types of adaptations that plants have made to grow in anaerobic soil conditions:

Morphologic, reproductive, physiologic

13) In the table, place the following plant indicators from most likely to least likely to occur in a wetland.

OBL
FACW
FAC
FACU
UPL

9

Quiz

14) A delineator walks into a wetland edge and observes over 75% areal coverage of cattail (OBL) with 2 other species (both FAC) that are less than 5% coverage each. What hydrophytic vegetation indicator test should they use?

a) Rapid Test of Hydrophytic Vegetation
b) Dominance Text is >50%
c) Prevalence Index is ≤ 3.0
d) Morphological Adaptations

15) How many dominant species are there in the sample point data below?

Species	Strata	% Coverage
Species A	Shrub/sapling	5
Species B	Herbaceous	20
Species C	Herbaceous	20
Species D	Herbaceous	30
Species E	Herbaceous	15
Species F	Herbaceous	30
Species G	Tree	3

a) 1
b) 2
c) 3
d) 4

10

Quiz

16) What is the recommended sampling size for the sapling/shrub, herbaceous, and tree strata? Use the table below.

Strata	Plot Size (feet)
Tree	30
Shrub/sapling	15
Herbaceous	5
Woody vine	30

11

Basic Agenda

Monday

- 3 Parameters, Wetland Function & Classification Systems, Hydrology Indicators, Delineation Methods & Critical Definitions, Data Sheet Field Exercise

Tuesday

- Quiz 1, Antecedent Precipitation, Offsite Resources and Hydrology Methods, Soil Concepts, Hydric Soil Indicators, Web Soil Survey, Soil Texture Lab, Soil profile description field exercise

Wednesday

- Quiz 2, Intro to Regulatory Programs, WCA Basic Decision Types, LGU Duties, Technical Evaluation Panel, WCA Application Procedures, Wetland Vegetation, Vegetation Field Plots Exercise

Thursday

- Quiz 3, Small Group delineation Field Exercise, Submitting Delineations, Replacement Plans, Wetland Banks, Monitoring

Friday

- WCA Enforcement, Altered Hydrology and Wetland Restoration, Functional Assessments Methods, Course Summary & Summary Quiz

- MWPCP Professional Exams

12

Learning Objectives

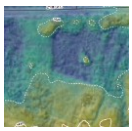
Small Group Wetland Delineation Field Exercise

- Delineate wetland boundaries in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and applicable Regional Supplements.
- Document delineation findings including data forms and field maps.

13

What to Record While in the Field

- Plant communities
  - Describe and sketch on aerial photograph
- Landscape settings
  - Topographic changes from wetland to upland
    - Gradual, abrupt
    - Foot, toe slope
    - Concave/linear/convex



- Vegetation
  - Dominant veg
  - changes from wetland to upland
- Soil
  - Changes from wetland to upland
  - Textures, Colors
- Hydrology indicators
  - Changes from wetland to upland

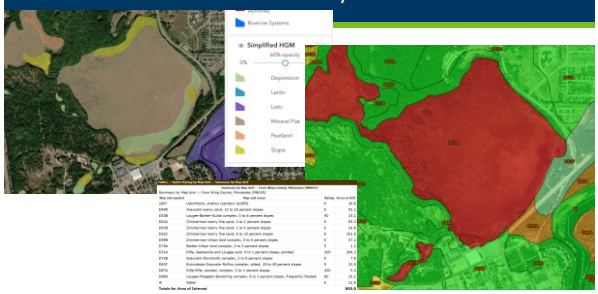
14

What to Record

- Area(s) of wetland within project area
- Wetland type
  (HGM, Eggers & Reed)
- General site description
  - Buildings, ditches, culverts, etc.
  - Field conditions
  - Precip. before site visit,
  cloud cover, drought, etc.

15

NWI and Soil Survey: Northland Arboretum



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Small Group Delineation Exercise

Northland Arboretum

- Use offsite resources to complete top of data sheet
- Field pack, shovel, auger, field maps
- Complete at least one upland and one wetland data sheet
- Determine wetland boundary
- Draft wetland and upland description
- Complete forms and submit for review

17

Submitting & Reviewing Wetland Delineation Reports

BOARD OF WATER AND SOIL RESOURCES

18

Learning Objectives

Submitting Wetland Delineation Reports

- Prepare wetland delineation documentation that is technically accurate, complete, and suitable for regulatory review.
- Prepare a complete delineation report that includes a narrative description, data sheets, antecedent precipitation analysis, aerial imagery review, and required mapping products.
- Interpret National Wetland Inventory maps, soil survey maps, Public Waters Inventory maps, and wetland boundary maps to support delineation review.

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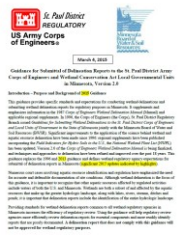
Guidance for Submitting Delineation Reports in MN

- Delineation report content
- Delineation Method and data collection
- On-site field demarcation
- Field Notes
- Basic Report Components
- Field Review
- Non-Routine Wetland Delineations


St. Paul District REGULATORY
US Army Corps of Engineers

March 6, 2015

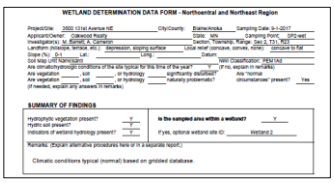
Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and Wetland Conservation Act Local Governmental Units in Minnesota, Version 2.0

Introduction – Purpose and Background and Guidance

20

Notes on Field Notes (cont.)

- Note taking skills improve with experience as you figure out what is important and what is not
- Take time to organize, refine, and augment field notes immediately following your field visit.
- Label and organize photos so you know where you took them and what they are intended to show.


WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 3550 131st Avenue NE City/County: Blaine/Anoka Sampling Date: 9-1-2017
Applicant/Owner: Oakwood Realty State: MN Sampling Point: DP2-wet
Investigators: M. Bartlett, K. Hamilton Section, Township, Range: Sec 2, T31, R23
Landform (hillslope, terrace, etc.): depression, sloping surface Local relief (concave, convex, none): concave to flat
Slope (%): 2-4 Lat: Long: Datum:
Soil Map Unit Name/Code: Wetland Classification: PEM1Ad
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	Is the sampled area within a wetland? Y
Hydric soil present?	Y	
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID: Wetland 2

Remarks: (Explain alternative procedures here or in a separate report.)
Climatic conditions typical (normal) based on gridded database.

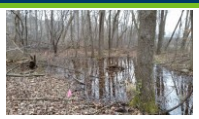
21

Field Mapping

22

Marking Wetland Boundaries

- Mark with:
  - Flagging tape, lath, pin flags
  - Will vary depending on situation.
- Locate via GPS or land survey methods (find out local requirements).
- Wetland boundaries must be usable for the regulatory purposes intended (grading plans, plat maps, etc.).



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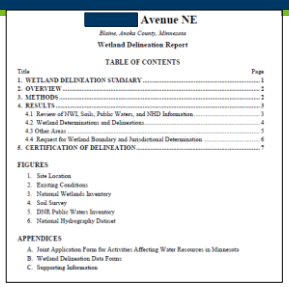
Typical Report Format

- **Introduction**
- **Methods**
- **Results**
- **Discussion (optional)**
- **Figures**
- **Field Data Forms**



[redacted] Avenue NE
Blaine, Anoka County, Minnesota
Wetland Delineation Report

TABLE OF CONTENTS

Title Page
1. WETLAND DELINEATION SUMMARY 1
2. OVERVIEW 2
3. METHODS 2
4. RESULTS 3
4.1. Review of NWI, Soils, Public Waters, and NHD Information 3
4.2. Wetland Determinations and Delineations 4
4.3 Other Areas 5
4.4. Request for Wetland Boundary and Jurisdictional Determination 6
5. CERTIFICATION OF DELINEATION 7

FIGURES
1. Site Location
2. Existing Conditions
3. National Wetlands Inventory
4. Soil Survey
5. DNR Public Waters Inventory
6. National Hydrography Dataset

APPENDICES
A. Joint Application Form for Activities Affecting Water Resources in Minnesota
B. Wetland Delineation Data Forms
C. Supporting Information

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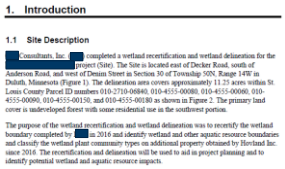
Introduction

- Who did you do this for?
  - Developer, public entity
- Where is the project
  - General location and size of project area
  - General description of plant communities: Wooded, meadow, urban etc
  - Why are you doing it?
  - Identify wetlands on potential development site
  - Identify wetlands in road corridor
- When did you do it?



1. Introduction

1.1 Site Description

[redacted] Consultants, Inc. ([redacted]) completed a wetland recertification and wetland delineation for the [redacted] project (Site). The Site is located east of Decker Road, south of Anderson Road, and west of Denim Street in Section 30 of Township 50N, Range 14W in Duluth, Minnesota (Figure 1). The delineation area covers approximately 11.25 acres within St. Louis County Parcel ID numbers 010-2710-04840, 010-4555-00080, 010-4555-00090, 010-4555-00090, 010-4555-00150, and 010-4555-00180 as shown in Figure 2. The primary land cover is undeveloped forest with some residential use in the southwest portion.

The purpose of the wetland recertification and wetland delineation was to recertify the wetland boundary completed by [redacted] in 2016 and identify wetland and other aquatic resource boundaries and classify the wetland plant community types on additional property obtained by Hovland Inc. since 2016. The recertification and delineation will be used to aid in project planning and to identify potential wetland and aquatic resource impacts.

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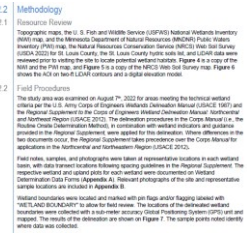
Methods

- **Level 1 or 2?**
- **Off site aerial review?**
- **Monitoring data?**
- **Reference wetlands?**
- **Problem area or atypical procedures?**



2.2 Methodology

2.2.1 Resource Review

Topographic maps, the U. S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) map, and the Minnesota Department of Natural Resources (MNDNR) Public Waters Inventory (PWI) map, the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2022) for St. Louis County, the St. Louis County hydric soils list, and LiDAR data were reviewed prior to visiting the site to locate potential wetland habitats. Figure 4 is a copy of the NWI and the PWI map, and Figure 5 is a copy of the NRCS Web Soil Survey map. Figure 6 shows the AOI on two-ft LiDAR contours and a digital elevation model.

2.2.2 Field Procedures

The study area was examined on August 7th, 2022 for areas meeting the technical wetland criteria per the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE 2012). The delineation procedures in the Corps Manual (i.e., the Routine Onsite Determination Method), in combination with wetland indicators and guidance provided in the *Regional Supplement*, were applied for this delineation. Where differences in the two documents occur, the *Regional Supplement* takes precedence over the Corps Manual for applications in the Northcentral and Northeastern Region (USACE 2012).

Field notes, samples, and photographs were taken at representative locations in each wetland taxon, with data transect locations following spacing guidelines in the *Regional Supplement*. The respective wetland and upland plots for each wetland were documented on Wetland Determination Data Forms (**Appendix A**). Relevant photographs of the site and representative sample locations are included in **Appendix B**.

Wetland boundaries were located and marked with pin flags and/or flagging labeled with "WETLAND BOUNDARY" to allow for field review. The locations of the delineated wetland boundaries were collected with a sub-meter accuracy Global Positioning System (GPS) unit and mapped. The results of the delineation are shown on **Figure 7**. The sample points noted identify where data was collected.

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RESULTS and Discussion

Describe wetlands

- Wetland Type – HGM and Eggers & Reed
- Hydrology Indicators
- Dominant Vegetation for each community/type
- Hydric Soil Indicators
- Other Observations (NWI, connections, excavated?)

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Text Examples

Mineral Flat

Wetland A is a ~~Type 7~~ – Hardwood Swamp located in the northcentral part of the delineation area and covers +/- 1.04 acres. Wetland A hydrophytic vegetation criteria were met by the Dominance Test (>50% FAC, FACW, or OBL) and the Prevalence Index. The Wetland A sampling point met hydrology indicators B9 – Water-Stained Leaves, D2 – Geomorphic Position, and D5 – FAC-Neutral Test. Hydric soil indicators A11 – Depleted Below Dark Surface and F3 – Depleted Matrix were present. Wetland A is not identified on the NWI or PWI. The source of hydrology for Wetland A appears to be from precipitation.

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Outlined Text Examples

Wetland A – ~~Type 1/6/7~~ Shallow Marsh/Shrub Swamp/Hardwood Swamp

Wetland A is a wetland located along the central portion of the project area. The wetland is connected through drainage and groundwater discharge from nearby uplands. Data point DP_WET_A1, DP_WET_A2, DP_WET_A3, and DP_WET_A4 was documented to show wetland characteristics.

Data Point DP_WET_A1 (~~Type 7~~; Hardwood Swamp)

- Hydrology – Wetland hydrology indicators observed at data point DP_WET_A1 included: High Water Table (A2), Saturation (A3), Water-stained Leaves (B9), Hydrogen Sulfide Odor (C1), Thin Muck Surface (C7), Drainage Patterns (B10), Moss Trim Lines (B16), Stunted or Stressed Plants (D1), Geomorphic Position (D2), Shallow Aquitard (D3), Microtopographic Relief (D4), and FAC-Neutral Test (D5).
- Vegetation – Dominant vegetation observed included: **Trees** – Balsam Fir (*Abies balsamea*, FAC), and Quaking Aspen (*Populus tremuloides*, FAC). **Saplings/Shrubs** – Speckled Alder (*Alnus incana*, FACW), and Quaking Aspen (*Populus tremuloides*, FAC). **Herbaceous** – Reed-canary Grass (*Phalaris arundinacea*, FACW), Jewelweed (*Impatiens capensis*, FACW), Dwarf Raspberry (*Rubus pubescens*, FACW), and Bristly Sedge (*Carex comosa*, FACW).
- Soil – The soil within this portion of the wetland complex was classified as a silty clay loam with a matrix color of 10YR 3/1 from 0-6 inches bgs. Hydric soil indicators Loamy Mucky Mineral (F1), and 2 cm Muck (A10) were met at DP_WET_A1.

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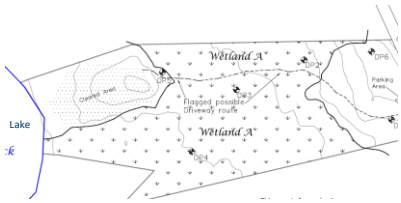
Report Components – Figures

1. Site Location
2. National Wetland Inventory (NWI)*
3. Soils
4. Public Waters Inventory (PWI)*
5. Wetland Boundary Map

*often combined



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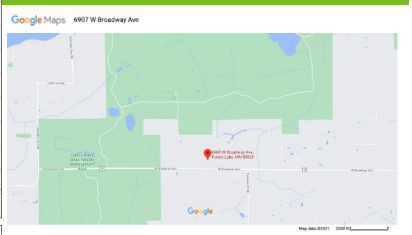
Report Components – Site Location



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NWI/PWI

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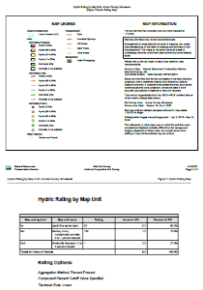
Soils



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Use LiDAR

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Delineation Figure

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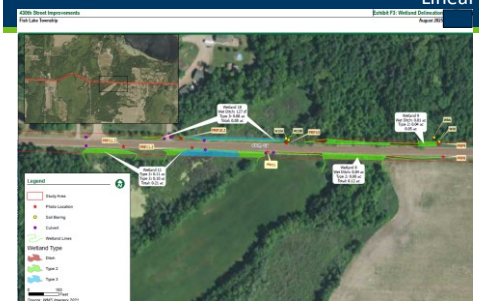
Linear Projects



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Data Forms

- Fill out completely
- Correspond to sample locations indicated on a map
- Remember that sample locations should be representative
- Not needed if doing a Routine Level 1
- Do a complete job, but keep in mind that these are field assessments, not a scientific study, spend a reasonable amount of time.

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Field Review

Who should conduct site review?

- At least 1 member of TEP
- LGU may request assistance from TEP (SWCD and BWSR) or other tech. prof.
- Corps participation will vary with project
- Delineator invited (but does not need to be present)

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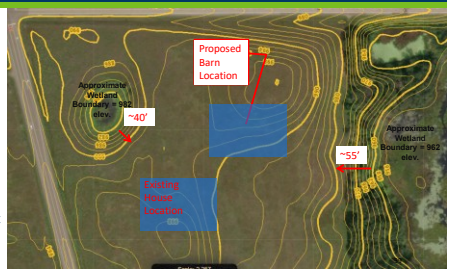
Non-Routine Wetland Delineations

- Informal Delineations
- Landowner wanted to fill an area mapped as non-hydric soil
- Site visit to estimate and stake wetland boundary
- Be sure to document with map and memo



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Replacement Plan Applications

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Professional Certification Program

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Learning Objectives

Wetland Replacement Plans

- Explain the purpose of wetland replacement under the Wetland Conservation Act and identify when a replacement plan is required.
- Identify the application requirements for a complete replacement plan, including preapplication coordination, required forms, supporting documentation, and technical analyses.
- Evaluate proposed projects for special considerations
- Understand sequencing requirements of WCA used to evaluate alternatives analyses to determine whether practicable avoidance and minimization alternatives have been adequately considered.
- Calculate replacement requirements using applicable replacement ratios.
- Evaluate replacement site selection to ensure compliance with WCA replacement siting requirements.

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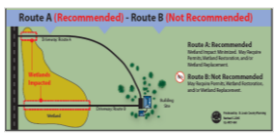
Replacement Plans


Standard Credit Withdrawal Form
Minnesota Wetland Bank Program

8420.0330 REPLACEMENT PLAN APPLICATIONS.

Subpart 1. **Requirement.** A landowner proposing a wetland impact that requires replacement under this chapter must apply to the local government unit and receive approval of a replacement plan before impacting the wetland.



BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

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Preapplication Meeting

- Prior to preparation of an application;
- Meet with the LGU/TEP, provide basic information of the project
- LGU/TEP inform the applicant of sequencing requirements and criteria to evaluate the replacement plan


PART ONE: Applicant Information

PART TWO: Site Location Information

PART THREE: General Project/Site Information

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Application Contents

- Information necessary to be considered a complete application (a lot of this info can be pulled from the delineation report)
- For the impacted Wetland:

1. The amount of wetland impact (in sq ft or acres) by type
2. Minor/Major watershed, County, and Bank Service Area (BSA)
3. Soil survey of site, identify hydric soils
4. Hydrologic inlets and outlets, adjacent Public Waters (shoreland), floodplain

44

44

Application Contents Continued…

5. Information pertaining to special considerations (8420.0515) (Threatened & Endangered species, rare communities, cultural resources, etc.)
6. List of known local, state, and federal permits required for the activity
7. Identify project purpose and need and alternatives considered

45

45

Application Contents Continued…

C. for the replacement wetland when the replacement consists of wetland bank credits:

(1) the wetland bank account number;

(2) the minor watershed, major watershed, and bank service area;

(3) the amount of credits to be withdrawn in square feet; and

(4) a completed application for withdrawal of wetland credits from the wetland bank in a form provided by the board or a purchase agreement signed by the applicant and bank account holder; and

D. a description of the required replacement as determined according to the proposed replacement actions and the replacement standards in part 8420.0522.

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Special Considerations (8420.0515)

These factors must be considered by the applicant before submitting a replacement and by the LGU during the review

1. Endangered and threatened species (DNR natural heritage/nongame)
2. Rare natural communities (DNR natural heritage)https://mce.dnr.state.mn.us/
3. Special fish and wildlife resources (fish spawning, water birds, waterfowl, deer wintering/wildlife corridor)
4. Archaeological, historic, or cultural resource sites (National Register of Historic Places, State Historical Preservation Office) https://mn.gov/admin/shpo/
5. Groundwater sensitivity (Decorah edge, Geologic Sensitivity)

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Special Considerations Continued…

6. Sensitive surface waters (trout stream)
7. Education or research use (Cedar Creek, Anoka Co)
8. Waste disposal site (former dump, superfund, TCAAP/AHATS)
9. Consistency with other plans (watershed management, land use, planning and zoning)

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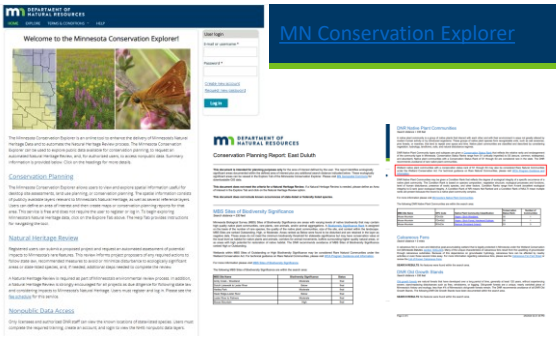
MN Conservation Explorer



49

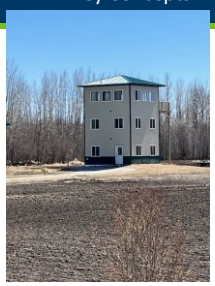
Sequencing: 8420.0520

- LGU **MUST NOT** approve a wetland replacement plan unless the LGU finds the project complies with sequencing.

50

Key Concepts

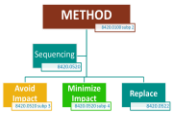
- Sequencing is a MUST for all replacement plans
- TWO avoidance alternatives
- Evaluate projects…can wetlands be avoided?
- Are impacts minimized?
- Long term effects
- 8420.0520 Subp C – Page 45 of 2009 Rule book

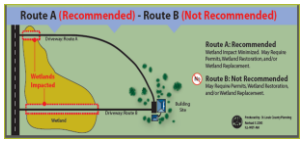


51

Sequencing

- **Avoid**
- **Minimize**
- **Replace**





52

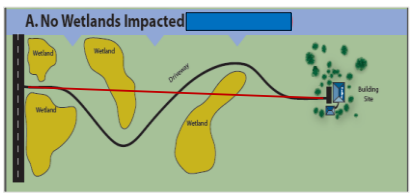
How does applicant *demonstrate* sequencing?

- Clearly define the **purpose** of the project.
- Identify the physical, economic, and/or demographic **requirements** of the project.
- **Justify** why this project should or must go on this site.
- Show (concept plans, discarded grading plans, etc.) and describe other *reasonable* **alternatives** that were considered or could be considered.

53

Impact Avoidance

- If LGU finds that a Feasible and Prudent Alternative exists that avoids impacts, the application must be denied.



54

Alternatives Analysis

What is *feasible* and *prudent*?

WCA rule tells us (8420.0520 subp 3C(2)):

- Can be done from an engineering perspective
- Is in accordance with accepted engineering standards and practices
- Is consistent with public health, safety, and welfare requirements
- Is environmentally preferable based on social, economic, and environmental impacts
- Would not create any truly unusual problems

55

Evaluating Alternatives (continued)

- LGU must consider (8420.0520 subp 3C(3)):
  - Could the size, configuration, or density of the project be modified to avoid wetlands?
  - Has the applicant made efforts to remove constraints (zoning restrictions, ordinance requirements, etc.) that are causing wetland impacts (i.e. request for variances, PUD, conditional use permit, etc.)?

56

What if an avoidance alternative DOES exist?

- If the LGU determines that a feasible and prudent alternative exist that avoids wetland impacts, it MUST DENY the replacement plan.

57

Avoidance

58

tion

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Alternatives Analysis Continued…

Future considerations when reviewing a site and potential off-site impacts

60

Figure 4 - Proposed Plan and Wetland/Tributary Impacts

Alternatives Analysis

- Direct and secondary impacts:

A wetland may not be directly impacted (filled/drained/excavated) but can be impacted through loss of hydrology (storm pond, curb/gutter, pipes, etc.)

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What if an avoidance alternative does NOT exist?

- LGU evaluates:
  - Minimization
  - Rectification
  - Reduction/Elimination of impacts over time
  - Replacement

62

Impact Rectification

- Temporary impacts must be rectified by repairing, rehabilitating, or restoring the affected wetland to pre-project conditions

63

Reduction or Elimination of Impacts Over Time

- Once complete, further impacts must be reduced or eliminated and preserve or maintain wetland functions
- Best Management Practices (BMP)
- Silt fence
- Storm-ponds
- Buffers
- Rip-Rap

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Sequencing Flexibility

Allowed at the discretion of the LGU if:

1. Impacted wetland degraded;
2. Avoidance results in severe degradation;
3. Upland site of the project or replacement has greater function and value;
4. Human health and safety is a factor.

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Sequencing – Replacement

Final Review Step

LGU must evaluate if unavoidable impacts will be adequately replaced AND if correctly sited.

Adequate Replacement

- Must replace the functions and values at an equal or greater level than that which was lost.
- Uses wetland area as the unit of measurement (acreage or sq. ft.)

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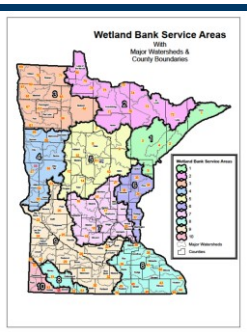
Bank Service Areas (BSA)



- Geographic area in which replacement wetlands, including banking credits, can provide replacement for wetland impacts
- Used in wetland mitigation siting
- BSAs are established by BWSR

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Replacement Ratios

Minimum Replacement Ratios: Banking		
Location of impact	Replacement	Minimum replacement ratio
>80% area or agricultural land	Outside bank service area	1.5:1
	Within bank service area	1:1
<50% area, 50-80% area, and nonagricultural land	Outside bank service area	2.5:1
	Within bank service area	2:1

Must follow a priority order:

1. Minor Watershed
2. Major Watershed
3. Same BSA
4. Another BSA

If not available in 1, move to next, etc.

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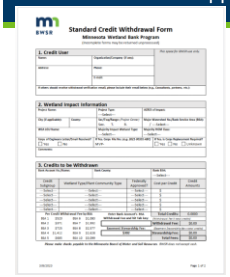
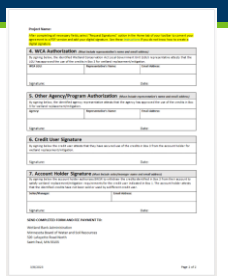
Result?

A formal NOD document that summarizes the decision, is supported by technical findings and is valid for 5 years.

69

Application to withdraw wetland credits


Standard Credit Withdrawal Form
Minnesota Wetland Bank Program



- Be sure to complete all sections!
- Form auto calculates fees
- Signatures

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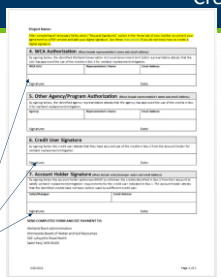
Credit Transactions

When processing transactions we need LGU name and contact. Typed or printed information makes it easier to figure out.

Transaction forms cannot be processed without required signatures.



Applicant and LGU will get verification letter once BWSR processes.


Wetland Bank Credit Withdrawal Verification

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Wetland Banking

BOARD OF WATER AND SOIL RESOURCES

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Learning Objectives

Wetland Banking

- Explain the purpose of the Minnesota Wetland Bank Program and its role in compensating for unavoidable wetland impacts
- Differentiate among wetland bank types, including private, agricultural, and in-lieu fee (ILF) banks
- Identify activities eligible to generate wetland bank credits
- Describe the process for establishing a wetland bank, including preparation and review of a Draft Prospectus, Prospectus, and Mitigation Plan.
- Determine eligibility for the Public Road Replacement Program and explain the procedures used by the Local Government Unit (LGU) and Technical Evaluation Panel (TEP) to review public road replacement projects.

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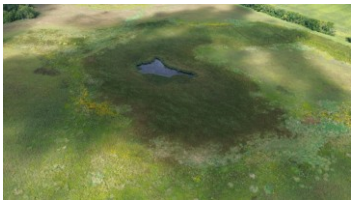
Overview

- Purpose of Wetland Banking
- Types of Wetland Banks
- Actions Eligible for Credit
- Establishing a Wetland Bank
- Certification and deposit of credits
- Withdrawals and transfers
- Replacement for Public Road Projects



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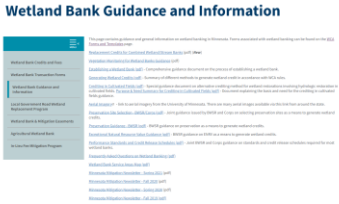
Banking

- Wetland Bank Guidance and Information



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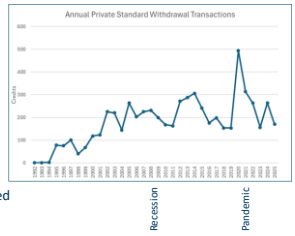
Purpose

What is Wetland Banking?

- WCA rule: "The purpose of the state **wetland banking** system is to provide a market-based structure that allows for replacement of unavoidable impacts with pre-established replacement wetlands."
- Federal Mitigation Rule definition (33 CFR 332.2): "A **mitigation bank** sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor."



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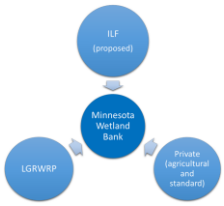
Bank types

- Private
  - Standard- Landowners establish bank on private land to mitigate impacts on non-ag or transportation projects
  - Agriculture- Credits can only be used for Ag projects
- In-lieu Fee (proposed)
  - Mitigation not always completed in advance
  - Open to only government and NGOs, requires compensation planning framework
- Local Government Road Wetland Replacement Program
  - Replaces impacts resulting from local transportation projects



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Actions Eligible for Credit

- Restoration of completely drained wetland
- Restoration of partially drained wetland
- Vegetative restoration of farmed wetlands
- Protection of wetland previously restored via conservation easements
- Wetland Creations
- Restoration and protection of Exceptional Natural Resource Value
- Preservation of wetlands
- (Upland) buffer areas

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Actions Eligible for Credit 8420.0526

Subpart	Action
2	Buffer
3	Restoration, Completely Drained or Filled
4	Restoration, Partially Drained or Filled
5	Vegetative Restoration of Farmed Wetland
6	Protection of Wetlands Previously Restored
7	Wetland Creation
8	ENRV
9	Preservation

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Establishing a Wetland Bank

State and Federal Review Process in Minnesota

- Draft Prospectus
  - State: Optional
  - Federal: Optional
- Prospectus
  - State: Optional
  - Federal: Required
- Mitigation Plan/Draft MBI
  - State and Federal: Required
- Final Mitigation Plan and MBI
  - Federal only and required

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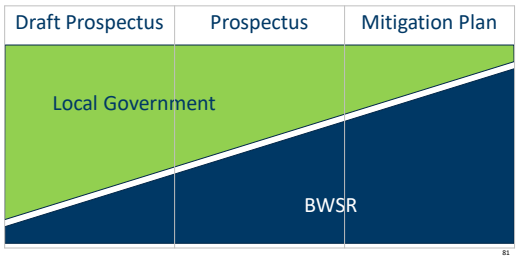
Roles in Establishing a Wetland Bank



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Draft Prospectus


Wetland Mitigation Proposal
Draft Prospectus

- Optional
- No decision required
- Help sponsors
- Complex or difficult projects
- Minimal investment

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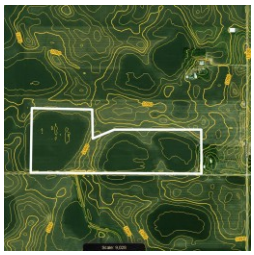
Draft Prospectus

- Basic project information
- Easement questionnaire
- Basic Features
- Why is it a good bank project
- Constraints
- Existing wetlands



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Draft Prospectus

- BWSR provides “Discussion Items”
- WS uses discussion items at TEP meeting
- TEP writes Findings based on discussion
- Sponsor receives TEP findings and decides what to do

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US Army Corps of Engineers – St. Paul District

Wetland Mitigation Proposal

Prospectus

BWSR

Prospectus

- Required by Corps
- No decision required
- Baseline Information
- Justify Credit Actions
- Justify Credit Allocation
- General Concept Plans

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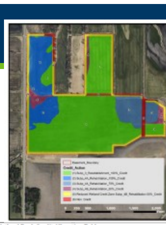
Prospectus

- Crediting
  - Buffer credit cannot exceed restored wetland area credit
- Topographic Information
- Wetland Determination
- Title Opinion
- Site Hydrology Information



WCA Wetland Bank Credit Allocation Table

Map ID	Credit Action [2]	Acres [3]	Credit Allocation			
			Minimum Credit [4]		Maximum Credit [5]	
			% Credit	Credit Amount	% Credit	Credit Amount
1	Subp 4 A/Rehabilitation	21.4	75	16.0500	100	21.4000
2	Subp 4 A/Rehabilitation	16.2	75	12.1500	100	16.2000
3	Subp 4 B/Rehabilitation	3.3	25	0.8133	50	1.6266
4	Subp 4 B/Rehabilitation	1.7	25	0.4307	50	0.8614
5	Subp 4 B/Rehabilitation	1.2	25	0.3068	50	0.6135
6	Subp 2/Upland Buffer	0.8	10	0.0774	25	0.1934
7	Subp 2/Upland Buffer	17.6	10	1.7648	25	4.4121
8A	Subp 2/Upland Buffer	2.2	10	0.2162	25	0.5405
8B	Subp 2/Upland Buffer	2.7	10	0.2729	25	0.6821
9	Earthen Embankment	0.5	0	-	0	-
	TOTAL EASEMENT SIZE	67.6	TOTAL:	32.0020	TOTAL:	46.5296

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Roles for reviewing prospectus

TEP/LGU Roles:

- Verify previous comments addressed
- Verify sponsor adequately described the site
- Review wetland delineation or determination
- Review crop history (if necessary)
- Provide LOCAL perspective on project and eligibility

BWSR Role:

- Evaluate easement issues
- Vegetation, Engineering, and Bank Coordinator comments included
- Statewide consistency
- Technical answers and interpretations
- Coordination with Corps

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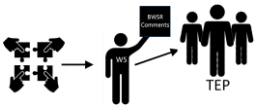
Review

- Comments become more direct
- Baseline information must justify credit actions and allocations
- Some credit actions require more information
- Project takes shape but detailed plans not required
- Balance information needs versus sponsor's cost



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Mitigation Plan


Wetland Mitigation Proposal
Mitigation Plan (Full Application)
BWSR

- Document of record
- Required for both programs
- LGU Decision Required
- Section 15.99 time limits!
- Attached to Corps' MBI

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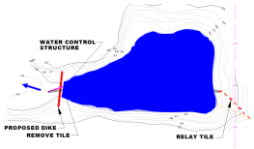
Mitigation Plan

Required:

- Detailed vegetation plans
- Detailed construction plans
- Detailed monitoring plans
- Performance standards
- Credit release schedule



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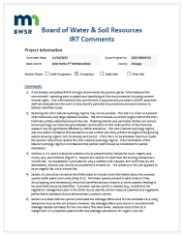
TEP Review

- Verify Corps has completed Prospectus phase
- Verify Prospectus information carried forward and comments addressed
- Verify Baseline Information is complete and adequate
- Wetland delineation approval
- Review detailed plans to your comfort level


Board of Water & Soil Resources
IRT Comments

Project Information

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Mitigation Plan

"Plans are nice but performance releases credits." J. Overland

- Monitoring plan must relate to performance standards
- Performance standards must relate to credit releases
- The Mitigation Plan is the basis for implementation, credit releases, and allowable actions into the future
- DOCUMENTATION IS CRITICAL

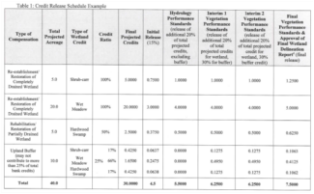
Table 1: Credit Release Schedule Example

Type of Compensation	Total Projected Acreage	Type of Wetland Credit	Credit Ratio	Final Projected Credits	Initial Release (15%)	Hydrology Performance Standards (release of additional 20% of total projected credits excluding buffer)	Interim 1 Vegetation Performance Standards (release of additional 20% of total projected credits, 30% for buffer)	Interim 2 Vegetation Performance Standards (release of additional 20% of total projected credits, 50% for wetland, 30% buffer credit)	Final Vegetation Performance Standards & Submittal of Final Wetland Delineation Report* (final release)
Re-establishment/ Restoration of Completely Drained Wetland	5.0	Shrub-carr	100%	5.0000	0.7500	1.0000	1.0000	1.0000	1.2500
Re-establishment/ Restoration of Completely Drained Wetland	20.0	Wet Meadow	100%	20.0000	3.0000	4.0000	4.0000	4.0000	5.0000
Rehabilitation/ Restoration of Partially Drained Wetland	5.0	Hardwood Swamp	50%	2.5000	0.3750	0.5000	0.5000	0.5000	0.6250
Upland Buffer (may not contribute to more than 25% of total bank credits)	10.0	Shrub-carr	17%	0.4250	0.0637	0.0850	0.1275	0.1275	0.1363
		Wet Meadow	25%	1.0750	0.2475	0.0850	0.4950	0.4950	0.4125
		Hardwood Swamp	17%	0.4250	0.0638	0.0850	0.1275	0.1275	0.1362
Total	40.0			30.0000	4.5	5.0000	6.2550	6.2550	7.5000

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Mitigation Plan Decision

- Track 15.99 time limits, extensions needed
- Most Mitigation Plans will require some revision
- Make final decision in accordance with section 15.99
- Clearly identify and retain approved Mitigation Plan
- When possible, the WCA and Corps approved plans should be the same

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Easement Acquisition

GENERAL PROCESS INFORMATION

- Easement acquisition is typically initiated after mitigation plan approval
- Easement acquisition does not have to be completed prior to construction
- The process is managed at BWSR by Easement Section Staff, not Wetland Specialists
- It is the responsibility of the sponsor/landowner to initiate the easement acquisition process

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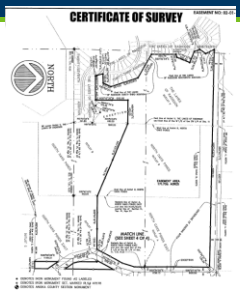
LGU role in Easement Acquisition

- Help the sponsor find the "Conservation Easement Acquisition Overview for Private Wetland Banks"
- BWSR easement staff will take it from there



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Easement Acquisition

The significant steps in the easement acquisition process include:

1. **Sponsor** submits initial $1,000 Easement Acquisition Fee **to BWSR** along with application
2. **BWSR** performs a preliminary review of ownership information to identify potential issues
3. **Sponsor provides** DRAFT Certificate of Survey in required format **for BWSR review & comment**
4. **BWSR provides** sponsor with instructions to obtain Title Commitment
5. **Sponsor (landowner) provides** Title Commitment **to BWSR** for State Attorney General (AG) review & comment
6. **BWSR prepares** Conservation Easement document to be signed by landowner
7. **Landowner signs Easement and returns to BWSR** with $2,400 Easement Acquisition Fee balance
8. **BWSR sends** instructions to record the Easement and issue a Title Insurance Policy
9. **BWSR notifies sponsor** that easement acquisition process is complete

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Construction Certification

- LGU must certify the initial construction
  - Documentation:
    - as-built drawing
    - surveyed map
    - seed tags
    - construction photos
- Site Visit with TEP
  - Recommend TEP Findings of Fact

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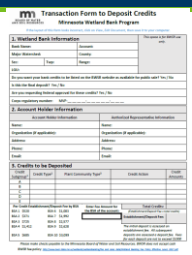
Credit Deposits

- Up to 15% of the credits are eligible for deposit after the certification of construction
- Remaining credits are eligible for deposit based on the credit release schedule and performance standards in the approved bank plan
- Subject to review by the LGU & TEP
- After certifying the credit for deposit, the LGU must forward to BWSR banking administrator


Transaction Form to Deposit Credits
Minnesota Wetland Bank Program

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Local Government Road Wetland Replacement Program

- WCA exempts certain local road projects from State wetland replacement requirements
- BWSR is required to replace the associated wetland impacts so the local governments don't have to
- These wetland credits also satisfy Corps of Engineers' Section 404 permit requirements

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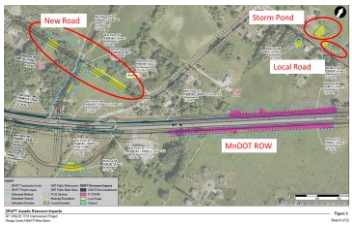
What projects Qualify?

- **Repair, rehabilitation, reconstruction** or **replacement** of **currently serviceable** existing State, City, County or Town public road.
  - Provided that:
    - Project **minimizes impacts**
    - **Plans are provided** to the LGU
- What doesn't qualify?
  - New roads
  - Roads expanded solely for additional capacity lanes



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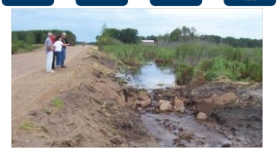
Reviewing Local Road Projects

Annual meeting with Local Road Authority → Review & approve delineation → Receive joint application with completed Attachment E → TEP determines whether impacts are eligible for program → TEP signs Attachment E → LGU returns signed Attachment E to Road Authority → Road Authority sends signed Attachment E with project plans to BWSR Central → BWSR & Corps determine mitigation requirements per Federal Mitigation Rule



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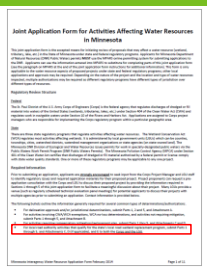
Joint Application Form


Joint Application Form for Activities Affecting Water Resources in Minnesota

For Local Road Projects:

- Parts 1-5; Attachments C and E
- May need Attachment D if there will be impacts that do not meet the Local Road Program eligibility requirements

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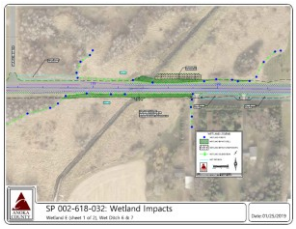
Application Requirements

Local Road Unit should provide TEP the following:

- Project plans depicting wetland boundaries
- Description of wetland impacts by type
- Information demonstrating wetland impact minimization
- Only one alternative is required



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Good Example

MnDOT's Road Design Manual (2000) also recommends turn and/or bypass lanes for rural undivided roadways with traffic volumes over 1,500 ADT and speed limits above 45 mph. Current road condition compared with required and proposed are laid out in the table below.

	Existing	Required	Proposed
Lane Width (ft)	12	11-12	12
Shoulder Width (ft)	0-6	8	8
In-Slope	1:4	1:4	1:4

This project is proposed to improve CSAH 18 to meet today's State Aid Standards and improve safety along the corridor.

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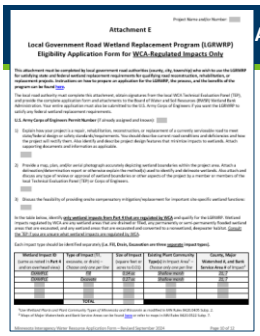
Attachment E – Joint Application


Attachment E

Local Government Road Wetland Replacement Program (LGRWRP)
Eligibility Application Form for WCA-Regulated Impacts Only

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Quick facts on Ag bank

Eligibility to USE the Ag Bank:

✓The wetland must be proposed to be impacted for agricultural use.

✓The land must remain in agricultural use.

✓The wetland must be a farmed wetland (FW) or otherwise degraded wetland on existing agricultural land.

Differences with Standard Bank:

- Credits can only be used for Ag projects
- Flexibility on Vegetation Standards
- Expired CRP sites could be eligible "as-is"

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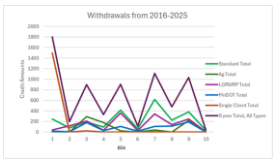
Review

- Types of Wetland Banks
  - Standard
    - Private and Agriculture
  - Local Road Program
- Replacement for Public Road Projects
  - Repair, rehabilitate, reconstruction of currently serviceable roads
- Actions Eligible for Credit
  - Restoration of drained wetlands, vegetation restoration, protection, ENRV, Preservation, upland buffer
- Establishing a Wetland Bank
  - Draft Prospectus
  - Prospectus
  - Mitigation Plan
- LGU and TEP procedures for banking
  - Construction Certification, deposit of credits, withdrawal of credits



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Wetland Bank Monitoring

BOARD OF WATER AND SOIL RESOURCES

BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

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Learning Objectives

- **Wetland Monitoring**
- Evaluate monitoring requirements, performance standards, and corrective actions necessary to achieve successful wetland bank establishment.
- Understand how to establish measurable performance standards to evaluate restoration success and long-term ecological function.
- Describe the procedures governing wetland credit withdrawals, transfers, and other banking transactions.

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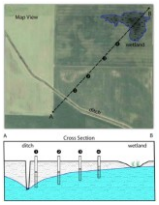
Overview of Wetland Bank Monitoring

- Monitoring process
  - Construction Certification
  - Duration of monitoring
  - Deposit of Credits
- Maintenance responsibilities
  - Monitoring reports
  - Timeline
  - Reports
- Corrective Actions



- Hydrology Monitoring
  - Performance standards
- Vegetation Monitoring
  - Performance standards

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General Monitoring roles once wetland bank is approved

LGU/Corps roles:

- certify construction
- certify credits for deposit
- review monitoring reports
- may require corrective actions as needed

Sponsor/landowner roles:

- Sponsor responsible for maintenance
- Submitting as-built documentation
- Submitting wetland credit deposit transaction form(s)
- Submitting monitoring reports
- Paying administrative fees

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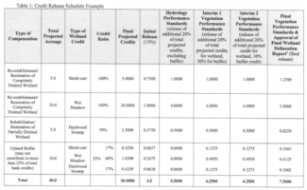
Monitoring Schedule

- Monitoring must begin no later than first full growing season after construction certification
- Must continue for at least 5 full growing seasons
- If unsuccessful, the LGU may extend the monitoring period (<5 additional years)
- Actual monitoring schedule may vary for different bank types (restoration vs preservation)



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Performance Standards

- Performance standard: observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives.

Examples:

- Vegetation
  - *"85% of the site is vegetated by planted species and/or regenerated species as per approved plan by end of 5th complete growing season."*
- Hydrology
  - *"Hydrology must meet wetland definition of 1987 Corps of Engineers Manual with saturation to the surface of the soil for at least 31 days of the growing season."*

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Monitoring Report

- Submitted following the first full growing season no later than 12/31
- Then submitted as per approved bank plan
- May include Transaction Form to Deposit Credits

Contents of the report:

- Project location map
- Description of performance standards
- Activities completed and planned
- Hydrology measurements
- Plant communities map
- Color photographs
- Other information specified from approved plan

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Reviewing Monitoring Reports

A. Success Criteria Summary

Summary of Success Criteria Standards and Current Metrics for 2017.

Metric	Success Criteria	Measured Criteria	Success Criteria Met?	Comments
Hydrology – *Standards used for 2011 - 2016*				
Elevation	Water between 6 inches above and one foot below ground surface	Measured hydrology is between 6 inches above and one foot below ground surface	Yes	*Formal hydrology monitoring not required for 2017. Success based on direct site observations*
Duration	Majority of the growing season	Hydrology was within the desired range for the majority of the growing season.	Yes	
Vegetation				
Diversity	Minimum of five native species	79 native species have been observed	Yes	Species diversity increased from 2016 to 2017
Composition	minimum two sedges and two grasses	Eight sedges and eight grasses have been identified	Yes	Species composition stable
Invasive species coverage	No more than 10% total cover	Total cover of invasive species is less than 10%, and has been effectively controlled.	Yes	Reed canary grass is less than 5% coverage.
Invasive species concentration	No single areas greater than one-quarter acre in size	Invasive species remain under control with no single area greater than one-quarter acre in size	Yes	Slight increase of along ditches, but sprayed again in fall 2017 to control

- Know performance standards
- Interpret data to determine whether the site meets those standards
- If not, document with data what is not meeting standard
- Consult with TEP & Corps
- Then corrective actions should be recommended

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Hydrology

Considerations in planning hydrologic monitoring project:

- What is the question?
- What is the performance criteria?
  - Precision?
- Site characteristics
  - Landscape position, hydrology setting, soil, vegetation, drainage features
- Pre-existing data
- Timeline and available resources

- BWSR Hydrology Guidance documents

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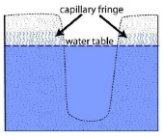
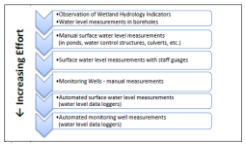
Methods to monitor hydrology

- Observation of indicators
- Staff gauges
- Open boreholes



- Monitoring wells
  - Manual measurements
  - Automated measurements



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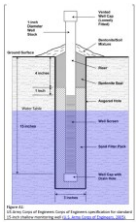
Design and location of monitoring wells

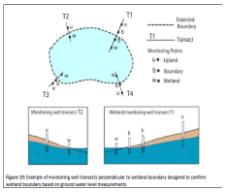


Monitoring wells

- Screen, Riser, Sand Pack, Bentonite seal

Well location

- Depends on the question:
  - Single well will tell if hydrology is present
  - Complex sites require transects based on landscape position, etc.
    - Professional judgement



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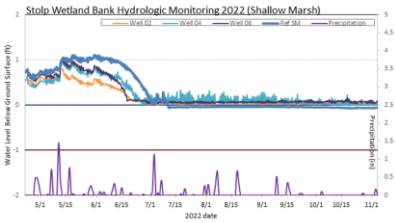
Monitoring Well Data

Hydrograph:

- Growing season
- Normal "envelope"
- 30 day rolling total
- Daily Precipitation



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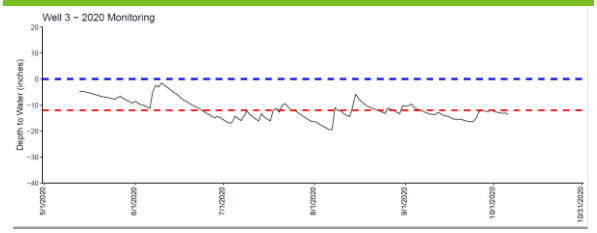
Seasonally Saturated



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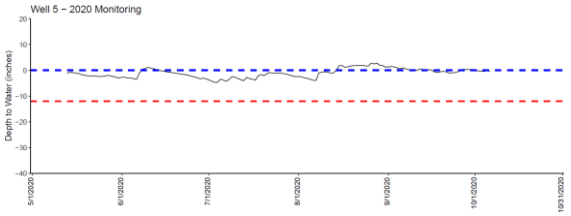
Shallow Inundation



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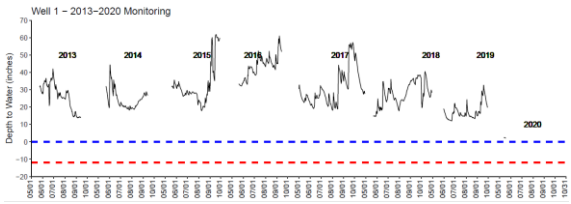
Permanent inundation



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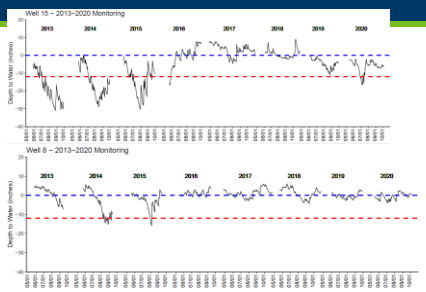
Shows restoration of mid 2015



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Interpreting Hydrology

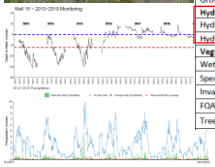

Table 1: Summary of Wetland Success Criteria for Phase I

Success Criteria	Phase I		
	Wet Meadow	Hardwood Swamp	Shallow Marsh
Duration			
Growing Seasons	5	4	5
Hydrology			
Hydrology (depth to water table)	Surface to -12"	Surface to -12"	+6" to -12"
Hydroperiod (duration within zone)	Meets duration	Meets duration	Meets duration
Vegetation			
Wetland Indicator (% FAC or wetter)	41/52 = 79%	39/51 = 76%	20/22 = 91%
Species Composition (Native Richness)	39/52 = 75%	39/51 = 76%	19/22 = 86%
Invasive Cover (% non-native)	2%	9%	2%
FQA/WFQA	20.2/26.7	20.0/21.4	16.9/19.7
Tree Coverage (trees per acre)	N/A	*26.48*	N/A

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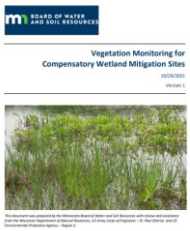
Vegetation Monitoring for Wetland Bank Sites

Vegetation Monitoring for Compensatory Wetland Mitigation Sites

- Developing a vegetation monitoring plan
- Sampling methods
- Where and when to monitor
- Monitoring plan considerations
- Reporting monitoring results



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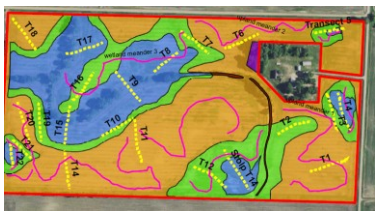
Vegetation

- Methods to monitor vegetation:
  - Floristic Quality Assessment
  - Mapping plant communities
  - Estimating invasive species



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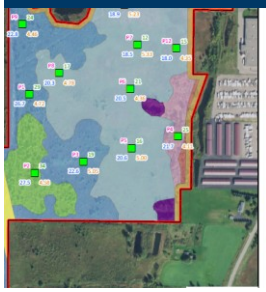

Vegetation

- Floristic Quality Assessment and plots

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Vegetation

- Interpreting vegetation data
  - Indicator status (% FAC or wetter)
  - Composition (% native species richness)
  - Invasive cover (%)
  - Floristic Quality Assessment (index rating)

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FQA/WFQA	20.2/26.7	20.0/21.4	16.9/19.7
Tree Coverage (trees per acre)	N/A	26.48	N/A

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Corrective Actions

- If, during the monitoring period, the LGU/Corps or TEP determine that a bank site does not meet the approved plan's specifications, the LGU must require corrective actions
- BWSR can freeze accounts by restricting deposits, withdrawals, transfers until the LGU determines the site is in compliance
- Noncompliance of bank sites is subject to enforcement procedures

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