

# Regionalizing the 1987 Corps of Engineers Wetland Delineation Manual

New England Field Testing

*MAWS*  
27 March 2009



US Army Corps of Engineers – New England District

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## National Project Goals

- Update the 20-year-old wetland delineation manual to reflect the state-of-the-science
- Improve its sensitivity to regional differences in climate, landforms, geology and soils, and plant distributions and adaptations
- Address National Academy of Sciences recommendations
- Current status and products:  
[http://www.usace.army.mil/CECW/Pages/reg\\_supp.aspx](http://www.usace.army.mil/CECW/Pages/reg_supp.aspx)

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## Status of Regional Supplements

- Alaska
  - Version 2.0 published & implemented in October 2007
- Arid West
  - Version 2.0 published Oct & implemented Nov 2008
- Western Mountains, Valleys, and Coast
  - Interim version implemented July 2008
- Great Plains
  - Interim version implemented May 2008
- Midwest
  - Interim version published Oct & implemented Nov 2008
- Atlantic and Gulf Coastal Plain
  - Interim version published Dec 2008 & implemented Jan 2009
- Caribbean Islands
  - ERDC review of peer review, public comments, & field testing
- Northcentral and Northeast
  - ERDC review of peer review, public comments, & field testing
- Hawaii and Pacific Islands
  - Second working group meeting February 2009
- Eastern Mountains and Piedmont
  - Second working group meeting March 2009

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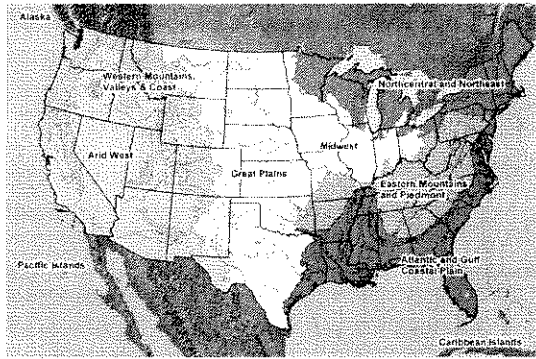
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## Wetland Delineation Regions



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## Interagency Partnerships

- Corps' Engineering Research and Development Center (ERDC) lead
- Regional Working Groups
  - Composed mainly of federal, state, and academic experts from the region
  - Identify technical issues, select wetland indicators, develop regionalized procedures, and help ERDC draft the Regional Supplement
  - Participate in field testing the supplement

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## Steps in the Process

- Develop a Regional Supplement in cooperation with the Regional Working Group
- Review by the National Advisory Team (NAT)
- Independent peer reviews (mainly private sector volunteers)
- Field testing following NAT protocol
- Public notice for review and comments
- Public notice for 1-year interim implementation
- Public notice for final implementation

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## What won't change?

- The Corps/EPA wetland definition
- The basic three-factor approach to wetland identification (vegetation, soil, hydrology)
- Emphasis on indicator-based wetland determinations
- Jurisdictional reach

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As regional supplements are finalized and implemented, they will replace certain portions of the 1987 delineation manual

Table 1. Sections of the Corps Manual replaced by this Regional Supplement.

Item	Replaced Portions of the Corps Manual (Environmental Laboratory 1987)	Replacement Guidance (this Supplement)
Hydrophytic Vegetation Indicators	Paragraph 35, all subparts, and all references to specific indicators in Part IV.	Chapter 2
Hydric Soil Indicators	Paragraphs 44 and 45, all subparts, and all references to specific indicators in Part IV.	Chapter 3
Wetland Hydrology Indicators	Paragraph 49(b), all subparts, and all references to specific indicators in Part IV.	Chapter 4
Growing Season Definition	Glossary	Chapter 4, Growing Season; Glossary
Hydrology Standard for Highly Disturbed or Problematic Wetland Situations	Paragraph 48, including Table 5 and the accompanying User Note in the online version of the Manual	Chapter 5, Wetlands that Periodically Lack Indicators of Wetland Hydrology; Procedure Item 3(g)

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## Remaining Contents of the National Delineation Manual

- Corps/EPA wetland definition
- Basics of the three-factor approach
- General definitions of hydrophytic vegetation, hydric soil, and wetland hydrology
  - No specific indicators
- Preliminary data gathering (offsite sources)
- Routine and Comprehensive field methods
- General Atypical Situation guidance
- General Problem Area guidance
- Main Glossary
- NAT to begin updating in 2009

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## Contents of a Regional Supplement

- Description of the region
- Hydrophytic vegetation indicators
- Hydric soil indicators
- Wetland hydrology indicators
- Guidance for "difficult wetland situations" in the region
- Data form

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## Role of the Technical Standard for Water-Table Monitoring

- To determine whether wetland hydrology is present on highly disturbed or problematic sites that lack wetland indicators
  - Not intended for routine use or to overrule an indicator-based determination on an undisturbed site
- Provides standards for the design, construction, and installation of water-table monitoring wells, and the collection and interpretation of data
  - <http://el.erdc.usace.army.mil/wrap/pdf/tnwrap05-2.pdf>

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## Relationship to the Plant Lists

- The regionalization of the 1987 Manual and the updating of wetland plant lists are separate and independent efforts. The Regional Supplements do not contain any changes to the plant lists.
- However, an independent effort to update the National Wetland Plant List is currently underway

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### Future of the Wetland Plant List

- Authority for the wetland plant list was transferred from the Fish and Wildlife Service to the Corps of Engineers in March of 2007
- National Panel, comprised of Corps, FWS, EPA, and NRCS, for the wetland plant list established in 2007; Regional Panels in 2008
- The list will be revised using a web-based system for national and regional panels, states, tribes and all others.
- Regional Panels currently evaluating species

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### Hydrophytic Vegetation Indicators

- Rapid Test
- Dominance Test
- Prevalence Index
- Morphological Adaptations
  
- Wetland Non-Vascular Plants (currently used in Alaska and the Pacific Northwest only, but under consideration for our region) – e.g., mosses

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### Hydrophytic Vegetation Indicators

#### Dominance Test:

- More than 50% of dominant species across all strata are rated OBL, FACW, or FAC
- Dominants are selected by the 50/20 rule
- In most regions, including Northcentral/ Northeast, '+' and '-' modifiers are not used

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## Hydrophytic Vegetation Indicators

### Prevalence Index:

- The prevalence index (PI) is 3.0 or less
- PI is a weighted-average wetland indicator status of all (or nearly all) species in the sample
  - OBL=1, FACW=2, FAC=3, FACU=4, UPL=5
  - Weighted by absolute percent cover
  - At least 80% of the total plant cover must be correctly identified and have an assigned indicator status (including UPL)
  - '+' and '-' modifiers are not used

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## Hydric Soil Indicators

- A subset of the NTCHS Field Indicators of Hydric Soils in the US



- NE Indicators being modified for this



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## Wetland Hydrology Indicators

### Regional Supplements

- Presented in four groups
  - Observation of surface water or saturated soil (Group A)
  - Evidence of recent inundation (Group B)
  - Evidence of recent soil saturation (Group C)
  - Evidence from other site conditions or data (Group D)
- Categorized as "primary" or "secondary"
  - Primary – any one indicator is sufficient
  - Secondary – two or more indicators are required
  - May vary by region

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## Wetland Hydrology Indicators

Examples from Northcentral/  
Northeast Regional Supplement

- Group A
  - A1 (Surface water)
  - A2 (High water table)
  - A3 (Saturation)

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## Wetland Hydrology Indicators

Examples from NC/NE Regional  
Supplement

- Group B
  - B1 (Water marks)
  - B2 (Sediment deposits)
  - B3 (Drift deposits)
  - B4 (Algal mat or crust)
  - B5 (Iron deposits)
  - B6 (Surface soil cracks)
  - B7 (Inundation visible on aerial imagery)
  - B8 (Sparsely vegetated concave surface)
  - B9 (Water-stained leaves)
  - B10 (Drainage patterns)
  - B13 (Aquatic fauna)
  - B15 (Marl deposits)
  - B16 (Moss trim lines)

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## Wetland Hydrology Indicators

Examples from NC/NE Regional  
Supplement

- Group C
  - C1 (Hydrogen sulfide odor)
  - C2 (Dry-season water table)
  - C3 (Oxidized rhizospheres along living roots)
  - C4 (Presence of reduced iron)
  - C6 (Recent iron reduction in tilled soils)
  - C7 (Thin muck surface)
  - C8 (Crayfish burrows)
  - C9 (Saturation visible on aerial imagery)

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## Wetland Hydrology Indicators

### Examples from NC/NE Regional Supplement

- Group D
  - D1 (Stunted or stressed plants)
  - D2 (Geomorphologic position)
  - D3 (Shallow aquitard)
  - D4 (Microtopographic relief)
  - D5 (FAC-neutral test)

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## Growing Season

On-site methods are preferred:

- Begins when 2 or more non-evergreen plant species exhibit any of the following:
  - Emergence of herbaceous species from the ground
  - New growth from vegetative crowns
  - Emergence from seed
  - Bud burst on woody plants
  - Emergence/elongation of leaves
  - Emergence/opening of flowers
- Soil temperature at 12 inches is above 5 C
- Whichever is earlier

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## Difficult Wetland Situations

Supplements address regional examples of:

- Atypical Situations – where wetland indicators may be missing or misleading due to recent human activities or natural events
- Problem Areas – where wetland indicators may be missing due to normal seasonal or annual variability, or the nature of soils or vegetation on the site
- Other issues that make wetland delineation challenging (e.g., wetland/non-wetland mosaics)

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## New England Field Testing

- August – September 2008
- Interagency effort led by Corps
  - EPA
  - NRCS
  - State agencies
  - academicians

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## Field Sites

- 12 sites throughout New England
- 2 sites per state, 2-3 plots per site
- Included:
  - Floodplain
  - Forested
  - Meadows

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## Vegetation

- Some differences in percentage of dominants, but only one plot at one site had a different determination on hydrophytic vegetation based on this, but this did not change wetland call
- Strata changes likely to be the cause of the few differences that may occur
- No differences based on dropping +/-

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## Hydric Soils

- Ultimately, there were no real differences in the hydric soil calls; however, there were 3 plots that had to be identified as "problem soils" under the Supplement and use the NEIWPC indicators to correctly assess the hydric nature of the soil
- Dark parent materials and spodosols are particular problems

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## Hydrology

- 1 false positive under Supplement using secondary indicators, but did not change wetland call
- In all cases, Supplement provided better support (i.e., more hydrology indicators) for wetland plots

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## Summary

- Appear to be few differences in wetland determination with the Supplement
- Several small changes in dealing with vegetation do not have much effect on overall wetland call.
- "Obligate" nature of National Hydric Soil Indicators puts more of our hydric soils into "Problem Soils" category
- Hydrology is better documented with Supplement

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Finally,

Like the '87 Manual, the Northcentral and Northeastern Regional Supplement is NOT intended to be used as a cookbook or in a vacuum devoid of professional judgement:

**DO NOT BE A MANUAL ZOMBIE!**

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