



Wetland Delineator Refresher – Part 1

BWSR Academy

October 2010

Wetland Delineator Refresher

Goals of Presentation:

1) Discuss the differences between wetlands and “other aquatic sites”

2) Discuss the *mandatory* use of the 1987 Manual and Regional Supplements

3) Discuss wetland delineation methods

4) Discuss determination of sampling point locations

Wetlands & Regulations: Why Do Wetland Boundaries Matter?

Federal Regulations:

Section 404 – Clean Water Act

State Regulations:

**Wetland Conservation Act and
DNR Protected Waters Program**

What is a wetland?

Wetlands. Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Water → Stagnation → Soil Chemistry
Changes → Specially Adapted Plants

A photograph of a lush green meadow. In the foreground, several bright yellow flowers with dark brown centers are scattered among tall, thin green grasses. The background shows a dense field of similar vegetation stretching to a line of trees under a grey, overcast sky. The overall scene is a natural, open landscape.

Is this a wetland?

Yes, wet meadow



And this?

No, upland prairie

Wetlands are 1 of 6 categories of “special aquatic sites”.

- Mudflats

No rooted veg.



- Sanctuaries & Refuges

- Vegetated shallows

Rooted aquatic veg.



- Coral reefs

- Riffle & pool complexes

Steep gradient sections of streams



How do we differentiate these?

Key differences between wetlands and other aquatic sites:

- Presence of vegetation (typically rooted, emergent veg.) under normal circumstances
- Presence of soil – a natural body that has horizons and/or supports rooted vegetation

Lakes vs. Wetlands

- **Lakes** – lakes and other deepwater habitats (>6.5 ft avg. depth) don't have soil (bottom is unconsolidated and it does not support rooted plants).



- **Wetlands** – Wetlands have water depths less than 6.5 ft average depth and have soil that supports rooted plants.



Rivers & Streams vs. Wetlands

Water movement determines the formation and presence of soil.

- Flow Rate – slow moving streams stagnate and wetlands can develop. Fast moving streams don't.
- Flow frequency – streams with more constant flow and/or water residence time may develop into wetlands while those with infrequent flow (flashy) and little water residence time don't.

Rivers & Streams – What to look for (nonwetlands)

Erosion due to high, flashy flows



Areas of deposition characteristic of streams



Lack of emergent veg in channel

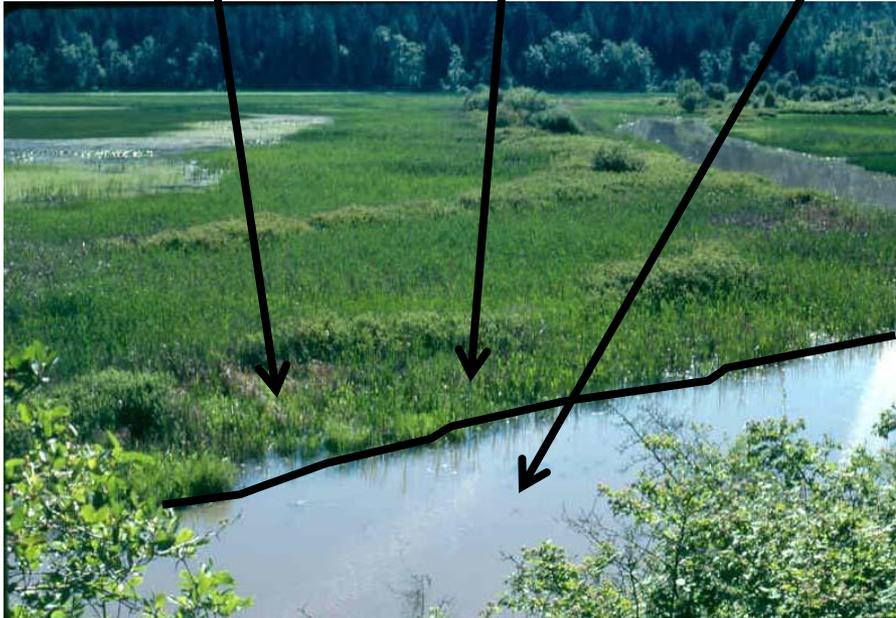


Rivers & Streams – What to look for (wetlands)

Emergent veg in wet zone

Riparian wetland

Channel of stream



Slow flow, stagnation, lack of pool-channel complexes, organic bottom



Bringing Wetland Delineation up to the State-of-the-Science

ERDC/IEL TR-02-20

**US Army Corps
of Engineers®**
Engineer Research and
Development Center

Developing a “Regionalized” Version of the
Corps of Engineers Wetlands Delineation
Manual: Issues and Recommendations

James S. Wakeley August 2002

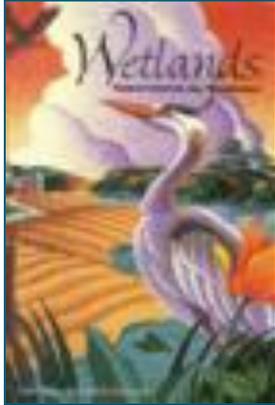


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Approved for public release; distribution is unlimited.

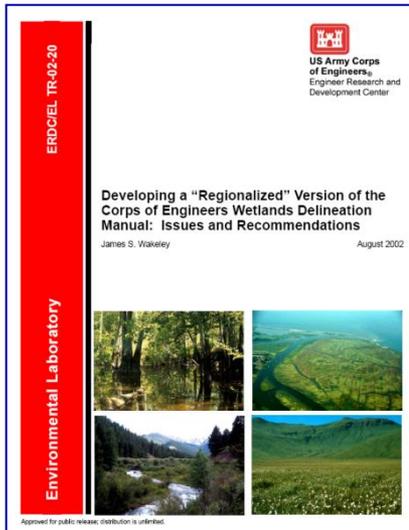
Regional Supplements to the Corps of Engineers 1987 Wetlands Delineation Manual

National Academy of Sciences Recommendations



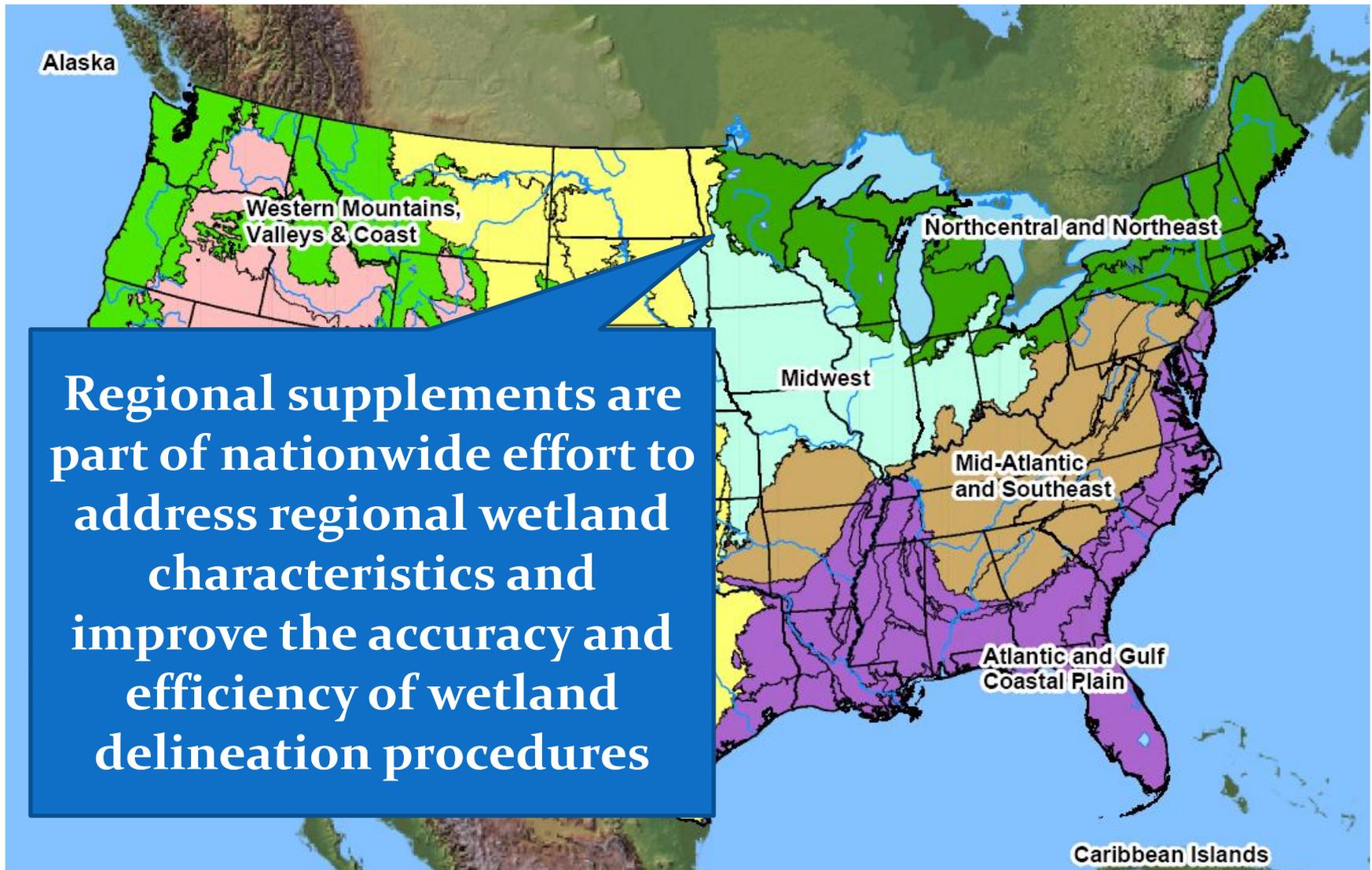
“Wetlands: Characteristics and Boundaries” (1995)

- Confirmed validity of 3-parameter approach
- Recommended regionalization of the 1987 Manual
- Recommended adopting 14-day hydrology criterion



Corps Army Engineer Research and Development Center (ERDC, formerly WES) report proposes rationale/process for “regionalization” (2002)

Regional Supplements



Supplement Contents

- **Description of the region.**
- **Describe regionalized indicators of:**
 - **Hydrophytic vegetation,**
 - **Hydric soil, and**
 - **Wetland hydrology.**
- **Provide guidance for dealing with disturbed or problem wetland situations in the region.**

Supplements vs. 87 Manual

- **Regional Supplements are designed for use with the current 87 Manual.**
- **Where differences occur, Supplements take precedence over 87 Manual.**
- **Corps Districts retain final authority over use and interpretation of 87 Manual and Regional Supplements.**

Regional Supplements

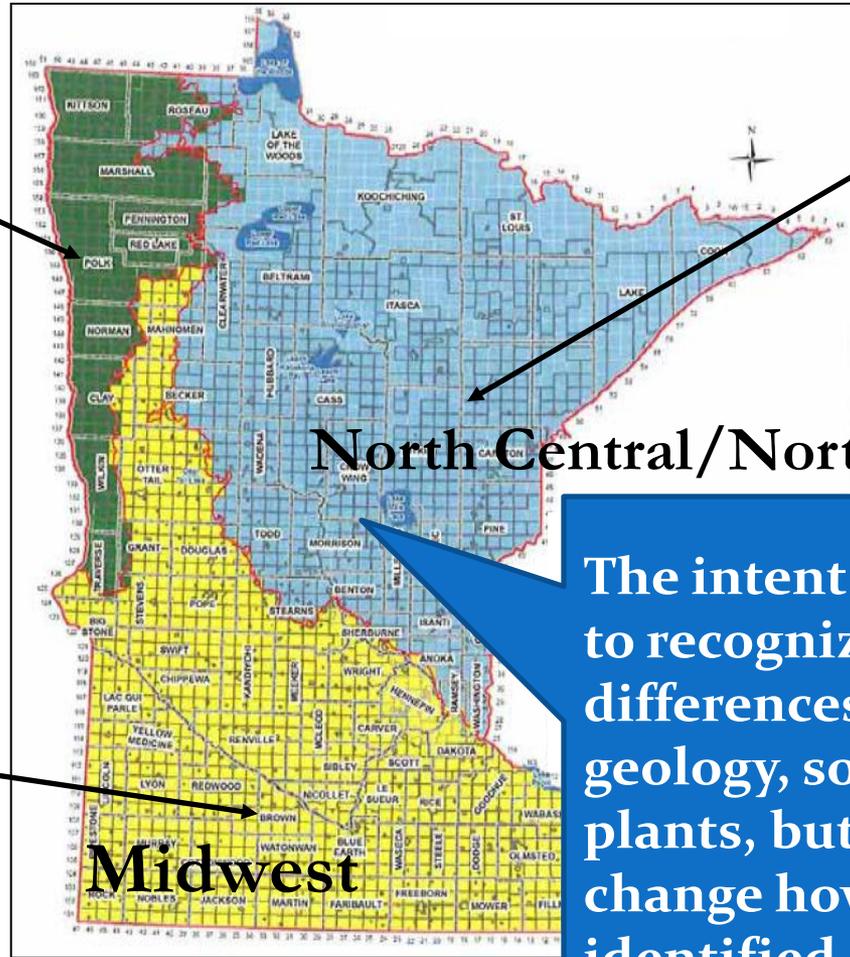
Great Plains

ERDC/EL TR-10-1

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Wetlands Regulatory Assistance Program
Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)
U.S. Army Corps of Engineers
March 2010



ERDC/EL TR-09-19

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Wetlands Regulatory Assistance Program
Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region
U.S. Army Corps of Engineers
October 2009

North Central/Northeast

ERDC/EL TR-08-27

Environmental Laboratory



Wetlands Regulatory Assistance Program
Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region
U.S. Army Corps of Engineers
September 2008

Midwest

The intent of supplements is to recognize regional differences in climate, geology, soils hydrology and plants, but not intended to change how wetlands are identified

Mandatory Use of Supplements

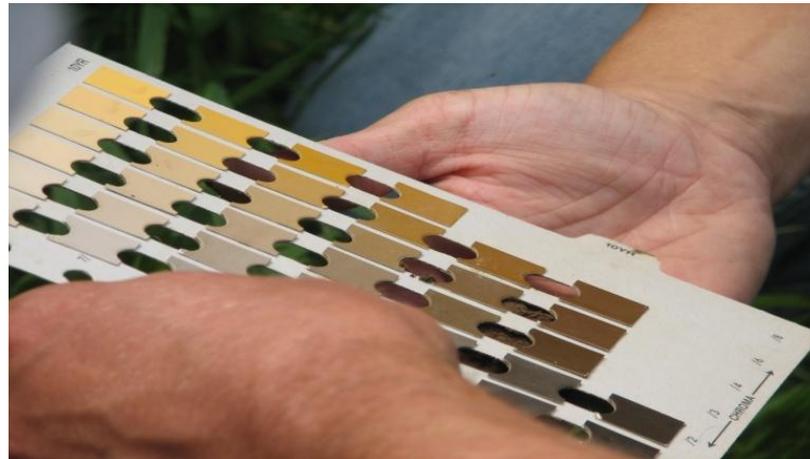
- Great Plains (F) = **June 6, 2008**
- Midwest (M) = **December 4, 2008**
- Northcentral/Northeast (K) = **March 20, 2010.**

NOTE: Delineations completed after implementation of regional supplement must use the supplement indicators and data sheets.

What skills do I need to delineate wetlands?

- Basic plant identification and the ability to use a dichotomous plant key
- Ability to describe soil profiles (texture, color)
- An understanding of wetland hydrology
- The ability to objectively collect and record scientific data
- **The ability to make reasoned decisions based on available evidence**

What Level of Delineation to Use?



Wetland Delineation Methods

The 1987 Wetland Delineation Manual describes two general types of delineation methods:

Routine and Comprehensive.

Routine :

Qualitative data (pick representative sample points, use estimates)

Comprehensive:

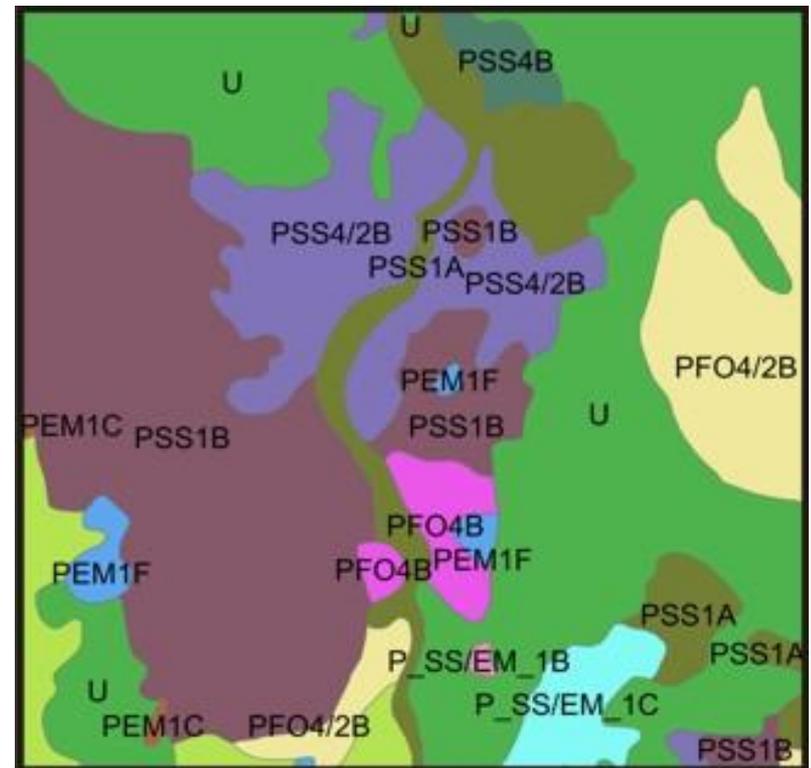
Quantitative data (systematic sampling, more direct and precise measurements)

Wetland Delineation Methods

CAUTION:

National Wetland
Inventory Maps are
NOT a wetland
delineation!

National Wetland
Inventory Map



Wetland Delineation Methods

Comprehensive delineation method

Use when the project area is very complex or when a determination requires rigorous documentation.

The applicant, TEP and Corps should agree to the exact methodology prior to beginning the field work.

Keep in mind that the comprehensive method can be used in combination with routine methods, depending on the parameter that requires greater documentation.

Comprehensive Delineation

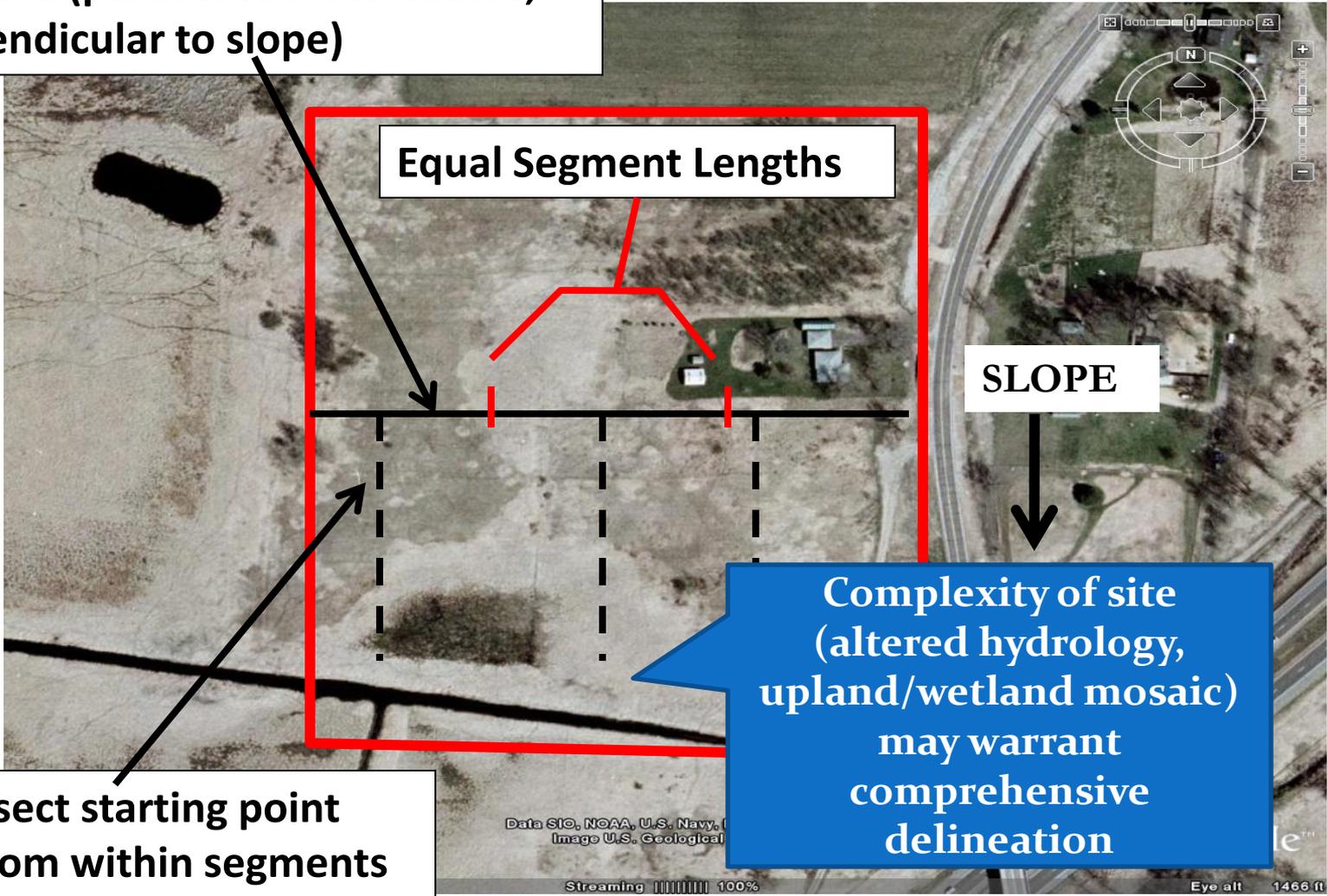
Baseline (parallel to watercourse, perpendicular to slope)

Equal Segment Lengths

SLOPE

Transect starting point random within segments

Complexity of site (altered hydrology, upland/wetland mosaic) may warrant comprehensive delineation



Wetland Delineation Methods

Some examples where the comprehensive method *may* be appropriate for WCA purposes:

The applicant and Technical Evaluation Panel disagree on delineation and further data collection using the routine method cannot, or could not, resolve the dispute. For example, a complex site where the selection of sampling point locations has a significant influence on the result.

The decision on a project is, or is likely to be, challenged in court. Often requires more rigorous data collection and documentation to support conclusions.

Wetland Delineation Methods

The routine delineation method includes three options, or “levels,” for investigation of the site:

Level 1

- Onsite inspection optional
- Data forms & boundary marking not needed

Level 2

- Onsite inspection necessary
- Data forms and boundary marking necessary

Level 3

- Combination of Levels 1 and 2



Wetland Delineation Methods

Routine Level 1: Onsite inspection unnecessary.

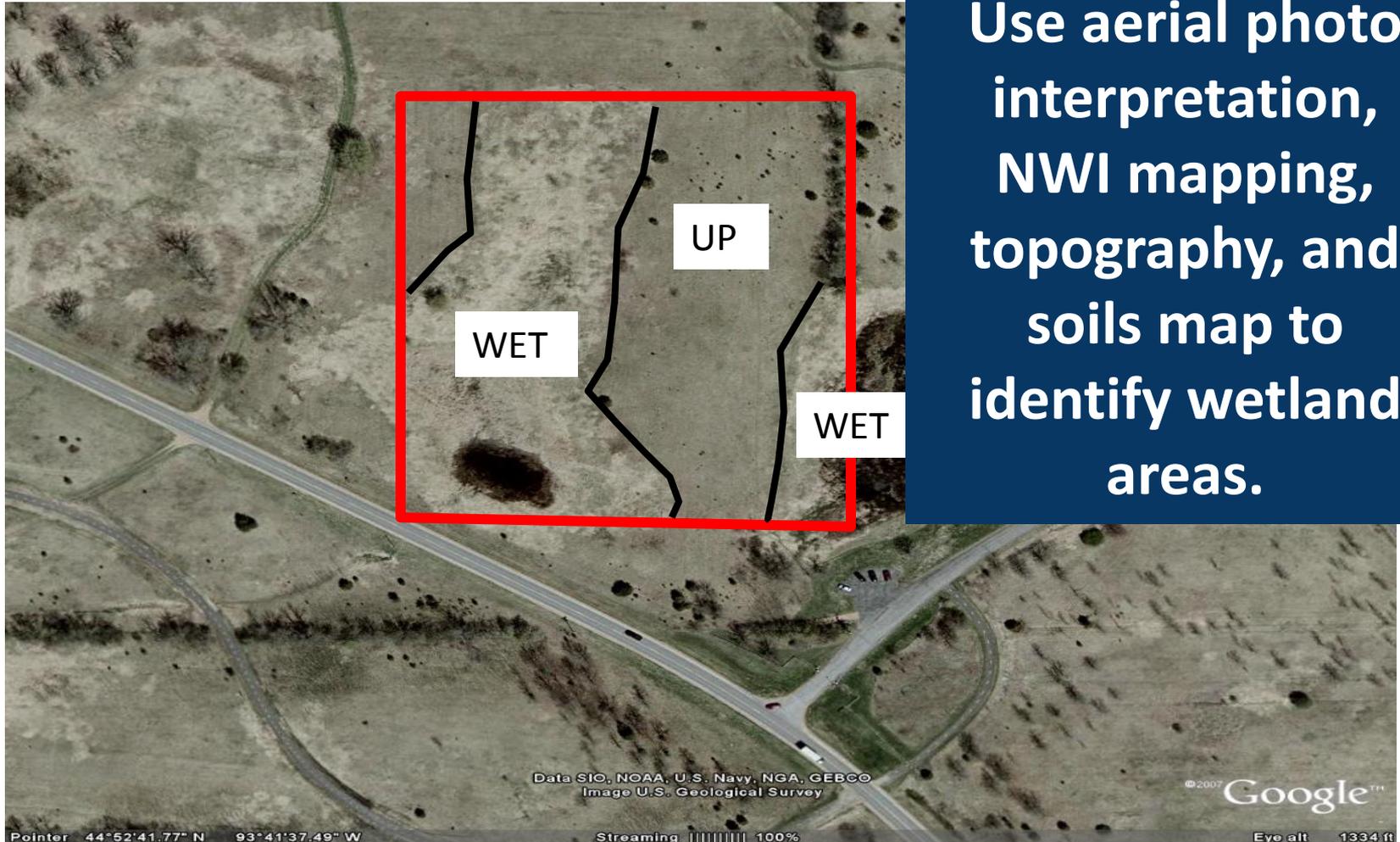
Used when exact wetland boundary is not critical.

Often used to determine wetland type, although in many cases an on-site inspection may be necessary.

Typically consists of an examination of common offsite mapping resources (soils, topography, LiDAR, NWI, Protected Waters map, aerial photos, etc.) to determine the potential presence of a wetland, identify its type, and/or sketch its approximate boundaries.

Routine 1

Use aerial photo interpretation, NWI mapping, topography, and soils map to identify wetland areas.



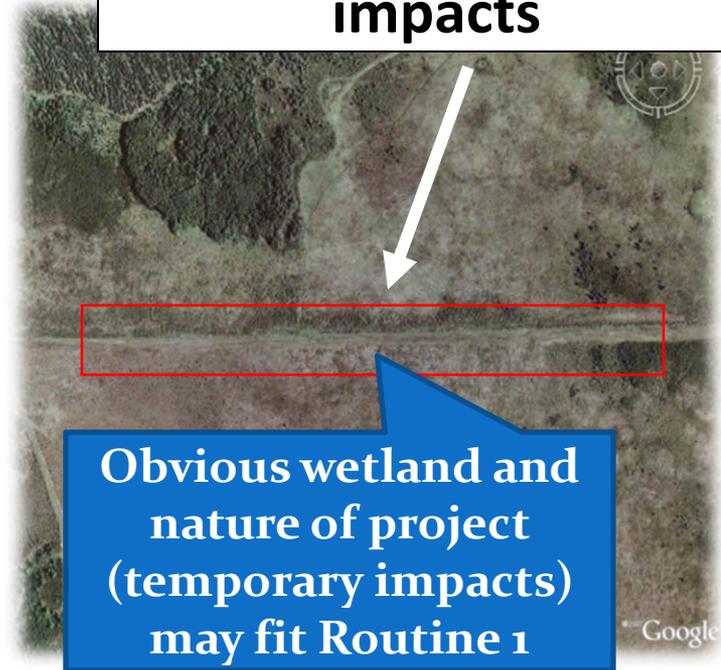
Routine Level 1 Examples

Evaluating incidental applicability for entire wetland – Routine 1 or no delineation necessary



Borrow pit may be obvious, easy to ID with off site methods

Culvert repair through large wetland complex involving temporary impacts



Obvious wetland and nature of project (temporary impacts) may fit Routine 1

Wetland Delineation Methods

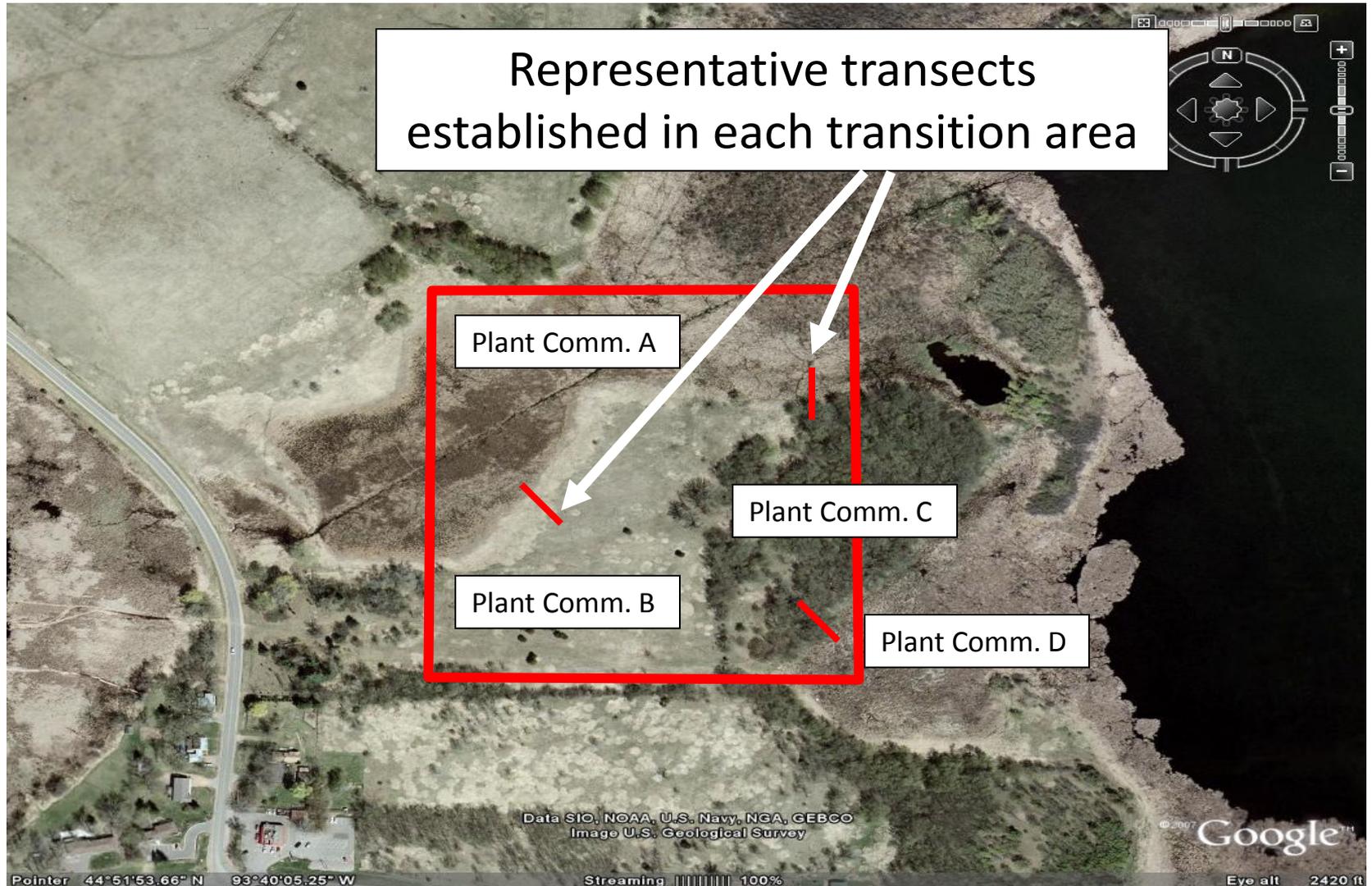
Routine Level 2

Involves the onsite collection of field data and the physical marking (staking) of wetland boundaries.

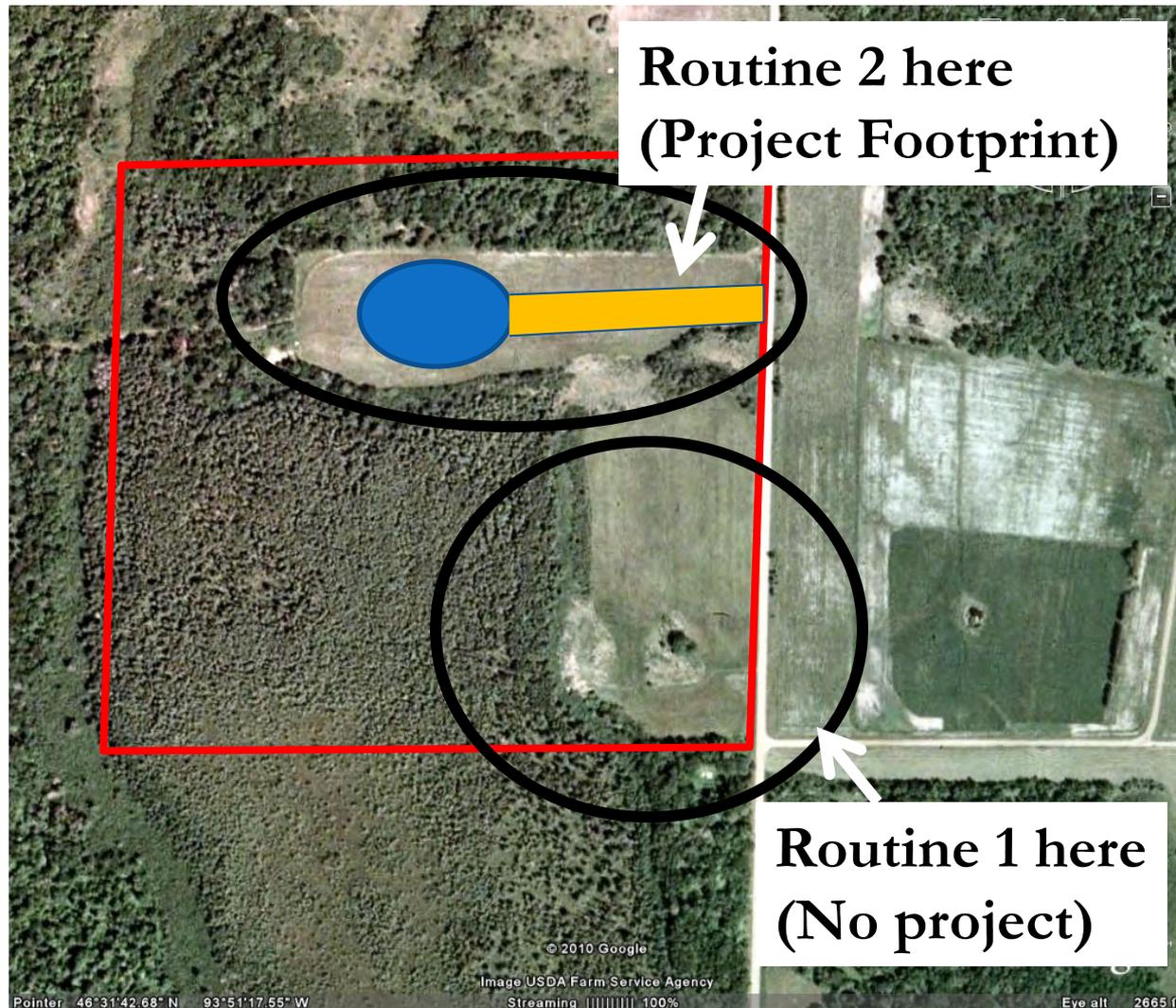
Used when an accurate wetland boundary is critical for the implementation of WCA, and is used in most WCA situations where permanent wetland impacts are proposed to occur and wetland replacement may be required.

Used when landowners want to know the land-use constraints of their property and seek assurance through a formal wetland boundary approval.

Routine 2



Routine Level 3 Example



Choosing Your Sampling Locations

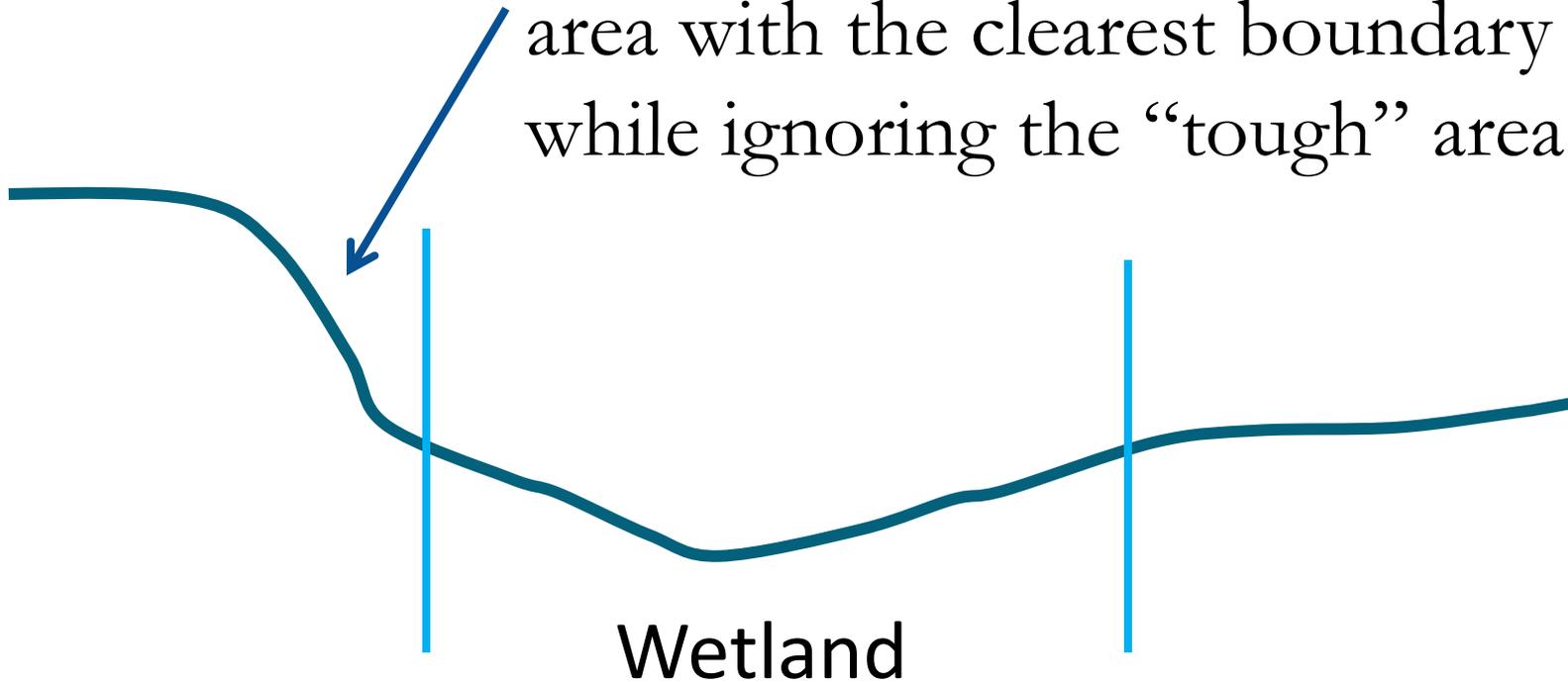
Sampling Locations Should Be Representative of the Wetland to Upland Transition

- Representative of soil changes (from upland to wetland)
- Representative of vegetation changes
- Representative of hydrology indicator changes
- Representative of landscape changes

Let's review some common errors of sampling ...

The “safe” approach

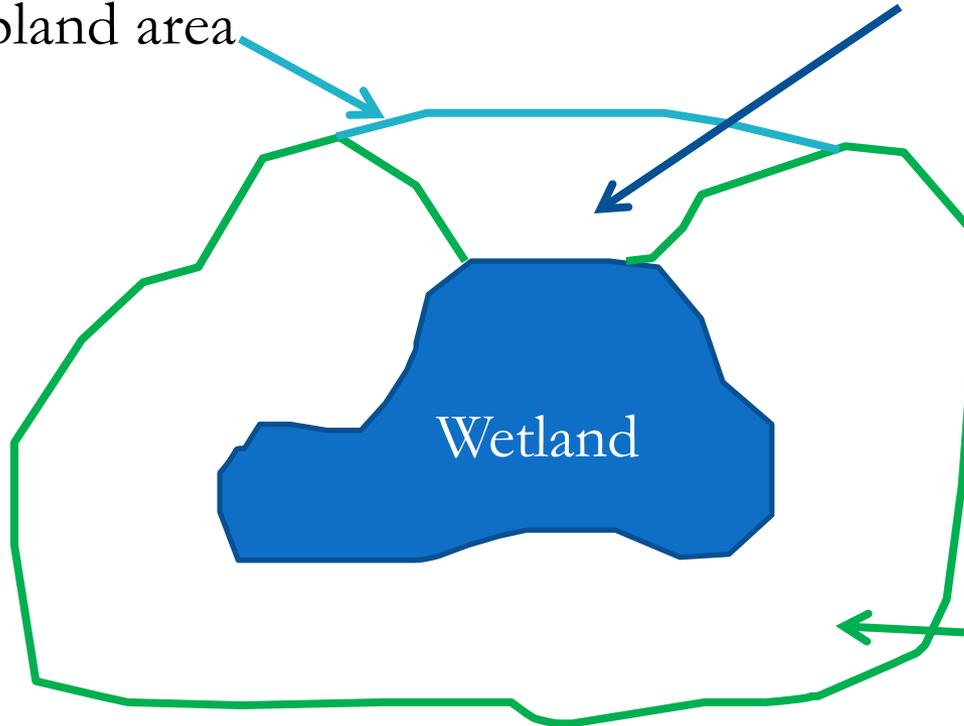
Choosing sampling location in area with the clearest boundary while ignoring the “tough” area.



The “lazy” approach

Choosing sampling location in most accessible location while ignoring the dominant transition area

Cleared upland area

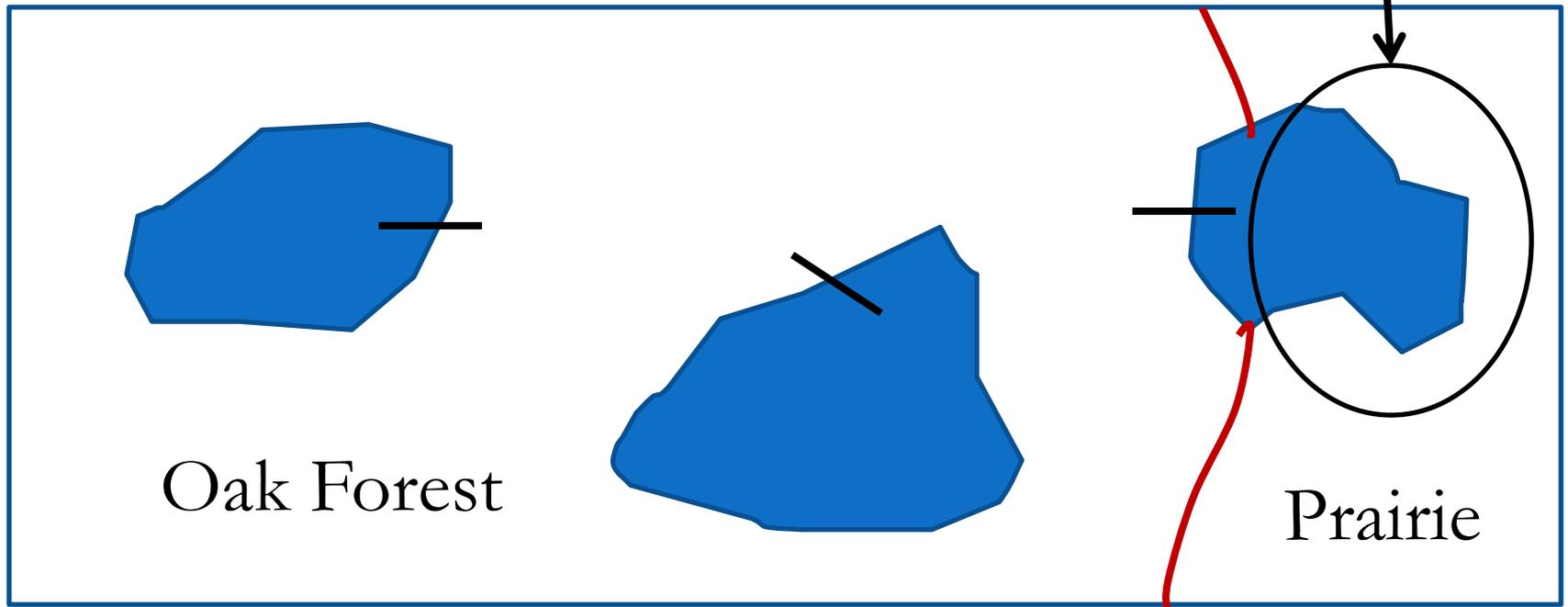


Upland Forest with dense shrub layer

The “anti-community” approach

Failing to sample in all transitional areas

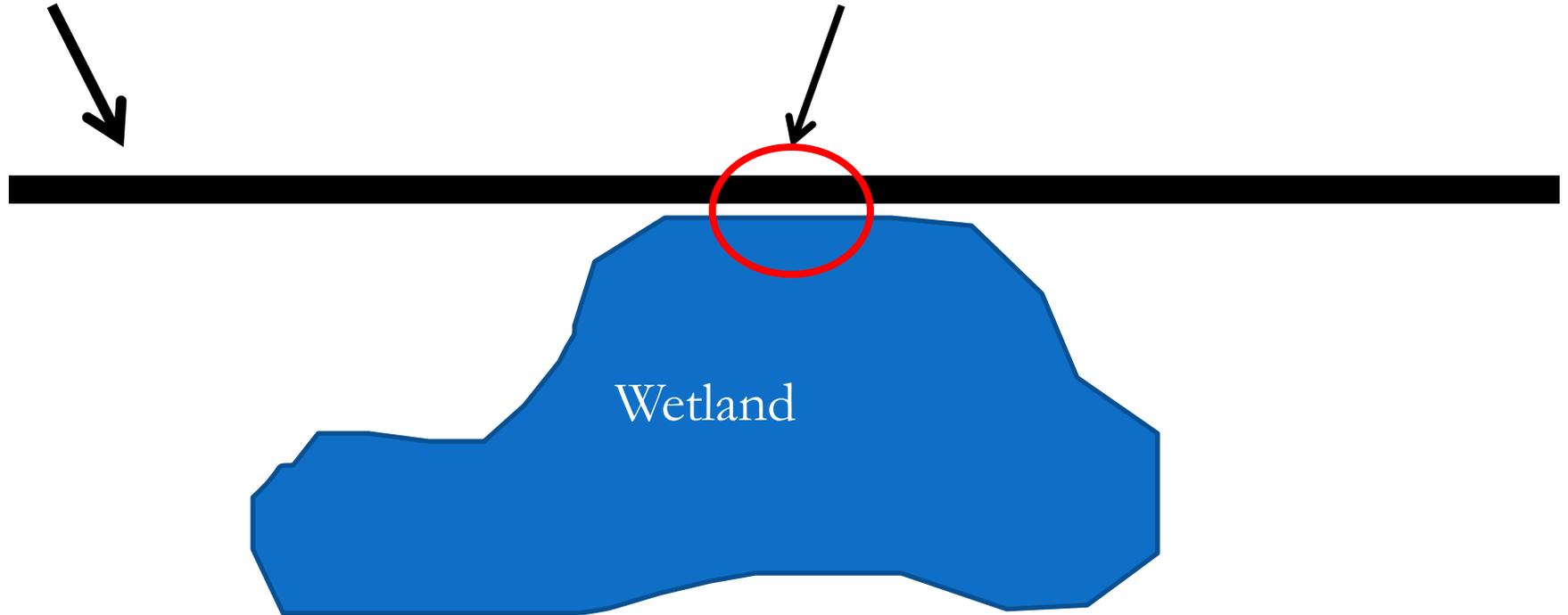
What about this
transition?



The “disturbed” approach

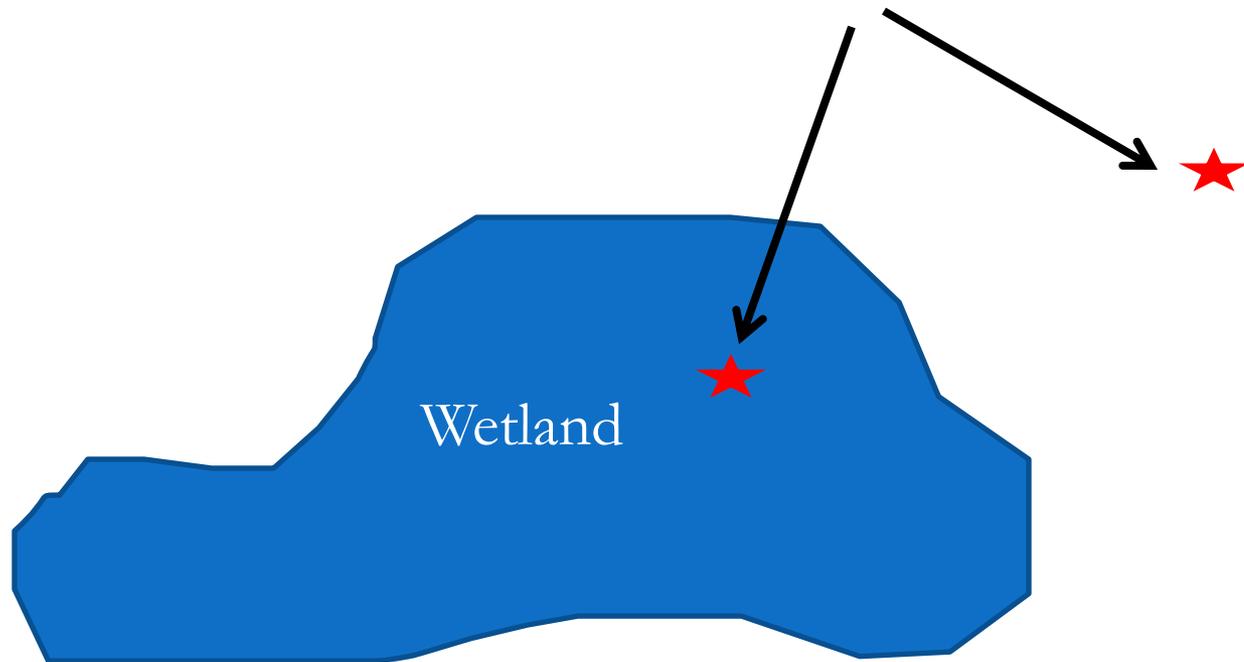
Choosing sampling location in
area of disturbance

Road



The “long-distance” approach

Choosing sampling points so far apart that they fail to document boundary conditions.



Avoid These Errors By:

- Examining your offsite mapping before heading to the field.
- Do an initial site reconnaissance before settling on a sampling location.
- In tough areas, do “preliminary” sampling to help determine where you should do your “official” representative sampling (i.e. full data sheets).

BWSR Website Delineation Information

The screenshot shows a Windows Internet Explorer browser window displaying the BWSR website. The address bar shows the URL: <http://www.bwsr.state.mn.us/wetlands/delineation/index.html>. The page title is "Minnesota Board of Water & Soil Resources". The navigation menu includes: Home, Easements, Grants, Resource Management and Planning, Conservation Implementation, Wetlands, and a search box. The "Wetlands" link is highlighted. The main content area is titled "Wetland Delineation" and contains a list of resources:

- Plant Identification Guides for Wetland Delineation in MN (Updated July 30, 2010)
- Wetland Delineations: Choosing the Appropriate Method (Updated July 1, 2010)
- Hydric Soil Field Indicators Version 7.0-2010 (updated annually, check <http://soils.usda.gov/use/hydric/> for the latest changes)
- Wetland Mapping Conventions for Cropland in MN (for use as an additional tool to evaluate wetland hydrology in croplands)
- Using Aerial Imagery to Assess Wetland Hydrology (Supplement to Wetland Mapping Conventions for Cropland) (Updated July 1, 2010)
- Guidelines for Submitting Wetland Delineations to LGUs in MN (BWSR/Corps-issued technical guidance for wetland delineations)
- Wetland Delineation Review Checklist (Word or PDF)
- Technical Standard for Water Table Monitoring (Corps-issued technical standard for hydrology studies related to wetland determinations/delineations per the 1987 Manual)
- Water Table Monitoring Project Design (Corps-issued technical guidance on designing hydrology studies related to wetland determinations/delineations per the 1987 Manual)
- Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/> (use this site to access the most current soil survey information for areas in Minnesota)
- Wetland Delineation Precipitation Data: <http://climate.umn.edu/wetland/> (use this site to access precipitation data for use in analyzing and interpreting wetland delineation information)
- Evaluating Antecedent Precipitation in Minnesota (BWSR Guidance)
- NWI Maps - link to USFWS site, use online mapping tool or integrate NWI into your Google Earth
- Official 1988 National List of Plants that Occur in Wetlands - Region 3
- Installing Monitoring Wells and Piezometers in Wetlands

There is a "Links" box on the right side of the page containing:

- Corps of Engineers 1987 Wetland Delineation Manual
- 1987 Manual Regional Supplements
- Wetland Delineator Certification Program (link to Univ. of MN website)
- List of certified wetland delineators

At the bottom of the page, there is a "BACK to Wetlands page" link and contact information for the Minnesota Board of Water & Soil Resources.

<http://www.bwsr.state.mn.us/wetlands/delineation/index.html>

Wetlands Delineation Refresher

Summary:

- 1) Wetlands and nonwetlands differ due to differences in soil and water level (or lack thereof)
- 2) Use of 1987 Manual and Regional Supplements (indicators and data sheets) is mandatory
- 3) Delineation methods vary depending on the scope and purpose of the project
- 4) Sampling location is crucial