User Guide for Automated Wetland Determination Data Form – Northcentral and Northeast Region v1.08

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This guide is for the wetland determination data form spreadsheet using Microsoft Excel. The spreadsheet will automatically populate hydrology, vegetation, and soil indicators using raw data input by the user. The information contained in the spreadsheet is from the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), published January 2012. (http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/NCNE_suppv2.pdf) The spreadsheet includes plant information from the U.S. Army Corps of Engineers 2014 National Wetland Plant List, version 3.2. (http://wetland_plants.usace.army.mil)¹ Any upland plant information for plants not listed in the National Wetland Plant List is from the USDA PLANTS Database (June 2014). (http://plants.usda.gov/index.html) The spreadsheet uses soil indicators from the NRCS Field Indicators of Hydric Soils version 7.0 (ftp://ftp-fc.sc.egov.usda.gov/NSSC/Hydric_Soils/FieldIndicators_v7.pdf) including the March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) The data form is a revised Version 2.0 form that includes hydric soil indicator changes from these Errata.

Disclaimer:

The Detroit District Regulatory Office uses the spreadsheet to produce "data-entered" copies of the wetland determination data form in Appendix C in the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region, Version 2.0, January 2012 (NC/NE Supplement). The Detroit District Regulatory Office's spreadsheet, and the resulting data sheet, includes the Natural Resource Conservation Service's Field Indicators of Hydric Soils version 7.0 March 2013 Errata (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx), which is not part of the current NC/NE Supplement data form. We are obliged to inform other users that the spreadsheet was developed for use within the Detroit District of the U.S. Army Corps of Engineers. The spreadsheet is provided "*as is*", with no guarantees, assurances or warranties of any kind, either express or implied, as to it accuracy, appropriateness, completeness, fitness or legal effect for any particular purpose and should be understood that usage is *not* endorsed by the U.S. Army Corps of Engineers and is fully "*at your own risk*".

General Instructions:

Please use a fresh copy of the Excel file for every use and use the **Save As** command to save the spreadsheet. Also, when correcting data on most fields in the form, try to use the **Undo** command. There are many hidden formulas in the spreadsheet and overwriting them with your own data will erase these formulas. By using a fresh copy of the file and using **Undo**, you will preserve these formulas for future use. Areas outside the blanks for the data form are locked and cannot be selected. Comments are located throughout the spreadsheet, which give information about the indicators or other cells. Comments can be shown by either holding the cursor over the cell or by using the **Show/Hide Comment** command under the **Review** tab.

¹ Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. *The National Wetland Plant List*. 2014 Update of Wetland Ratings. Phytoneuron 2014-41: 1-42. **Please see the website at:** <u>http://www.phytoneuron.net</u>

Symbols and Backgrounds:

Symbol	Description					
Х	This indicator is present at your sampling site based on the information you have provided.					
?	This indicator may be present at your sampling site based on the information you have provided.					
	Please read the comment contained in the spreadsheet cell for that indicator before verifying that					
	indicator with an "X".					
?C	This hydric soil indicator may be present at your sampling site. Based on the information you have					
	provided, this indicator meets all of the requirements except thickness. However, using the					
	information in the Regional Supplement pp. 42-44, two of the commonly combined hydric soil					
	indicators may be used in combination if they meet the most restrictive requirements of one of the					
	two combined indicators. Please read the comment contained in the spreadsheet cell for that					
	indicator before verifying that indicator with an "X".					
	A yellow background indicates that you must read the comment for that cell, as it contains					
	important information.					
	A red background indicates that the soil information is not in the proper place or is in the wrong					
	format. See the page 3 (Soil) section below for more information.					

Table 1: Key to symbols and background colors found in the spreadsheet.

Page 1 (Hydrology):

Input the appropriate information at the top of the page. The information entered into the Sampling Point field will carry on through pages 2 and 3. In the State field, please select the State from the drop-down list. The vegetation indicator status will be generated using this information; either the Northcentral-Northeast or the Northcentral Great Lakes subregion from the National Wetland Plant List. In the Subregion (LRR/MLRA) cell, please select your Land Resource Region and Major Land Resource Area from the dropdown list. A map of the LRR/MLRAs is available from the NRCS.

(http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052441.pdf) The Northeast and Northcentral Region includes LRRs K, L, R, and MLRA 149B of LRR S. Selecting your proper subregion will ensure that the only the hydric soil indicators appropriate for your area will be used. This information is also used to ensure the proper vegetation indicator status is used in the state of Ohio. Please also be sure to check with an "X" if the sampling site's vegetation, soil, or hydrology has been disturbed or naturally problematic, as it will allow the spreadsheet to select certain vegetation and soil indicators if wetland hydrology, hydrophytic vegetation, and hydric soil are not present. Comments containing the descriptions for the hydrology indicators are from the Regional Supplement. Hydrology indicators Surface Water (A1), High Water Table (A2), and Saturation (A3) will be checked with an "X" automatically from the information entered into the Field Observations section. Thin Muck Surface (C7) and FAC-Neutral Test (D5) will also be checked automatically with an "X" from the soil information on page 3 and vegetation information on page 2, respectively. All other hydrology indicators must be reviewed and checked with an "X" by the user.

Page 2 (Vegetation):

Enter in the species name and the absolute % cover in any order of abundance (make sure to enter in the state information on page 1). The spreadsheet can search any plant name in the Regional Supplement area in multiple ways. The scientific name can be entered or a correctly spelled current genus name can be typed and then the species selected from a drop-down list. The spreadsheet will also find the scientific name if only the common name is known if a "space" is typed and then the common name is spelled correctly. This will allow you to select the scientific name which is the name directly above the common name from the list. Also, any

synonyms for the species could also be entered and the correct indicator will be generated. For example if the plant *Schoenoplectus acutus* is present, the full scientific name could be entered, "Schoenoplectus" could be entered and then the species name chosen from the drop-down list, "Scirpus acutus" could be entered which is an older scientific name for the plant, or you could type "[space]Hard-Stem Club-Rush" and then select *Schoenoplectus acutus* from the drop-down list directly above the common name. The spreadsheet will determine if it is a dominant species and it will calculate the Dominance Test worksheet, the Prevalence Index Test worksheet, and the FAC-Neutral Test (D5) on page 1. The Prevalence Index will be calculated, but will only check with an "X" in the Hydrophytic Vegetation Indicators list if wetland hydrology and hydric soil are present. If not, the spreadsheet will search if the sampling site's soil or hydrology has been disturbed or is naturally problematic, which is entered on page 1.

Page 3 (Soil):

Enter the soil profile information according to Figure 1 (make sure to enter the Subregion (LRR\MLRA) information on page 1).

SOIL								Sampling Point:	
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth	Matrix	atrix Redox Features			es				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-4	10YR 3/1	90	5Y 3/2	5	С	М	Loamy/Clayey	Faint redox concentrations	
			5Y 4/4	5	С	PL		Prominent redox concentrations	
4-8	N 4/	90	10YR 4/4	5	С	М	Sandy	Prominent redox concentrations	
			10YR 5/1	5	D	М			

Figure 1: Example of the proper method of inputting soil data.

The information in the depth column must be entered in order and the starting depth of the second layer must equal the ending depth of the first layer. Only numbers may be entered in the depth column (no extra characters like + or – signs). Any additional information needed can be placed in the Remarks section. The colors for matrix and redox features must be entered in the format hue[space]value/chroma or hue[space]value/(blank) for neutral-hued (N) soils. If the soil color is between chroma, please round to the nearest color chip and add any additional information in the Remarks field. Rounding should not be used to make chroma meet the requirements of an indicator. Select textures from the drop-down list and only select the texture on the same line as the matrix color and depth information. See Table 2 below for descriptions on the available textures. If additional texture information is required, place the information in the Remarks field. Any errors in the above information will either generate an error statement or will format the cell with a red background.

Texture	Description
Loamy/Clayey	Loamy very fine sand and finer.
Sandy	Loamy fine sand and coarser.
Mucky Loam/Clay	"Mucky" is a USDA texture modifier for mineral soils. Mucky modified mineral soil material that has 0 percent clay has between 5 and 12 percent organic carbon. Mucky modified mineral soil material that has 60 percent clay has between 12 and 18 percent organic carbon. Soils with an intermediate amount of clay have intermediate amounts of organic carbon. Where the organic component is peat (fibric material) or mucky peat (hemic material), mucky mineral soil material does not occur. An example is mucky sandy loam, which has at least 7 percent organic carbon but not more than about 14 percent.

Texture	Description
Mucky Sand	"Mucky" is a USDA texture modifier for mineral soils. Mucky modified mineral soil
	material that has 0 percent clay has between 5 and 12 percent organic carbon. Where the
	organic component is peat (fibric material) or mucky peat (hemic material), mucky
	mineral soil material does not occur. An example is mucky fine sand, which has at least 5
	percent organic carbon but not more than about 12 percent.
Muck	Sapric organic soil material in which virtually all of the organic material is so decomposed
	that identification of plant forms is not possible. Muck has less than one-sixth (17%)
	fibers visible with a hand lens after rubbing.
Mucky Peat	Hemic organic material, which is characterized by decomposition that is intermediate
	between that of fibric material and that of sapric material. Mucky peat has between one-
	sixth (17%) and two-fifths (40%) fibers visible with a hand lens after rubbing.
Peat	Fibric organic soil material. The plant forms can be identified in virtually all of the
	organic material. Peat has two-fifths (40%) or more fibers visible with a hand lens after
	rubbing.

Table 2: Available textures and their descriptions from the Field Indicators of Hydric Soils in the United States version 7.0.

Place any additional texture information you wish to include in the Remarks section. Finally, the contrast for redox concentrations against the matrix color will automatically be calculated according to the NRCS soil color contrast information

(<u>http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_053569</u>) and shown in the Remarks field on the same line as the redox concentration.

Note: If you wish to place any other information in that Remarks cell, be aware that typing in that cell will erase the hidden formula and that information will be lost. If you would like to include the contrast information, you will have to retype it into that cell.

All soil indicators will be calculated using the soil profile information that has been entered. An "X", "?", or "?C" will be generated in the hydric soil indicator cells that meet the criteria for your appropriate Subregion (LRR/MLRA). Comments containing the descriptions for the soil indicators are from the NRCS Field Indicators of Hydric Soils version 7.0 and the March 2013 Errata. Indicators for problematic hydric soils will only generate a "?" and requires that wetland hydrology and hydrophytic vegetation be present. If not, the spreadsheet will search if the sampling site's vegetation or hydrology has been disturbed or is naturally problematic, which is entered on page 1. Table 3 shows the hydric soil indicators that were not able to be fully verified due to information required during the field inspection.

Hydric Soil Indicator	Description	Limitation
Polyvalue Below Surface	A layer with value of 3 or less and chroma of 1 or less starting	The spreadsheet cannot
(S8)	within 6 inches (15 cm) of the soil surface. At least 70 percent of	verify a spodic horizon.
	the visible soil particles must be masked with organic material,	Only the requirements for
	viewed through a 10x or 15x hand lens. Observed without a hand	the upper layer and the
	lens, the particles appear to be close to 100 percent masked.	underlain layer are verified.
	Directly below this layer, 5 percent or more of the soil volume has	
	value of 3 or less and chroma of 1 or less, and the remainder of the	
	soil volume has value of 4 or more and chroma of 1 or less to a	
	depth of 12 inches (30 cm) or to the spodic horizon, whichever is	
	less.	
Thin Dark Surface (S9)	A layer 2 inches (5 cm) or more thick, within the upper 6 inches (15	The spreadsheet cannot
	cm) of the soil, with value of 3 or less and chroma of 1 or less. At	verify a spodic horizon.
	least 70 percent of the visible soil particles must be masked with	Only the requirements for
	organic material, viewed through a 10x or 15x hand lens. Observed	the upper layer and the
	without a hand lens, the particles appear to be close to 100 percent	value and chroma for an
	masked. This layer is underlain by a layer or layers with value of 4	underlain layer are verified.
	or less and chroma of 1 or less to a depth of 12 inches (30 cm) or to	
	the spodic horizon, whichever is less.	
Mesic Spodic (TA6)	A layer 2 inches (5 cm) or more thick, starting within 6 inches (15	The spreadsheet cannot
	cm) of the mineral soil surface, that has value of 3 or less and	verify spodic development.
	chroma of 2 or less and is underlain by either:	However, all other
		requirements are verified.
	a. A layer(s) 3 inches (8 cm) or more thick occurring within 12	
	inches (30 cm) of the mineral soil surface, having value and chroma	
	of 3 or less, and showing evidence of spodic development; or	
	b. A layer(s) 2 inches (5 cm) or more thick occurring within 12	
	inches (30 cm) of the mineral soil surface, having value of 4 or more	
	and chroma of 2 or less, and directly underlain by a layer(s) 3 inches	
	(8 cm) or more thick having value and chroma of 3 or less and	
	showing evidence of spodic development.	

Table 3: Limitations for verifying hydric soil indicators.

Suggestions:

Send all comments, suggestions, or bug reports to <u>Nathan.T.Schulz@usace.army.mil</u>.

Version History:

v1.08

- Updated hydrophytic vegetation indicators and nomenclature from the Corps of Engineers National Wetland Plant List 2014 v3.2 (NWPL).
- Updated upland (UPL) vegetation nomenclature not found in the NWPL from the USDA PLANTS Database (June 2014).
- Added a new feature which allows the user to stop calculations in the Dominance Test worksheet if the Rapid Test for Hydrophytic vegetation passes and another option to stop calculations for the Prevalence Index worksheet if either the Rapid Test or Dominance Test passes.
- Added reminders to the Vegetation page if the state has not been selected or the subregion (LRR/MLRA) has not been selected on Page 1.
- Added missing genus headings for the selectable plant list.
- Improved Depleted Below Dark Surface (A11) hydric soil indicator to check if the thickness for the depleted or gleyed matrix (option b) is 2 inches. The spreadsheet will now populate a "?" if that condition is met—the user will still have verify that it is fragmental soil material—or an "X" if the 6-inch (option a) is satisfied.
- Fixed a bug with Sandy Redox (S5) and Red Parent Material (F21) hydric soil indicators.
- Updated link to the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata.

v1.07:

• Fixed a bug with problematic hydrophytic vegetation.

v1.06:

- Updated hydrophytic vegetation indicators and nomenclature from the Corps of Engineers National Wetland Plant List 2013 v3.1.
- Improved vegetation pull-down functionality to include auto-complete functionality. These pull-down boxes are objects that can be directly clicked on. The information entered in the box will be transferred to the underlying cell, but the object will not be printed. If needed, the underlying cell can be reached by using the arrow keys or the Tab key.
- Fixed the Absolute % Cover column on Page 2 (Vegetation) so users who erroneously used a % symbol will be alerted. Only whole numbers may be entered in the % column.
- Removed unknowns from the beginning of the pull-down list of plants. If no italics are desired for the vegetation entries, either enter a "space" at the beginning of the entry or place the word "unknown" somewhere in the entry.
- Fixed comment block formatting for wide-screen monitors.
- Fixed formatting for entry fields.
- Fixed a bug when totaling combination hydric soil indicator depths.

v1.05:

- Updated form language to Version 2.0.
- Updated hydrophytic vegetation indicators from the Corps of Engineers National Wetland Plant List.
- Updated hydric soil indicators according to the March 2013 Errata.
- Added yellow formatting to the State and Subregion (LRR/MLRA) fields on Page 1 to remind users to enter this critical information. The formatting changes when the information is entered.

- Fixed the Soils % columns under Matrix and Redox Features so users who erroneously used a % symbol will be alerted. Only whole numbers may be entered in the % columns.
- Added combination indicators for Dark Surface (S7) and Loamy Mucky Mineral (F1). Prior to the NRCS March 2013 Errata, these two indicators could not be combined as standard hydric soil indicators, as they could not be used as standard hydric soil indicators in the same LRR.
- Improved hydric soil indicator Stratified Layers (A5) to only return an "X" or "?" if all qualifying layers have a dominant (median) thickness of less than 1 inch according to the user notes for that indicator.
- Fixed bugs for Stratified Layers (A5), Dark Surface (S7), Polyvalue Below Surface (S8), Thin Dark Surface (S9), Loamy Gleyed Matrix (F2), and Piedmont Floodplain Soils (F19).
- Fixed bugs for redox concentrations and depletions not summing to meet hydric soil indicators when multiple colors of redox concentrations or depletions existed.
- Most hydric soil indicators are now not verified until the soil layer information is complete.
- Contrast information for redox concentrations are now only displayed when entering a "C" for concentrations anywhere in the corresponding Redox Feature Type field.

v1.04:

• Fixed a page 1 formula property.

v1.03:

- Fixed the Saturation (A3) hydrology indicator to search for a water table below the saturation or a restrictive layer within 12 inches.
- Added an automatic check for Thin Muck Surface (C7) hydrology indicator from the soil information.

v1.02:

- Fixed the list of plant species for hybrid species to use a [lowercase x][space] rather than an inserted ASCII symbol (×), e.g. *Lonicera x bella* instead of *Lonicera × bella*.
- Fixed a rounding error in the Vegetation Dominance Test Worksheet and Prevalence Index Worksheet.
- Improved functionality of the checkboxes on page 1 in cases of disturbed or naturally problematic situations.
- Made minor fixes to the plant list.
- Made a minor fix to the data validation on page 3.

v1.01:

- Added all plant species in the Regional Supplement area instead of only wetland species and added drop-down functionality to page 2.
- Added colors from newer Munsell color charts.
- Deleted the word "left" from a field on page 1.
- Changed the vertical formatting on the first Remarks field on page 1.

v1.00: Original version.