Day Three

MN Wetland Professional Certification Program
Introduction Class- Day 3

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Professional Certification Program

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1) Which of the following key characteristics are related to wetland hydrology?

a) Depth and source of saturation/inundation
b) Frequency and source of saturation/inundation
c) Frequency and duration of saturation/inundation
d) Vegetation adapted to live in saturated soil conditions and hydric soils

2) Describe what the following hydrology indicators look like:

Drift Deposits Debris deposited or entangled to objects

Water-Stained Leaves: Dead leaves turned greyish or black due to inundation for long periods

Saturation: Visual Observation of water glistening on soil associated with water table

Geomorphic Position: Concave landscape positions, drainage ways, floodplains, toeslope

Sediment Deposits: Sediment remaining after ponding or flooding

2

Quiz

3) Which of the following meets the technical standard for hydrology?

a) Saturation to the surface observed during the growing season in a normal year.
b) Observation of two primary hydrology indicators.
c) Water table within 12 inches of the surface for at least 14 consecutive days during the growing season in a normal year.
d) Water table observed in an open bore hole.

4) Which of the following soil textures could use the "S" hydric soil group indicators?

a) Sandy clay loam
b) Loamy fine sand
c) Loam
d) Fine sandy loam

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5) For the following description of a soil layer, what is the value of the matrix?

0– 10" 10YR 3/2 with 2% 7.5YR 4/6 concentrations

a) 6
b) 4
c) 3
d) 10

6) Which of the following is true regarding hydric soil indicators?

a) The final version is located in the regional supplements
b) Their applicability varies by region
c) They all require the presence of iron in the soil
d) They can all be assessed within 2 feet of the soil surface

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7) Circle the three processes that normally occur in a soil when it is saturated for an extended period?

a)It becomes aerobic
b)It becomes anaerobic
c)Iron becomes reduced
d)It becomes a wetland
e)Organic matter accumulates

8) The hydric soil indicators A, F, and S are used for what soil types. Use the table below.

Indicator	Soils
A	All Soils
F	Loamy and clay Soils
S	Sandy Soils (sand, loamy fine sand)

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9) Which of the following is <u>not</u> used in identifying Hydric Soil Indicators:

a) Land Resource Region
b) Soil textures
c) Soil colors
d) Flood frequency >25%

10) Why is antecedent precipitation analysis important prior to a delineation?

To understand current climatic conditions

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Wetland Regulatory/Compliance Programs in Minnesota

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Professional Certification Program

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- Wetland Regulations in MN

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Programs

- Minnesota Wetland Conservation Act (WCA)
- Public Waters Work Permit Program (PWWPP)
- Section 404 of the Clean Water Act (404)
- Section 401 of the Clean Water Act (401)
- Swampbuster provisions of the Food Security Act (FSA)

BWSR

DNR

US Army Corps of Engineers

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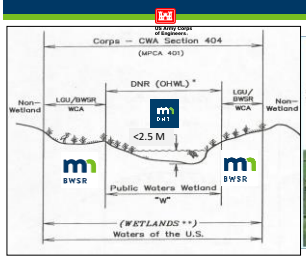
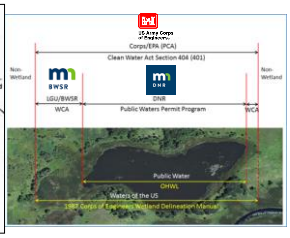
Jurisdiction





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Wetland Conservation Act (WCA)

Overview

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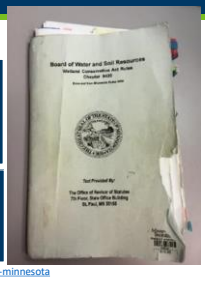
WETLAND CONSERVATION ACT (WCA)

State Law passed in 1991

MN Statute **103G** and parts of 103A,B,E,F

MN Rule Chapter 8420



https://bwsr.state.mn.us/wetlands-regulation-minnesota

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Wetland Conservation Act

- **Regulates:** draining, filling, some excavation
- **Administered by:** Local Government Units, SWCDs, Watershed Districts
- **Oversight by:** MN Board of Water and Soil Resources
- **Authorities:** M.S. 103A, 103B, 103G; M.R. Chapter 8420
- **Jurisdictional boundary:** 1987 Corps of Engineers Wetland Delineation Manual and Regional Supplements
- **Review standards:** Avoid, minimize, replace (sequencing)
- **Enforcement:** DNR Conservation Officers; cease & desist, restoration orders
- **Application**: Joint Application Form for Activities Affecting Water Resources in Minnesota

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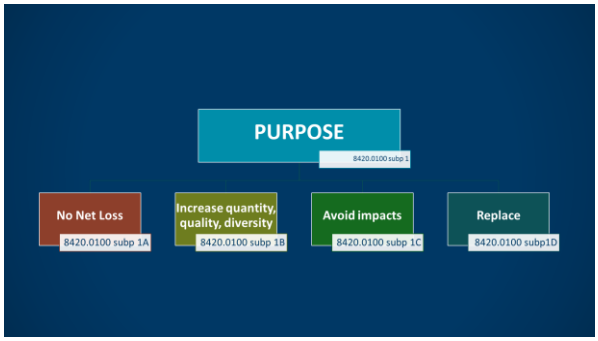

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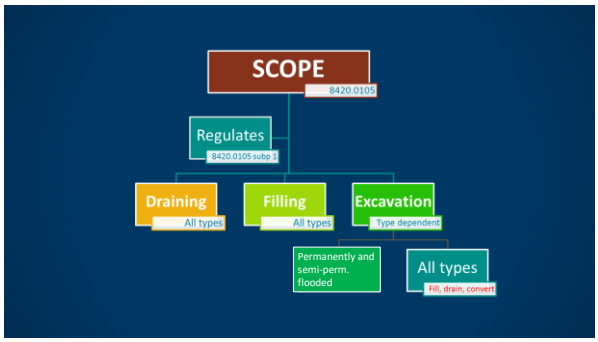

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Is this regulated under WCA?

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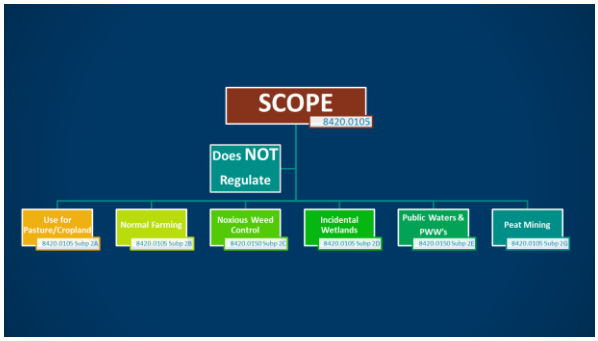

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Incidental Wetlands

- Wetlands created in naturally non-wetland areas not on purpose.

Temporary puddles

Stormwater ponds

Sewage treatment wetlands

Roadside ditch in upland

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WCA Authority on Tribal Lands?

- Tribes have special legal status as sovereign nations
- Tribal lands are composed of Trust lands, allotted trust lands, fee lands
- Many tribes have enacted their own environmental regulations
- Federal regulatory environmental laws apply on Tribal Lands

- WCA does not have jurisdiction on Trust lands
- Fee lands are held by an owner (tribal member or not)
- Authority of state environmental laws on tribal land is limited to fee lands held by a non-tribal owner

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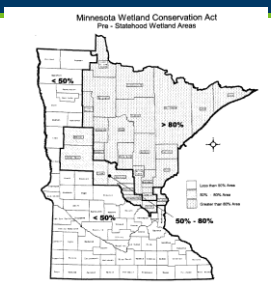
Pre-Statehood Areas



Different regulations apply depending on whether you are in a <50% area, 50 – 80% area, or >80% area.

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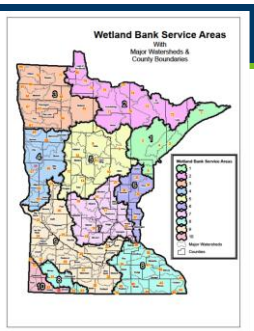
Bank Service Areas



- Used in wetland mitigation siting

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Applications and Decisions

- In general, applicants demonstrate through their application submittal that they are compliant with WCA.
- An LGU's decision to approve, deny or approve with conditions is saying if the project complies with WCA or not.
- An LGU can take the WCA decision process and fold it into a permit that they issue for a project. This is optional, but common among watershed districts and counties that issue permits for various other things.
- In general, LGUs can have more restrictive local requirements, but not less restrictive requirements.

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WCA Decision Types and Application Requirements

Decision Type	Application Requirement
Wetland Boundary/Type	Application required
Exemption or No-Loss Provision	Application not required (unless LGU has more restrictive local requirement)
Replacement Plan	Application required
Banking Plan	Application required

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Public Waters Work Permit Program (PWWPP)

Overview

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Minnesota Wetland Professional Certification Program

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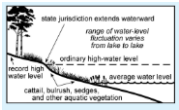
Public Waters Permit Program

- **Regulates:** changes to "course, current or cross-section"
- **Administered by:** DNR – Area Hydrologists
- **Authorities:** M.S. 103G; M.R. Chapter 6115
- **Jurisdictional boundary:** "Ordinary High Water Level"
- **Review standards:** Public interest; reasonable/practical, Riparian rights, Availability of feasible & prudent alternatives, Compensatory mitigation
- **Appeals:** Contested case hearing
- **Enforcement:** DNR Conservation Officers; cease & desist, restoration orders
- **Application:** on-line via "MPARS"



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Purpose

To conserve and utilize the water resources of the state in the best interest of its people.


Sylvan Lake, Cass County
Photo Credit: Ben Meyer

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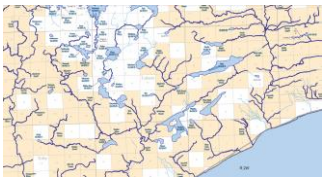
What is a Public Water?

Waters that are (paraphrased and shortened from statute):

- Assigned a shoreland management classification; navigable waters; lakes; for a designated mgmt. purpose (trout and game lakes); designated as scientific and natural areas; located within and totally surrounded by publicly owned lands; state or federal govt. holds title to any of the beds or shores, with publicly-owned and controlled access; natural and altered watercourses with a total drainage area greater than two square miles; trout streams; and public waters wetlands.



https://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html

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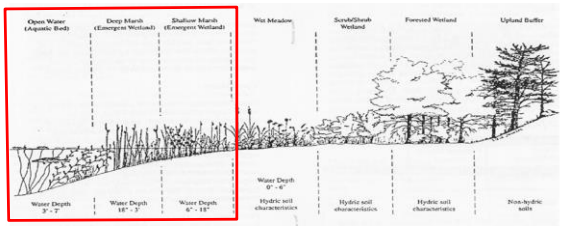
What is a Public Water Wetland?

- All types 3, 4, and 5 wetlands that are ten or more acres in size in unincorporated areas or 2.5 or more acres in incorporated areas.



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Watercourses and Wetlands

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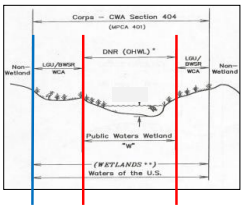
Public Watercourses

Top of bank



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Delineation of Public Waters/Public Waters Wetlands

- PWWPP does not use the same criteria and delineation methods as WCA (or any other programs we will discuss in this class.
- Uses the **Ordinary High Water Level (OHWL)** to define boundaries.
- OHWL is an elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial.

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OHWL vs Wetland Boundary

- **Wetlands** are transitional lands between *terrestrial* (living/growing on/in land/soil) and *aquatic* systems (living/growing on/in water). Wetland boundary is upper limit of hydric soils, wetland hydrology and hydrophytic vegetation.
- **Public waters** includes wetlands, but their boundaries are the upper limit of where high water has left evidence on the landscape, often this is the point where there is predominantly aquatic vegetation.

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OHWL vs Wetland Boundary

	Wetland Delineation	OHWL
Boundary Type	Line representing change from where all 3 parameters are present to where one or more parameters is absent.	Elevation representing where high water has left evidence on the landscape.
Key Factors	Hydrophytic vegetation, hydric soils and wetland hydrology	Evidence on landscape
Determination	Applicants/consultants make determination, regulatory agencies review and approve.	DNR makes determination

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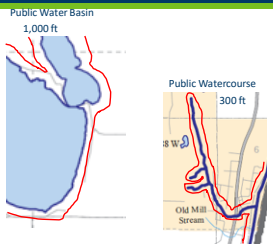
What is shoreland?

- DNR definition:
  - 1,000 ft from the OHWL of a public water basin or the shoreland area defined in local ordinance, which can be more restrictive
  - 300 ft from the OHWL of a public watercourse or the shoreland area defined in local ordinance, which can be more restrictive



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Standards (example)

Filling Public Waters

- Standards - Minimize encroachment, must be clean fill, must consider alternatives, must have erosion control, be consistent with floodplain/shoreland ordinance, etc.
- Prohibitions – in fish spawning areas, for veg control, to construct roadways (except public roads under certain circumstances), for disposal of materials, etc.

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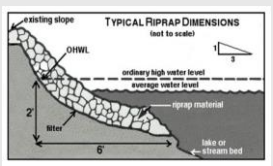
PW and applications

- No Permit Required – sand beach blankets (under certain conditions), riprap, in a watercourse with 5 sq. mile or less drainage area (under certain conditions), etc.
- Check with the LGU on WCA implications!



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Permit Application Process

- Apply through Minnesota Permit Application Reporting System (MPARS), an online permit system.
- DNR has schedule of application fees.
- Application is noticed to city, SWCD, watershed district, Corps and BWSR.

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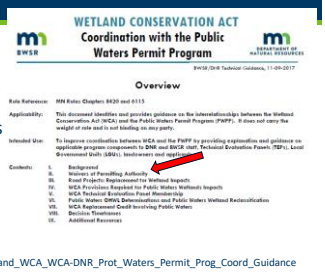
Waiving Jurisdiction between WCA and PWPP

- Jurisdiction between the two programs can be waived from one program to the other if a project impacts wetland areas both within and outside of public waters. But only for wetland areas, not watercourses or deepwater habitats (lakes).


WETLAND CONSERVATION ACT
Coordination with the Public Waters Permit Program
BWSR
DEPARTMENT OF NATURAL RESOURCES
Overview

Wetland_WCA_WCA-DNR_Prot_Waters_Permit_Prog_Coord_Guidance

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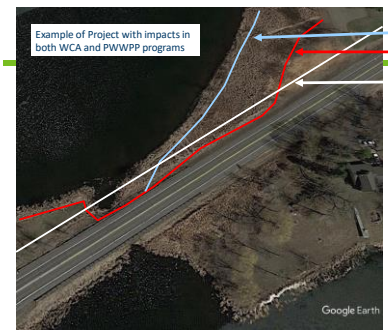

Boundary of Public Water (blue)

Boundary of Wetland (red)

Boundary of fill for road widening (white)

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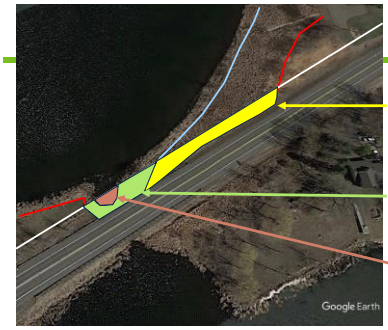

Wetland fill outside Public Water (yellow) ***Can*** **be waived to PWWPP for permitting.**

Wetland fill within Public Water (green) ***Can*** **be waived to WCA for permitting.**

Non-Wetland fill within Public Water (pink). ***Cannot*** **be waived to WCA for permitting because it is not wetland.**

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Program Element	WCA	PWWPP
Basis of Authority	Mn Rules Chapter 8420 and associated statutes	Mn Rules Chapter 6115 and associated statutes
Regulated Waters	Wetlands except incidental and wetland areas of Public Waters (unless waived)	Public Waters and Public Waters Wetlands (which includes deepwater habitats, streams and wetlands)
Jurisdictional Boundaries	Wetland Delineation per 87 Manual & Regional Supplements	OHWL
Regulated Actions	Fill, drain, excavate (semi-perm. Flooded areas)	Changes in course, current or cross-section
Program Administration	LGU implementation, BWSR oversight, DNR enforcement	DNR implementation
Type of Approvals	WCA decisions	Permit authorizations
Applying for Approval	WCA application or request for decision	MNPARS online application

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Section 404 Clean Water Act (in MN)

Overview

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US Army Corps of Engineers

Minnesota Wetland Professional Certification Program

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Corps Regulatory Program Administration

- Regulatory authority delegated to 36 separate Districts.
- Each district develops their own tools and procedures to implement the Regulatory Program consistent with laws and national guidance.

St. Paul Corps District (MN and WI)

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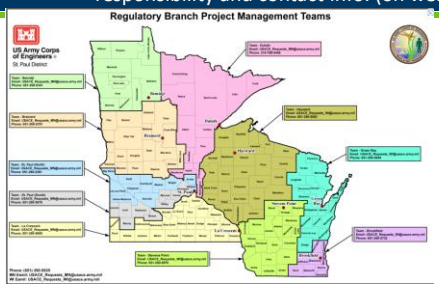
St. Paul District field offices, general areas of responsibility and contact info. (on website)



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Corps Regulatory Program in MN

Authority	Waters Regulated	Scope of Regulation
Section 10 Rivers & Harbors Act	Navigable Waters	Work in, over or under a navigable water
Section 404 Clean Water Act	WOTUS (which includes navigable waters)	Discharges of dredged or fill material

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Section 404 Geographic Jurisdiction

- Geographic Jurisdiction of Section 404 of the CWA regulation includes lakes, streams, rivers, wetlands and ponds that meet the definition of a Water of the United States (WOTUS)
- WOTUS is a case-by-case determination referred to as a **Jurisdictional Determination or JD**.
- a JD is an official determination on whether a water is or is not a water of the U.S. AJD needed to call a water not jurisdictional; no AJD needed to move forward w/ permitting. The Corps works to provide AJDs in accordance with statute, regulation and court decisions when they reduce, eliminate or expedite decision-making on DA permit applications.

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Section 10 Geographic Jurisdiction

NAVIGABLE WATERS OF THE UNITED STATES IN MINNESOTA

1. BIG FORK RIVER
Navigable throughout
includes:
Dora Lake (source)

2. BIG STONE LAKE
Navigable throughout

3. BOIS DE SIOUX RIVER
Navigable throughout

4. INTERNATIONAL BOUNDARY WATERS FLOW WEST THROUGH COOK, LAKE, ST. LOUIS AND KOOCHICHING COUNTIES
Navigable throughout,
within limits of the
United States,
includes:
North Lake (source)
Francis Bay
Little North Lake
Little Gunflint Lake
Gunflint Lake
Magnetic Lake
Pine River

Carp Lake
Birch Lake
Sucker Lake
Newfound Lake
Moose Lake
Inlet Bay
Basswood Lake
Rice Bay
Wind Bay
Hoist Bay
Back Bay
Jackfish Bay
Pipestone Bay
Basswood River
Horse River
Navigable 1 mile up-
stream
Wednesday Bay
Crooked Lake
Thursday Bay
Friday Bay
Saturday Bay
Sunday Bay
Iron Lake
Peterson Bay
Bottle Lake
Bottle River

Rollick Creek
Navigable 1 mile
upstream
North West Bay
King Williams Narrows
Harrison Narrows
Steuge Bay
Browns Bay
Swansons Bay
Namakan Narrows
Namakan Lake
Hammer Bay
Blind Pig Channel
Deep Slough
Randolph Bay
Junction Bay
Hoist Bay
Moose Bay
Moose River
Navigable 1 mile
upstream
Kabetogama Lake
Old Dutch Bay
Sullivan Bay
Ash River
Navigable 2 miles
upstream

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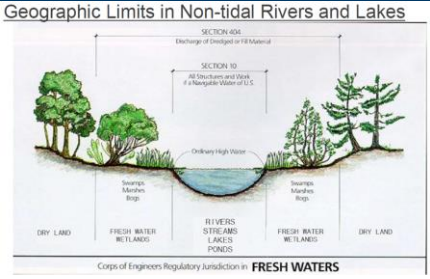
Section 10 Geographic Jurisdiction

Geographic Limits in Non-tidal Rivers and Lakes



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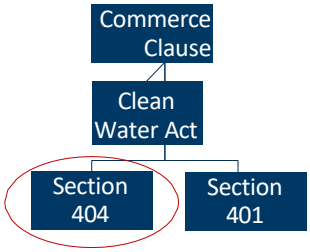
Section 404 of the Clean Water Act



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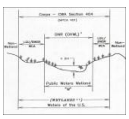
Section 404 Clean Water Act

- **Regulates:** Discharges of dredged or fill material into waters of the US including wetlands and below the ordinary high water mark of rivers, streams and lakes
- **Administered by:** U.S. Army Corps of Engineers – St. Paul District
- **Authorities:** 33 U.S.C. §1251; 33 CFR Parts 320-332; 40 CFR Part 230
- **Delineating Aquatic Resources:** 1987 Corps of Engineers Wetland Delineation Manual with appropriate Regional Supplement(s); Regulatory Guidance Letter 05-05 for Ordinary High Water Mark."
- **Jurisdictional boundary:** Waters of the United States as defined under current final rule
- **Review Standards:** Sequencing, public interest, adequate compensatory mitigation, guidelines compliance
- **Appeals:** COE administrative appeal
- **Enforcement:** COE and USEPA; administrative orders
- **Application:** Joint Application Form for Activities Affecting Water Resources in Minnesota

US Army Corps of Engineers



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404 Jurisdiction Trigger

Must be a "discharge" of dredged or fill material into WOTUS.




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404 Jurisdiction Trigger

Definition of discharge of dredge material 33CFR323.2(d)(1):

Any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation.

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404 Jurisdiction Trigger

Definition of Fill material - 33CFR323.2(e)(1)

Fill material means material placed in waters of the United States where the material has the effect of:

(i) Replacing any portion of a water of the United States with dry land; or

(ii) Changing the bottom elevation of any portion of a water of the United States.

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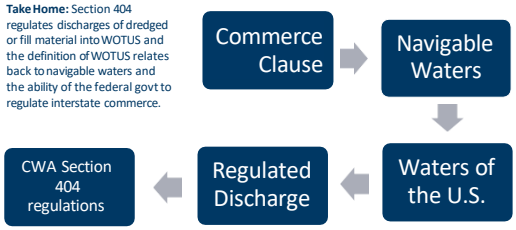
Section 404

Take Home: Section 404 regulates discharges of dredged or fill material into WOTUS and the definition of WOTUS relates back to navigable waters and the ability of the federal govt to regulate interstate commerce.



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Section 404 - Permitting

- **Individual Permit (IP)**–for regulated activities with more than minimal, and potentially significant effects.
- **General Permit (GP)** – for categories of activities where regulated activities have minimal impacts. Can be issued on a nationwide, regional or state basis.

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IPs vs GPs

Individual Permits have longer review times, different noticing procedures and receive more scrutiny than **General Permit** authorizations.

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General Permits (GP)

- Authorizes landowners to proceed with a project without the more time-consuming need to obtain standard individual permits in advance.
- Corps is confirming that activity is eligible for the GP. Some activities may not require verification from the Corps.
- ~97% of permit activities authorized by General Permits.

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Regional General Permits

- Issue Regional General Permits (RGPs) in addition to or to substitute for NWPs.
- GPs may include impact threshold.
- GPs may include pre-construction notification (PCN) requirements.

- Regional General Permits include:
  - Minor discharges
  - Piers and docks
  - Utility
  - Transportation
  - Wildlife ponds

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Nationwide Permits (NWP)

- A form of general permit issued nationally every 5 years.
- Each Corps District has broad discretion as to how they utilize NWPs. They can:
  - Adopt some or all NWPs for use in their district; or
  - Add their own regional conditions to some or all NWPs.
  - In general, cannot exceed ½ acre or 300 linear feet of impact

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Types of Nationwide Permits (NWP)

- Residential Development
- Commercial Development
- Agricultural Activities
- Recreation Facility
- Stormwater Management Facility
- Mining Activities
- Land and Water-Based Renewable Energy Generation Facility

https://www.mvp.usace.army.mil/missions/regulatory/nwp/

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General Permit Application (PCN) and process

- Submit complete Preconstruction Notification (PCN) if required to usace_requests_mn@usace.army.mil with county name in the subject line of the email (e.g. Washington County).
- Corps sends acknowledgment email with assigned project number and Corps contact.
- Corps notifies applicant within 30 days if PCN incomplete
- Section 106 of national Historic Preservation Act (NHPA)
- Section 7 of Endangered Species Act (ESA)
- Section 408 (modification of Corps projects)
- On average, general permit verifications are made within +/- 60 days

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Individual Permit Process

- Submit complete application to usace_requests_mn@usace.army.mil with county name in the subject line of the email (e.g. Washington County).
- Corps sends acknowledgment email with assigned project number and Corps contact.
- Corps issues 15-30 day public notice within 15 days of receiving a complete application
- Includes a public notice, public interest review, environmental documentation, and, if applicable, a Section 404(b)(1) Guidelines compliance analysis, Section 106, Section 7 ESA, etc
- Goal of the Corps is to process individual permit decisions within +/- 120 days

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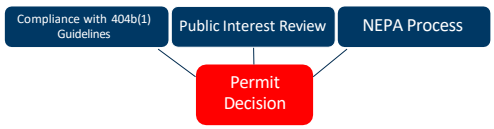
Individual Permit Process



63

Individual Permit Process

Decision Element	Type	Critical Elements
Public Interest Review	Substantive criteria for making a decision.	Project need, practicable alternatives and extent/permanence of effects.
404b(1) Guidelines	Substantive criteria for making a decision.	Practicable alternatives, minimization of potential harm, significant degradation to aquatic system, Federal mitigation rule.
NEPA	Procedural requirement, public disclosure and factors that must be considered in decision making.	EIS/EA, consultation with other agencies, consideration of effects on the human environment, alternatives, mitigation.

64

404b(1) Guidelines Requirements for Regulated Projects/Activities

- Must not be practicable alternatives that are less damaging (LEDPA)

  For example: *Alternative that is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.*
- Cannot result in significant degradation of the aquatic ecosystem
- Must minimize potential harm to the aquatic ecosystem
- Must be sufficient information to make a reasonable judgment on compliance.

65

Other Important Considerations in MN

- **Section 7 of Endangered Species Act (ESA)** Corps must consult with U.S. Fish and Wildlife Service regarding affects on federally-threatened and endangered species by proposed permit actions.
- **Section 106 of National Historic Preservation Act (NHPA)** Corps must consider effects of regulated activities on historic properties, which includes sites listed on or eligible for listing on the National Register of Historic Places (NRHP). Consultation with State Historic Preservation Office (SHPO), Tribal Preservation Office (THPO) and other consulting parties depending on resource proposed to be impacted.

66

WCA and Corps Comparison

Program Element	WCA	Corps Regulatory
Basis of Authority	State statutes and rule (Mn Rules Chapter 8420)	Section 404 of Clean Water Act (CWA) and Section 10 of Rivers and Harbors Act (RHA)
Regulated Waters	Wetlands except incidental and wetland areas of Public Waters (unless waived)	Navigable Waters and Waters of the U.S. (WOTUS)
Regulated Actions	Fill, drain, excavate (semi-perm. Flooded areas)	Discharges of dredged or fill material (404 CWA) Work in, over, or under navigable waters (Section 10 RHA)
Program Administration	LGU implementation, BWSR oversight, DNR enforcement	Corps Districts implement, EPA oversight on 404
Type of Approvals	WCA decisions	Permit authorizations via IPs, GPs, NWPs
Applying for Approval	WCA application or request for decision	Pre-Construction Notification (PCN) for GPs/NWPs, Application for IP
Mitigation for Impacts	Replacement	Compensatory Mitigation

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Section 401 of Clean Water Act (in MN)

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US Army Corps of Engineers

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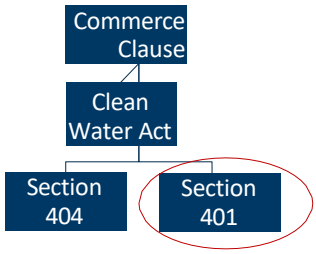
Section 404 of the Clean Water Act



69

Section 401 Program Basics

- Federal agencies may not issue a permit unless a certification that the discharge complies with water quality requirements or waives certification.
- Minnesota Pollution Control Agency (MPCA) is responsible for adopting state water quality standards and issuing Section 401 certifications outside of the exterior boundaries of Federally Recognized Indian reservations.
- On tribal lands where the Tribe is not authorized to issue water quality certification, EPA is the certifying authority.
- MN Tribes (to date) that are 401 certifying authorities include Fond du Lac, Grand Portage and Leech Lake and Red Lake.

70

Regulatory Scope

- Requires a federal action (permit, license, etc.) that may involve a discharge into waters of the United States. If none, then not applicable.

No federal Permit Required	=	No 401 Certification Required

71

Program Administration

- All General Permits (GPs) in MN have various levels of certifications, denials or special conditions depending on the location of the project and general permit.
- Individual Permits (IP's) and GPs without certification require an individual certification.

72

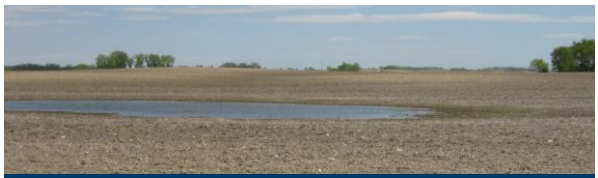
Outstanding Resource Values Waters

- Waters designated as such for their "exceptional characteristics".
- Two Types of ORVWs:
  - **Restricted** – activities are restricted as necessary to preserve the existing water quality and to maintain and protect the exceptional characteristics.
  - **Prohibited** - prohibits activities that result in a net increase in loading or other causes of degradation.

73

Program Element	WCA	Corps Regulatory Program	401
Basis of Authority	State statutes and rule (Mn Rules Chapter 8420)	Section 404 of Clean Water Act and Section 10 of Rivers and Harbors Act	Section 401 of Clean Water Act
Regulated Waters	Wetlands except incidental and wetland areas of Public Waters (unless waived)	Waters of the U.S. (WOTUS)	Waters of the U.S. (WOTUS)
Regulated Actions	Fill, drain, excavate (semi-perm. Flooded areas)	Discharges of dredged or fill material	Federally permitted or licensed activities that may result in a discharge into WOTUS
Program Administration	LGU implementation, BWSR oversight, DNR enforcement	Corps Districts implement, EPA oversight	MPCA, EPA and Authorized Tribes implement
Type of Approvals	WCA decisions	Permit authorizations via IPs, GPs, NWPs	Water Quality Certifications
Applying for Approval	WCA application or request for decision	Pre-Construction Notification (PCN) for GPs/NWPs, Application for IP	Request Pre-filing meeting 30 days in advance of request for certification. Anti-degradation assessment form.
Mitigation for Impacts	Replacement	Compensatory Mitigation	Mitigation

74



Food Security Act (Wetland Conservation Provisions)

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Minnesota Wetland Professional Certification Program

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Program Basics

- The U.S. Dept of Agriculture (USDA) via the 1985 Food Security Act provides benefits (loans, assistance payments, insurance premium subsidies, etc.) to producers of agricultural crop commodities. Typically referred to as the "Farm Program".
- The program is modified and re-authorized periodically by congress. This is typically referred to as the "Farm Bill".

76

Agency Roles (related to wetland conservation provisions)

- **Natural Resource Conservation Service (NRCS):**
  - Makes technical determinations by assigning labels to farm fields that are significant in determining compliance with wetland conservation provisions.
  - Provides technical assistance to producers to assist in wetland conservation compliance.
- **Farm Service Agency (FSA):**
  - determines whether production/planting occurred on converted wetland and if producer is in compliance with wetland conservation provisions.

77

Wetland Conservation Provisions of Food Security Act

Producers must complete form AD-1026 certifying they will not:

- Plant or produce an agricultural commodity on a converted wetland; or
- Convert a wetland with the intent to make production of an agricultural commodity possible.

78

How Does NRCS Evaluate Compliance?

Primarily through Certified Wetland Determination (CWD).

Involves identifying wetlands and then assigning a label that has implications for compliance. For example, if producer drains a wetland for crop production, that would result in a label change that could result in producer being ineligible.

79

Program Element	WCA	404	Wetland Conservation Provisions of Food Security Act
Basis of Authority	State statutes and rule (Mn Rules Chapter 8420)	Clean Water Act	Food Security Act
"Regulated" Waters	Wetlands except incidental and wetland areas of Public Waters (unless waived)	Waters of the U.S. (WOTUS)	All wetlands
"Regulated" Actions	Fill, drain, excavate (semi-perm. Flooded areas)	Discharges of dredged or fill material	Draining, dredging, filling, leveling, or otherwise manipulating to make crop production possible.
Program Administration	LGU implementation, BWSR oversight, DNR enforcement	Corps Districts implement, EPA oversight	Farm Service Agency, technical determinations by NRCS
Type of Approvals	WCA decisions	Permit authorizations via IPs, GPs, NWPs	Eligible to receive benefits
Applying for Approval	WCA application or request for decision	PCN	Form 1026
Mitigation for Impacts	Replacement	Compensatory Mitigation	Mitigation

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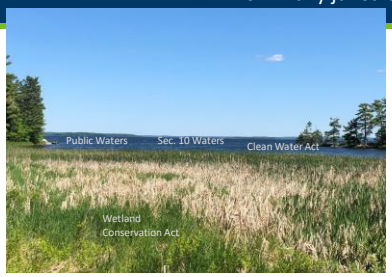
How many jurisdictions?



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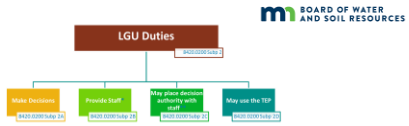
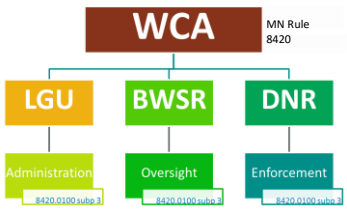


WCA Local Government Duties

82

WCA



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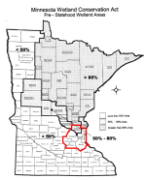
WCA



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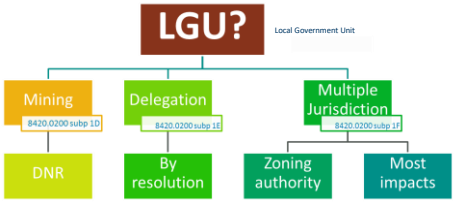
WCA



85

Who is the LGU?

- LGU's can delegate some or all of their authority to another entity provided that both parties pass resolutions (see BWSR website for example resolutions).
- If project overlaps LGU jurisdiction, then the LGU is:
  - One with zoning authority over the project
  - If both have zoning authority, then the one in which the most impact occur.
  - Both LGUs can maintain separate jurisdiction if agreed upon.

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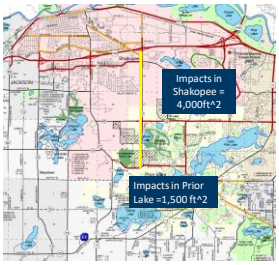
Example



Scenario 1 – Shakopee delegates duties to PL but is still noticed and comments. Prior Lake responsible for LGU duties.

Scenario 2 – Per rule (most impact) Shakopee reviews entire application and is responsible for LGU duties

Scenario 3 – Cities agree that both review and approve application within their respective jurisdictions, and both administer LGU duties. Result: two applications.

87

Who defines a project?

The LGU defines the project

Definition of "project" (8420.0111 Subp. 54):

Project means a specific plan, contiguous activity, proposal, or design necessary to accomplish a goal as defined by a local government unit. As used in this chapter, a project may not be split into components or phases for the purpose of gaining additional exemptions.

Figure 1 - Site Location

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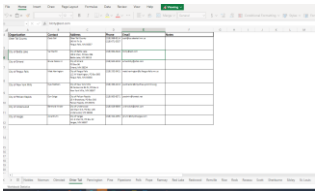
LGU List

WCA Contacts



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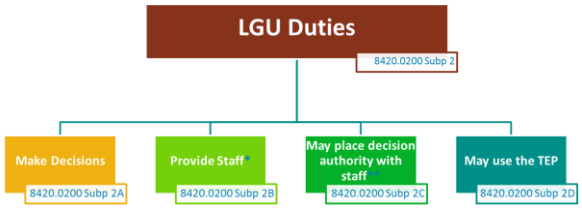
LGU Duties



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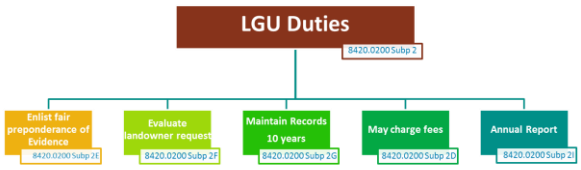
LGU Duties, cont.



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Delegation of Decision-Making Authority to Staff

- Decision authority by default rests with the elected/appointed governing board (City Council, County Board, WMO Board, etc.)
- However, the LGU *may*, through resolution, rule, or ordinance, place decision-making authority with staff according to procedures it establishes.

92

Failure to Apply Law

If the LGU is not following WCA:

1) BWSR notify LGU in writing of its concerns
2) Spot Checks, PRAP, Audits
3) Can then impose moratorium on making decisions

93

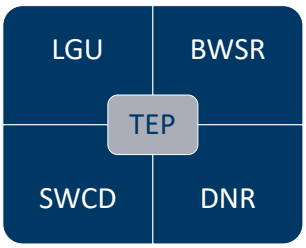
Local Wetland Ordinances

- WCA provides minimum standards
- Local governments may require more procedures and more wetland protection, but not less

94

Technical Evaluation Panel

- Plays a key role in implementation.
- Representative from LGU, SWCD, BWSR and DNR (if project effects public waters and/or in shoreland zone).
- Primary role is to advise LGU on decisions. Some decisions depend on TEP recommendation/concurrence.
- TEPs often advise landowners/applicants during pre and post application reviews.



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Key Roles in WCA Implementation

- **LGU** – make WCA decisions, leads Technical Evaluation Panel
- **SWCD** – serve on TEP, write restoration plans for violation orders
- **BWSR** – serve on TEP, hear appeals, administer wetland bank, oversee and train LGUs.
- **DNR** – serve enforcement orders and coordinate/collaborate with TEP, LGU and SWCD on enforcement process.

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TEP

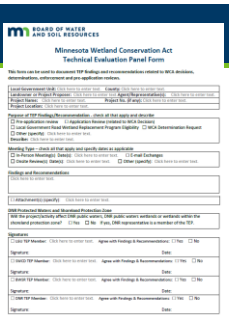
A TEP

Too many people for a TEP

97

TEP Roles

- Determine technical issues
- Generates findings Document specific evidence
- Makes recommendations to LGU
- Operate objectively, clearly, concisely, and timely



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Minnesota Wetland Conservation Act
Technical Evaluation Panel Form

The TEP does not:

- Make decisions
- Perform LGU duties (notices, extensions, etc.)

98

TEPs can and do operate informally

- Not subject to open meeting law.
- Field reviews.
- Open discussions.
- Healthy debates.
- Gather info.

99

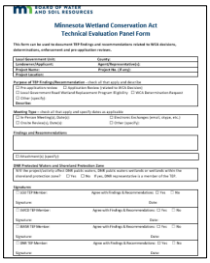
When should you hold a TEP meeting?

- Complex or difficult projects
- Visible, high-profile, or public projects
- LGU is applicant
- Enforcement cases
- Bank plan and monitoring report reviews
- Local Government Road Wetland Replacement Program projects

100

When is TEP required to make findings?

- Requested by LGU, landowner, or a member of TEP
- LGU extends decision timeline beyond 5 years
- Enforcement when determining whether restoration is not possible or prudent



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Technical Evaluation Panel Form

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TEP

Who can Request a TEP?

- LGU
- TEP member
- Landowner
- Others who have requested to be noticed

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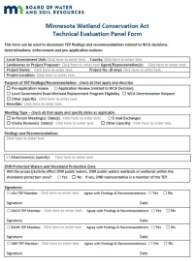
TEP Meetings

- Step 1: Define purpose of TEP discussion/review (set a formal agenda)
- Step 2: Have an open discussion (there will be disagreements)
- Step 3: Summarize and agree to conclusions (find common ground)
- Step 4: Write Findings Report (be clear and concise)

103

TEP findings & recommendations:

- Communicate the cumulative result of field visits, report reviews & informal discussions.
- Give the applicant/landowner direction on next steps (if any).
- Often provide the LGU with the basis for their decision.



Minnesota Wetland Conservation Act
Technical Evaluation Panel Form

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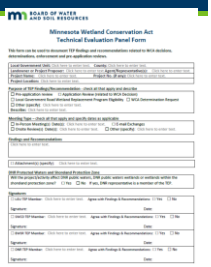
Tips on Well-Written TEP Findings

We will cover the following topics:

- Purpose & audience
- Timing
- Active voice
- Subjective language & “legal-ease”
- Relevant
- Findings vs minutes
- Honesty



Minnesota Wetland Conservation Act
Technical Evaluation Panel Form

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TEP recommendations

- TEP may recommend approval, approval with conditions or denial
- LGU must consider TEP findings and recommendations
- TEP cannot make findings without having at least one member make a site visit
- Findings and recommendations must be endorsed by a majority of members

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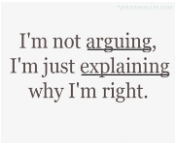
What if the LGU doesn't agree with TEP?

- The LGU must provide detailed reasons for rejecting the [TEP] finding of fact or recommendation in its record of decision; otherwise, the LGU has not sufficiently considered the TEP report.



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Detailed reasons for not following TEP recommendation?

"The Board felt that the TEP's recommendation to deny the application was unreasonable and therefore we approve the application."

108

Reasons for not following TEP recommendation

"The Board finds that the TEP's recommendation to reject the application based on the availability of a reasonable and prudent alternative alignment to the proposed road (impacting less wetland) did not give due consideration to the decreased public safety associated with alternative alignments. The alternative alignments mentioned in the TEP's recommendation result in unsafe sighting distances at road intersections according to national safety standards. Therefore, the Board finds that there are no feasible and prudent alternatives and approves the application."

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What TEP findings <u>should</u> include:

- Landowner needs to find out DNR jurisdiction first.
- Include TEP's assessment of delineation and need for adjustments to line and type before approval.
- Inform landowner of potential applicable *de minimis* amount.
- Inform landowner that he/she must be able to explain why the access road cannot be built on the adjacent parcel (seemingly in the same ownership) in order to minimize wetland impacts.

What TEP findings <u>should *not*</u> include:

- Historic cropping conditions from the 1980s.
- Landowner's warehouse 1 mile west.

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WCA Application Procedures

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Professional Certification Program

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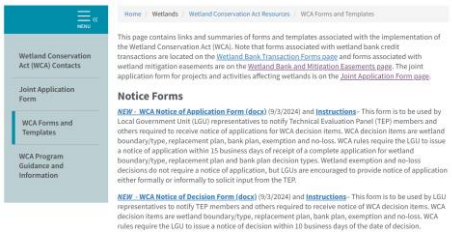
BWSR website

- WCA Forms and Templates



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WCA Application Procedures

- LGU Roles
- Application Procedures
- Agency Action Deadlines
- Noticing Requirements
- Technical Evaluation Panel

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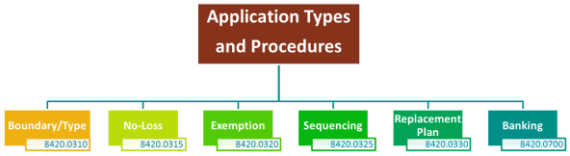
Application



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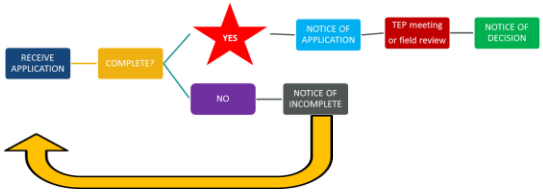
Procedures and Process



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Timelines and deadlines- MN Statute 15.99

Determine Complete Application
- **15** Business days from the date of receipt (date stamp!)

Send the Notice of Application
- **15** Business days from date of receipt of a complete application

Set the Comment Period
- MINIMUM **15** Business days from the date of sending the Notice of Application
  - Can be longer

Make a Decision
- **60** Calendar days from the receipt of a complete application
- Can extend 60 days, additional extension requires applicant approval

Send the Notice of Decision
- **10** Business days from date of decision

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Timelines

Appeal a Decision

- **30** Calendar days from the date of decision

How long is the Decision Valid?

- **5** Years
- Unless longer is specified by LGU when TEP advises longer period

How long do I (LGU) keep all this paperwork?

- **10** Years

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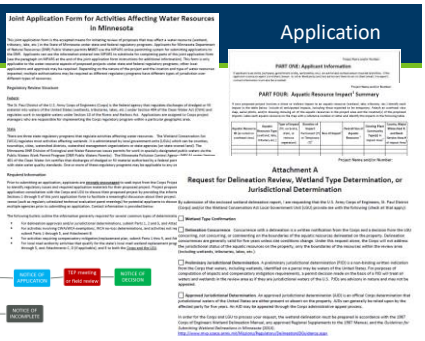
Application

- You should receive:
  1. A "Joint Application"
  2. Applicable attachment(s)
  3. Supporting documentation


Joint Application Form for Activities Affecting Water Resources in Minnesota

PART ONE: Applicant Information

PART FOUR: Aquatic Resource Impact Summary

Attachment A
Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

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Is the application complete?

- Application must contain sufficient/required information found on 1st page of application
- Consider what is being asked, where it fits in Rule, what information the Rule requires
- Local application requirements such as fees?


Joint Application Form for Activities Affecting Water Resources in Minnesota

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Application Review

- Use checklists/guidance
- Missing Information = Incomplete Application
- Notify applicant
  - Within 15 business days of receipt
  - Provide list of what is missing

121

It's Complete! Notice of Application

- Complete BWSR form
- Mark all decision types
- Specify comment Period (min 15 days)
- Decision time information
- Send to applicant, agent, TEP and others who requested notice

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NOA Use

Summary of LGU Application Types		
Decision Type	NOA Required	NOD Required
Boundary or Type	Yes	Yes
No-Loss	No	Yes
Exemption	No	Yes
Sequencing	Yes	Yes
Replacement Plan	Yes	Yes
Bank Plan	Yes	Yes

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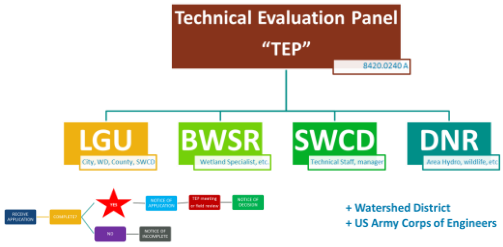
Review



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Notice of Decision

Notice of Decision (NOD) should include:

- Summarize the project- Decision type requested, proposed impact including wetland type and amount
- Clearly state the decision
- Applicable rule citation(s)
- TEP findings
- Conditions of approval
- Location map

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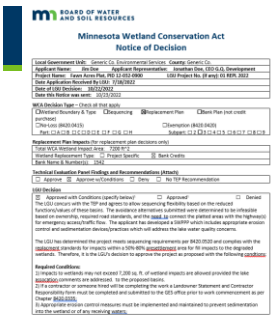
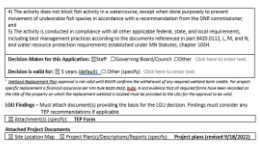
Notice of Decision Example





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TEP Form Attached to NOD


BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Conservation Act
Technical Evaluation Panel Form

This form can be used to document TEP findings and recommendations related to WCA decisions, determinations, enforcement and pre-application reviews.

Local Government Unit: Generic Co. Environmental Services County: Generic Co.
Landowner or Project Proposer: Jim Dee Agent/Representative(s): Jonathan Doe, CEO G.G. Development
Project Name: Fawn Acres Plat, Project No. (if any): 01 REPL 2022
Project Location: 30 acre parcel located in the S1/2 SW1/4, Section 32, Bog Township, PID 12-032-0900

Purpose of TEP Findings/Recommendation – check all that apply and describe
☐ Pre-application review ☒ Application Review (related to WCA Decision)
☐ Local Government Road Wetland Replacement Program Eligibility ☐ WCA Determination Request
☐ Other (specify): Click here to enter text.
Describe: Click here to enter text.

Meeting Type – check all that apply and specify dates as applicable
☐ In-Person Meeting(s), Date(s): Click here to enter text. ☐ E-mail Exchanges
☒ Onsite Review(s), Date(s): 9/26/2022 ☐ Other (specify): Click here to enter text.

Findings and Recommendations
Johnathan Doe submitted a replacement plan application to impact 7,200 sq. ft. of wetlands on a 30 acre parcel located in the S1/2 SW1/4, Section 32, Bog Township, PID 12-032-0900. The proposed impacts include filling 6,000 sq. ft. of Type 2, Fresh Wet Meadow wetland (Wetland A) and 1,200 sq. ft. of Type 7, Hardwood Swamp areas (Wetland B). Impacts have been avoided on Wetland C. All impacts are a result of road construction with associated curb and gutter with the primary purpose to develop the parcel into 7 new residential lots while maintaining connectivity with CSAH1/7 and the adjacent plat. Sequencing flexibility has been requested. Both Wetlands A & B are partially drained by a shallow ditch and have been consistently surrounded by row crop production which has resulted in partial fill at the fringes. Wetland A is dominated by reed canary grass. Proposed mitigation will be via the purchase of 14,400 sq. ft. of banked credits (2:1) within the same BSA and pre-settlement area. The NOA was sent on 7/20/2022 with one comment received by the adjacent lake association with concerns that the development will reduce the lake water quality. The prior wetland delineation was approved and noticed on 6/15/2022. The timeline for making the decision was extended per M.S. 15.99 to 11/18/2022. No special considerations were noted by the applicant, LGU or TEP during the review process. The original replacement plan failed to adequately evaluate two additional avoidance alternatives (i.e. access upland from the south parcel & review options for cul de sac) identified by the TEP on 7/26/22. The applicant then submitted a supplementary sketch and information package. No feasible and prudent avoidance alternatives are available to accomplish the primary purpose of the project and still meet the required road, zoning, and safety standards. The TEP concurs with the degraded MN RAM analysis and recommends approval of the project as revised on 9/18/22.

☒ Attachment(s) (specify): Project plans (revised 9/18/2022)

BWSR TEP Findings & Recommendation Form - October 2019 1


DNR Protected Waters and Shoreland Protection Zone
Will the project/activity affect DNR public waters, DNR public waters wetlands or wetlands within the shoreland protection zone? ☒ Yes ☐ No If yes, DNR representative is a member of the TEP.

Signatures
☒ LGU TEP Member: Ima Regulator Agree with Findings & Recommendations: ☒ Yes ☐ No
Signature: Date:
☒ SWCD TEP Member: John Door Agree with Findings & Recommendations: ☐ Yes ☒ No
Signature: Date:
☒ BWSR TEP Member: Jane Doe Agree with Findings & Recommendations: ☒ Yes ☐ No
Signature: Date:
☒ DNR TEP Member: Jill Hydro Agree with Findings & Recommendations: ☒ Yes ☐ No
Signature: Date:

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LGU Decision

- Based on standards and procedures in WCA, TEP Findings, and Recommendation.
- Must occur within 60 day of complete application (or as extended)
- Requires a Notice of Decision within 10 days

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General Appeal Process

- 30 day appeal window following NOD
  - Any work completed during this period may be at risk.
- 30 days starts from postmarked date of mailing or date of electronic transmission
- LGUs can have local appeal process
- Extension possible by mutual agreement

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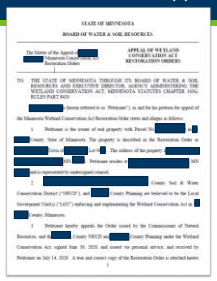
Appeals

- Appeals may be made by
  - landowner,
  - those required to be noticed (TEP/other), or
  - 100 residents in county where wetland is located.
- Appeal goes to BWSR.
- Heard by Dispute Resolution Committee with final decision by full BWSR Board.



STATE OF MINNESOTA

BOARD OF WATER & SOIL RESOURCES

APPEAL OF WETLAND CONSERVATION ACT RESTORATION ORDERS

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Summary of LGU Review Process

- Discussion (pre app meeting?),
- Review of application,
- On-site review,
- TEP meeting(s)/Rec.,
- Amendment(s)?
- more discussion……

*** Don't forget to include our Army Corps of Engineers partners!!*

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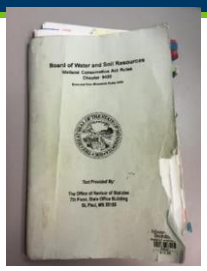
How long is a WCA decision valid for?

A) One year

B) Three Years

C) Five Years

D) Ten Years



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WCA Application Procedures Review

- LGU Roles
- Application Procedures
- Agency Action Deadlines
- Noticing Requirements
- Technical Evaluation Panel

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Hydrophytic Vegetation Indicators and Determination

BOARD OF WATER AND SOIL RESOURCES

MWPCP | bwsr.state.mn.us

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Outline

- Hydrophytic Vegetation Definition
  - Define Hydrophyte
  - What makes a plant a hydrophyte
  - Why it matters
- Hydrophytic Vegetation Indicators
  - Indicator status
  - Field indicators
  - Dominance
- Determining Hydrophytic Plant Community
  - Rapid Test
  - 50/20 Rule
  - Prevalence Index
  - Morphological Adaptations

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Hydrophytic Vegetation Definition

Wetland definition includes the language: "…and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

1987 Manual says in a wetland, "The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions."

Hydrophytic Vegetation: Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

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Hydrophytic Vegetation Definition

What Is a Hydrophyte?

Hydrophyte
Water Plant

OR

Any plant that is adapted to grow in water or in wet habitats.

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Hydrophytic Vegetation Definition

- What makes a plant a hydrophyte?.....ADAPTATIONS!
  - Morphological adaptations ---→ visible changes/growth habits
  - Reproductive adaptations ---→ changes in how the reproduce
  - Physiological adaptations ----→ internal chemical process changes

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Morphological Adaptations

List of Examples

- Buttressed tree trunks
- Multiple trunks
- Pneumatophores
- Adventitious roots
- Shallow roots
- Hypertrophied lenticels
- Aerenchyma
- Polymorphic leaves
- Floating leaves

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Morphological Adaptations

Buttressed bases

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Examples

Multiple Trunks

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Examples

Shallow Roots - Adventitious Roots



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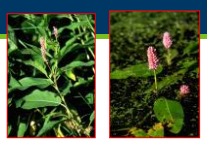
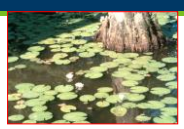
Morphological Adaptations



Polymorphic Leaves
Water Smartweed (*Persicaria amphibia*)



Floating leaves

Aerenchyma Tissue for Oxygen Transport

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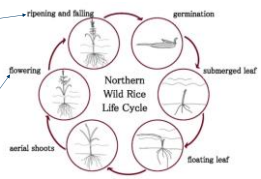
Reproductive Adaptations





Wild Rice lifecycle

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Why Hydrophytes Matter

- They have adapted to life in saturated/ponded/anaerobic conditions
- A prevalence of hydrophytes in a plant community indicates the area likely experiences a period of ponded or saturated soils such that they out compete the non-hydrophytes
- The vegetation component in wetland delineation requires each species be classified as a hydrophyte or non-hydrophyte, and then apply to the community as a whole

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What about bryophytes?

- Bryophytes are not vascular plants.
- Sphagnum moss is listed as bog plant community species but does not have an indicator status

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Plant Identification

Plant ID Applications:

Seek/iNaturalist
PictureThis
NatureID
LeafSnap
PlantIn
PlantNet
PlantSnap
FlowerChecker

BWSR does not endorse specific products.

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Individual Plant Indicator Status

https://nwpl.sec.usace.army.mil/

https://www.usace.army.mil/Media/Announcements/Article/3679433/13-february-2024-final-2022-national-wetland-plant-list-is-available/

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Plant Indicator Status

Wetland Indicator Status	Indicator Symbol	Definition
Obligate Wetland	OBL	Plants that almost always grow in wetlands. Estimated probability of >99% for growing in wetland.
Facultative Wetland	FACW	Plants that usually occur in wetlands. Estimated probability of 67% - 99% for growing in wetland (1%-33% in upland)
Facultative	FAC	Plants with similar likelihood of occurring in both wetland and upland. Estimated 33%-67% for growing in wetland.
Facultative Upland	FACU	Plants that sometimes grow in wetland. Estimated 1% - <33% for growing in wetland.(>67% - 99% in upland).
Obligate Upland	UPL	Plants that rarely occur in wetland. Estimated probability of <1% for growing in wetland (>99% in upland).

Hydrophytes

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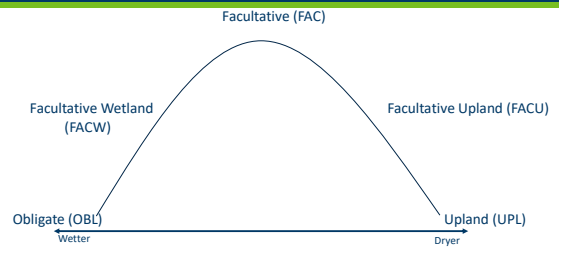
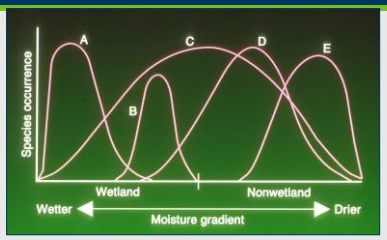
Plant Indicator Status



150

Plant Indicator Status Distributions



Indicator Status

Obligate
FACW
FAC
FACU
Upland

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NWPL Regions = Supplement Boundaries

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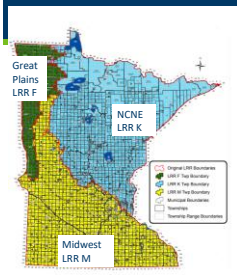
Plant Indicator Status



Plant Details

Scientific Name: *Populus tremuloides* Michx.
Family Name: Salicaceae Mirb. - Willow family
Common Name: quaking aspen
Symbol: POTR5
Date Modified: June 23, 2023, 1:27 p.m.

Wetland Ratings

AGCP	AW	CB	EMP	GP	HI	MW	NCNE	WMVC	AK
FAC	FACU		FAC	FAC		FAC	FACU	FACU	FAC

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Indicator Status Comparisons

Silver Maple (**FACW**: NC/NE; Midwest)(**FAC**:GP)

Swamp Ecotype: shallow root system

Upland Ecotype: tap root to water table

Red Maple (**FAC**)

Sugar Maple (**FACU**: NC/NE; Midwest) (**UPL**: GP)

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Indicator Status Comparisons

Asclepias

Common Milkweed (**UPL**: NC/NE; GP)(**FACU**: Midwest)
A. syriaca

Swamp Milkweed (**OBL**: NC/NE; Midwest)(**FACW**: GP)
A. incarnata

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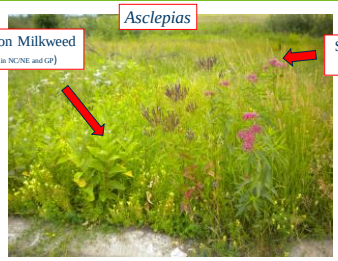
Indicator Status Trust

Asclepias

Common Milkweed (UPL in NC/NE and GP)

Swamp Milkweed (OBL in NC/NE and Midwest)



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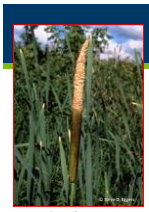
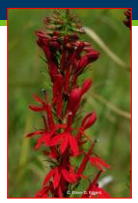
OBL Species Examples


Cattail


Cardinal Flower
(NC/NE and MW)


Lake Sedge

White Lady's-slipper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FACW Species Examples


Giant Goldenrod


Showy Lady's-slipper


Red-osier Dogwood

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FAC Species Examples


Yellow Birch


Plains Cottonwood

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FACU Examples

Canada goldenrod


Black Cherry

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UPL Species Examples


Smooth Brome
(NC/NE; GP)


Common Milkweed
(NC/NE; GP)

Butter and Eggs

161

Reed Canary Grass - FACW

Is RCG a true hydrophyte because it occasionally occurs in uplands?

RCG fits well within the concept of a FACW species as it usually occurs in wetlands, but may occur in non-wetlands

The fact that RCG occasionally occurs in uplands is why it wasn't assigned an OBL indicator status

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Indicator Status

Malus sylvestris
(crab apple)

Plant species is not on the list…

Using incorrect name or synonym?

Searching under most current scientific name? (some have changed)

If still not on the list: then

species is UPL

163

Indicator Status for Crop Species?

Corn, soybeans and other crops do not have an indicator status:

Normal Circumstances? Atypical for vegetation?

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

Are Vegetation _____ Soil _____ or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

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

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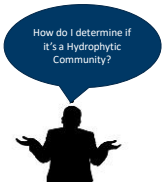
From Individual to the Community

Vegetation Component Focus is on plant communities and not individual plants

Focus

165

From Individual to the Community



Delineation relies heavily on FIELD based INDICATORS applied to the whole veg community

Field Indicators for Hydrophytic Vegetation relies on the dominance or prevalence of hydrophytes in the community

**** Data collection/sampling is required to demonstrate/prove the veg community is dominated by hydrophytes for an indicator to be met.**

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Native Plant Communities of Minnesota

https://www.dnr.state.mn.us/npc/index.html

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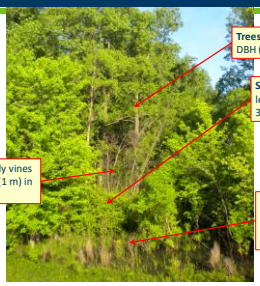
Vegetation Strata (layers of vegetation)



Trees: woody plants 3 inches or more DBH (regardless of height)

Saplings/Shrubs: woody plants less than 3 in. DBH and taller than 3.28 feet (1 m)

Woody Vines: all woody vines greater than 3.28 feet (1 m) in height

Herbaceous: all non-woody plants including herbaceous vines, regardless of size, and woody plants less than 3.28 feet (1 m) in height

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Vegetation Strata

Trees: woody plants 3 inches or more DBH regardless of height

Shrubs/Saplings: woody plants less than 3 inches DBH and taller than 1 meter (3.28 feet) in height

Herbaceous: all non-woody plants regardless of size AND woody plants less than 1 meter (3.28 feet) in height

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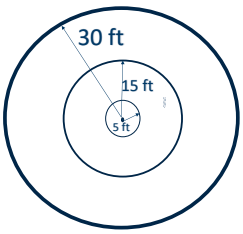
Typical Vegetation Sampling



5 ft Herbaceous; 15 ft Shrub/Sapling; 30 ft Tree/Woody Vine

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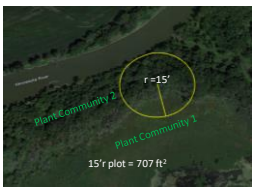
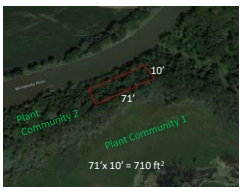
Vegetation Sampling Adjustments

Circular plot overlaps two different plant communities?
Then use rectangular plot of same square footage.





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Determining Dominance- Sampling

- Within plots relative abundance of a species is used as the metric for determining dominance
  - Typical abundance measures include:
    - basal area for tree species
    - **percent areal cover**
    - stem density
    - frequency based on point-intercept sampling.

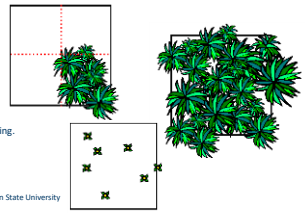

Photo Credit: © 2007 Mark V. Wilson and Oregon State University

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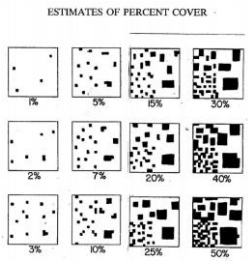
Determining Dominance- Sampling



Percent Areal Cover

- Estimate can vary from person to person
- Almost NEVER adds up to 100%...sometimes more; sometimes less
- Is recommended method for determining cover
- Used by 50/20 Rule
- Used by Prevalence Index

- Is different that Absolute Cover = Actual or Total cover

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Determining Dominance- Sampling

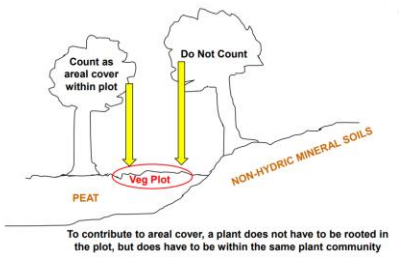

Photo credit USACE

To contribute to areal cover, a plant does not have to be rooted in the plot, but does have to be within the same plant community

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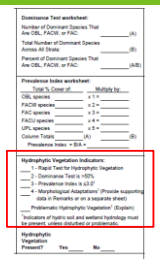
Determination of Hydrophytic Vegetation

Sequence of Field Indicators

1. Rapid Test
2. Dominance Test (“50/20 Rule”)
3. Prevalence Index
4. Morphological Adaptations


Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
Total Number of Dominant Species Across All Strata: _____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
Prevalence Index worksheet:
Total % Cover of: _____ Multiply by:
OBL species _____ x 1 = _____
FACW species _____ x 2 = _____
FAC species _____ x 3 = _____
FACU species _____ x 4 = _____
UPL species _____ x 5 = _____
Column Totals _____ (A) _____ (B)
Prevalence Index = B/A = _____
Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Hydrophytic Vegetation Present? Yes ____ No ____

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Determining Hydrophytic Vegetation

The procedure for using hydrophytic vegetation indicators is as follows:

1. Apply Indicator 1 (Rapid Test for Hydrophytic Vegetation).
2. Apply Indicator 2 (Dominance Test).
   a) **If the plant community fails the dominance test, but indicators of hydric soil and wetland hydrology are both present, proceed to step 3.**
3. Apply Indicator 3 (Prevalence Index).
4. Apply Indicator 4 (Morphological Adaptations).
   a) If none of the indicators is satisfied, then hydrophytic vegetation is absent unless indicators of hydric soil and wetland hydrology are present and the site meets the requirements for a problematic wetland situation

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Hydrophytic Plants – Rapid Test

All dominant species across all strata are rated OBL or FACW, or a combination of these two categories, based on a visual assessment

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1. Rapid Test for Hydrophytic Vegetation

All dominant species are rated OBL or FACW, or a combination of the two, based on a visual assessment

Example:
50% cattail (OBL), 50% areal cover by reed canary grass (FACW)

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Hydrophytic Plants – Dominance Test

- Dominance Test AKA 50/20 Rule
  - Used to determine which species are dominant in each strata (layer of veg)
  - Once dominate species are identified their percent cover does not matter; all treated equally
    - Example: Tree Strata may have low number of species compared to Shrub Strata, but may still have a dominant component.
  - IF greater than 50% of the dominant species across all strata are OBL, FACW, or FAC, THEN hydrophytic plant community exists
    - Example: 5 dominant species are identified. 3 dominant species are FACW and 2 dominants are FACU. MEETS CRITERIA FOR HYDROPHYTIC PLANT COMMUNITY; 3/5=.6 or 60% FACW dominants

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Hydrophytic Vegetation – Dominance Test (50/20 Rule)

1. Estimate absolute percent cover of each species in first stratum. Species must be at least 5% to be considered dominant.
2. Rank species from most to least abundant
3. Calculate the total percent cover of all species (usually not 100 percent) in that stratum
4. Calculate 50% of total cover
5. Calculate 20% of total cover
6. Begin at top of list and add percent covers together until 50% threshold is met
7. Continuing after last species in 50%, next identify species that ALONE meet or exceed 20% threshold
8. Repeat for each stratum

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Hydrophytic Vegetation – Dominance Test

50/20 Rule Example

Strata 1

Species	% Cover
Species a	*45*
Species b	*30*
Species c	*25*
Species d	*10*
Species e	*5*
Species f	*5*
Total Cover	120

120 x 50% (0.50) = 60
120 x 20% (.20) = 24

Species a + Species b = 75 ---Together exceed 50%

Species c = 25 ---individually meet/exceed 20%

Species a, b, and c are dominant

Note: if species percent cover is a tie, include both

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50/20 Example #2

Strata 1

Species A: 55%
Species B: 35%
Species C: 35%
Species D: 25%
Species E: 20%
Species F: 10%

Tied; count both

125 Dominants

TOTAL : 180

50% = 180 x 0.50 = 90 20% = 180 x 0.20 = 36

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Dominance Test

Stratum	Species Name	Wetland Indicator Status (Region 5)	Absolute Percent Cover	Dominant?
Herb	Impatiens capensis	FACW	15	Yes
	Geranium carolinianum	UPL	7	Yes
	Toxicodendron radicans	FAC	5	No
	Lonicera tatarica	FACU	2	No
	Glyceria striata	OBL	2	No
	Parthenocissus quinquefolia	FACU	1	No
	Arisaema triphyllum	FACW	0.5	No
	Carex laxiflora	FACU	0.5	No
		Total cover	33.0	
		50/20 Thresholds: 50% of total cover = 16.5% 20% of total cover = 6.6%		
Sapling/shrub	Carpinus caroliniana	FAC	35	Yes
	Carya ovata	FACU	10	No
	Acer saccharum	FACU	5	No
	Quercus rubra	FACU	5	No
		Total cover	55.0	
		50/20 Thresholds: 50% of total cover = 27.5% 20% of total cover = 11.0%		
Tree	Quercus bicolor	FACW	40	Yes
	Fraxinus pennsylvanica	FACW	17	Yes
	Ulmus americana	FACW	10	No
	Carya ovata	FACU	8	No
		Total Cover	75.0	
		50/20 Thresholds: 50% of total cover = 37.5% 20% of total cover = 15.0%		
Woody vine	Toxicodendron radicans	FAC	1	No[2]
Hydrophytic Vegetation Determination	Total number of dominant species across all strata = 5. Percent of dominant species that are OBL, FACW, or FAC = 80%. Therefore, this community is hydrophytic by Indicator 2 (Dominance Test).			

1. Tally number of dominants across all strata – 5
2. Tally number of dominants that are FAC, FACW, or OBL – 4
3. Calculate if FAC, FACW, OBL dominants comprise more than 50% of plant communities – 4/5 = 80%

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Class exercise

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

1, 2, 3, or 4?

Note: if fails but have Hydrology and Soil, go to Prevalence Index

Species	Strata	% Coverage
Species A	Herbaceous	35
Species B	Herbaceous	30
Species C	Herbaceous	22
Species D	Herbaceous	20
Species E	Herbaceous	15
Species F	Shrub/sapling	5
Species G	Tree	3

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Class exercise

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

3

Species	Strata	% Coverage
Species A	Herbaceous	35
Species B	Herbaceous	30
Species C	Herbaceous	22
Species D	Herbaceous	20
Species E	Herbaceous	15
Species F	Shrub/sapling	5
Species G	Tree	3

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Apply indicator – Result?

- Does this pass the dominance test?
- IF greater than 50% of the dominant species across all strata are OBL, FACW, or FAC, THEN hydrophytic plant community exists

Species	Strata	Ind. Status
Species A	Herbaceous	FACW
Species B	Herbaceous	FAC
Species C	Herbaceous	FAC
Species D	Herbaceous	FACW
Species E	Herbaceous	FAC
Species F	Shrub/sapling	FACU
Species G	Tree	OBL

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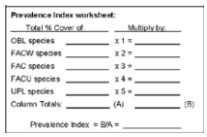
Hydrophytic Vegetation – Prevalence Index

- Prevalence Index
  - A numerical calculation used to determine whether a hydrophytic plant community is present
  - Uses a weighted average and uses all plant species in the plot, not just dominant
  - Values range from 1 to 5
  - Values less than or equal to 3 indicate hydrophytic plant community


Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

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Hydrophytic Vegetation – Prevalence Index

Species	% Cover	Indicator
Tree Strata		
Species a	*45*	*FACW*
Species b	*30*	*OBL*
Species c	*25*	*FAC*
Species d	*10*	*FAC*
Species e	*5*	*FACU*
Species f	*5*	*UPL*
Herbaceous Strata		
Species A	55	OBL
Species B	35	FACW
Species C	35	FACW
Species D	25	FAC
Species E	20	FACU
Species F	10	UPL

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	115	x 2 =	230
FAC species	60	x 3 =	180
FACU species	25	x 4 =	100
UPL species	15	x 5 =	75
Column Totals:	300 (A)		670 (B)

Prevalence Index = B/A = 2.23

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Class Exercise

	Herb Stratum	Plot Size (5)	Absolute % Cover	Dominant Species	Indicator Status
1	*Poa pratensis*		30	Y	FACU
2	*Bromus inermis*		20	Y	UPL
3	*Rubus idaeus*		15	Y	FAC
4	*Phalaris arundinacea*		5	N	FACW
5	*Solidago canadensis*		5	N	FACU

Prevalence Index Worksheet

Total % Cover of:			
OBL species	____	x 1 =	____
FACW species	____	x 2 =	____
FAC species	____	x 3 =	____
FACU species	____	x 4 =	____
UPL species	____	x 5 =	____
Column totals	____ (A)		____ (B)

Prevalence Index = B/A = ____

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Class Exercise

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	15	x 3 =	45
FACU species	35	x 4 =	140
UPL species	20	x 5 =	100
Column totals	75 (A)		295 (B)

Prevalence Index = B/A = 3.93

Prevalence Index worksheet:

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

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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Hydrophytic Vegetation – Morphological Adaptations

Morphological Adaptations

- Use when more than 50% of FACU plants exhibit morphological adaptations to saturated soil conditions AND criteria for hydric soils and hydrology is present
  1. For each FACU species exhibiting adaptations, record percentage of individuals with morphological adaptations on data sheet so long as the adaptations are not also common in the same species within nearby uplands areas.
  2. If more than 50% have adaptations then re-assign indicator status for that species from FACU to FAC
  3. Recalculate dominance test and/or prevalence index

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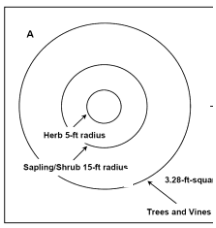
Vegetation Sampling Field Exercise



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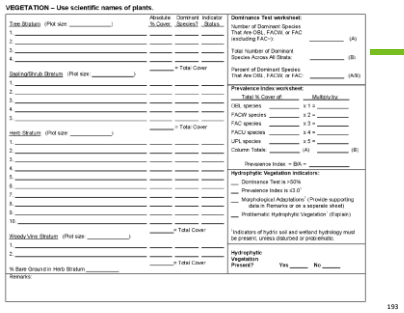

VEGETATION – Use scientific names of plants.

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

% Bare Ground in Herb Stratum _____

Remarks:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No ____

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