NAVIGATION OF NEBRASKA NRCS AMENDMENT 44 TO THE NATIONAL ENGINEERING HANDBOOK PART 650, CHAPTER 14: WATER MANAGEMENT (DRAINAGE)

TILE DRAINAGE NEAR WETLANDS

This amendment is the collaboration between Nebraska NRCS Biologists, Soil Scientists and Engineers. This product was built from examples from other states and Nebraska personalization.

The "Tile Drainage Charts/Lateral Effects Tables" can be found in the electronic Field Office Technical Guide (eFOTG) at this location:
https://efotg.sc.egov.usda.gov/references/public/NE/NEH_Part_650-Chapter_14-NE_Amend_44-Lateral_Effects_Guidance.pdf

The Amendment has three (3) parts:

1. Explanation and Examples
2. Tile Charts (i.e.: the Minimum Lateral Effects Distances Tables for each Nebraska County)
3. Nebraska Hydric Soil Components Table (i.e.: a table of hydric soils in Nebraska)

The amendment document (pdf) has a clickable index on the left edge of the screen.

If you click on one of the counties in Table 1 on the left portion of the screen it will take you to the second part of the document for a specific county's "Minimum Lateral Effects Distances Table".

To get to the "Nebraska Hydric Soils Components Table" scroll down to the bottom of the Index on the left of the screen and click on:

Table 2 – Nebraska Hydric Soil Components, Classes and Assessment

The following information will be needed to assess tiling near a wetland:

- Wetland determination map for the property
- Location of the property by any of the following:
  - Address
  - State and County
  - Soil Survey Area
  - Latitude and Longitude
  - PLSS (Section, Township, Range)

- Location of the property in the landscape[1]:
  - Depression, Oxbow
  - Drainageway
  - Drainageway, Flood Plain
  - Drainageway, Hillslope
  - Drainageway, Spring
  - Fen
  - Floodplain
  - Floodplain, Channel
  - Floodplain, Fen
  - Interdune
  - Meanders
  - Oxbow
  - Oxbow, Lake
  - Playa
  - Sand Sheet
  - Stream Terrace
  - Swale
  - Swale, Playa

[1]*Descriptions of location in the landscape definitions are contained in Appendix 1, and are from (430-VI-NSSH, 2008) Part 629 – Glossary of Landform and Geologic Terms.*

Step 1. Obtain the needed data soils information. This soils information can be found in the NRCS Web Soil Survey[2] at:

https://websoilsurvey.nrcs.usda.gov/app/

The property can be located in the Web Soil Survey in a variety of ways, with latitude/longitude, hydrologic unit, State & County, Section/Township/Range, etc. You can zoom in or zoom out to view the area better.

Now select the "Area of Interest". Click on either of the AOI buttons noted by the blue arrow. Use the "Define AOI by rectangle" or "Define AOI by polygon" button.

Click on the "Soil Map" tab along the top of the screen. The Soils List will appear on the left as will soils mapping of the Area of Interest.

Note the soils contained in the area delineated as wetland on the Wetland determination map for the property.

Step 2. Go to the 3rd section of the NEFH Amendment, Nebraska Hydric Soil Components Table next and find your soils from the Web Soil Survey in the table in the first column. If your wetland soil is in this list skip step 2A. If your soils are not listed in the first column of "Table 2 Nebraska Hydric Soil Components, Classes and Assessment Groups" go back to the Web Soil Survey for further information as noted in Step 2A.

Step 2A: Click on the "Soil Data Explorer" Tab along the top of the screen indicated.

- Then click on the "Soil Reports" Tab near the right side of the screen.
- Then on the menu on the left side of the screen click on the "Land Classifications" Tab and then the "Hydric Soil List-All Components (NE)" Tab.
- Finally click on the "View Soil Report" Button now below the previous two tabs.
- The report now appears at the bottom right of the screen, scroll down to look at it.
- This table lists the Hydric Soils inclusions within the nonHydric soil, also listing the landform and whether the Hydric criteria (code) is met.
- Find the soil that comprises the wetland in the left most column labeled "Map symbol and map unit name" in this report. Look at the next column labeled "Component/Local Phase" for the name of the Soil Inclusions. Check the fifth column, "Hydric Status" to see if any of the inclusions meet Hydric Status noted by yes. Note the Landform listed in the fourth column for comparison in Table 2, Nebraska Hydric Soil Components, Classes and Assessment Groups".

Step 3. In the 3rd section of the NEFH Amendment, Table 2, Nebraska Hydric Soil Components Table, find your hydric soil or hydric inclusion soil as appropriate from the Web Soil Survey in the table in the first column.

Table 2 gives information about wetlands found on Nebraska Hydric soils. The Local Phase column tells us if the soils are depressional/rarely flooded/frequently flooded/frequently ponded/wet/etc. The Landform column lists where these hydric soils are found in the landscape i.e. depression, drainageway, floodplain, oxbows, playas, swales, etc. NE HGM (HydroGeoMophic) Subclass describes the HydroGeoMorphic subclasses found on Nebraska hydric soils. The Ground Water Interceptor Risk lists if

[2]*Instructions on the use of the Web Soil Survey are found on the first page of this web site. When ready, click on the button "START WSS" to launch Web Soil Survey.*
Enclose your area of interest with a rectangle or polygon by clicking on one corner of the area of interest and slide the cursor until the area is enclosed and double click the cursor again. The area just delineated will then appear cross hatched.

a 1X or 3X distance should be maintained between the wetland edge and drainage tile. If the wetland is primarily fed by overland flow this column will be listed as No and the 1X distance is appropriately used. If the wetland is primarily fed by subsurface flow, this column will list Yes and the 3X distance is appropriately used.

Look back at the soils map.

- The hydric soil is the wetland soil and it is used in determining if a 1X or 3X distance from the tile charts should be use as listed in Column 7 "Groundwater Interception Risk". If the column is "yes" that it is a Groundwater Interception Risk, use a 3 times (3X) the distance in the Tile Charts ("Minimum Lateral Effects Tables"). If the column is "no" that it is not a Groundwater Interception Risk, use the distance listed in the Tile Charts (1X) ("Minimum Lateral Effects Tables").
- The soil surrounding the wetland is where the tile is installed and where the setback distance will normally be assessed (it could be a wetland soil if some of the wetland was prior converted). This surrounding soil is what will be looked for in the Tile Charts and used as either 1X or 3X. Look for this soil type in the "Minimum Lateral Effects Distances Tables" for the Nebraska County that the property of interest is located.

At this point we know the soil type in the wetland and whether the wetland is primarily overland fed or subsurface fed (from the Nebraska Hydric Soil Components Table) which indicates a 1X or 3X distance. We know the soils surrounding the wetland.

Step 4. The next step is to go to the "Minimum Lateral Effects Tables" for the County the property of interest is in.
Scroll down to the soil surrounding the wetland – the setback distances are listed for a 3', 4', 5' and 6' tile depths. Note: If you determined in Step 3 that the soil had a Groundwater Interception Risk, then multiply the distance shown times 3.

Step 5. Now look at the 1st part of the Amendment for any further details about what may be allowed or not allowed for the specific site details.

APPENDIX 1
Excerpts from (430-VI-NSSH, 2008) Part 629 – GLOSSARY OF LANDFORM AND GEOLOGIC TERMS

channel – (a) [streams] The hollow bed where a natural body of surface water flows or may flow. The deepest or central part of the bed of a stream, containing the main current and occupied more or less continuously by water. (b) (colloquial: western USA) The bed of a single or braided watercourse that commonly is barren of vegetation and is formed of modern alluvium. Channels may be enclosed by banks or splayed across and slightly mounded above a fan surface and include bars and mounds of cobbles and stones. (c) [microfeature term] Small, trough-like, arcuate or sinuous channels separated by small bars or ridges, caused by fluvial processes; common to flood plains and young alluvial terraces; a constituent part of *bar and channel* topography. GG, FFP, & SW

depression – Any relatively sunken part of the Earth's surface; especially a low-lying area surrounded by higher ground. A closed depression has no natural outlet for surface drainage (e.g., a sinkhole). An open depression has a natural outlet for surface drainage. Compare – closed depression, open depression. GG

drainageway – (a) A general term for a course or channel along which water moves in draining an area. GG. (b) [soil survey] a term restricted to relatively small, roughly linear or arcuate depressions that move concentrated water at some time, and either lack a defined channel (e.g., head slope, swale) or have a small, defined channel (e.g., low order streams). SW

fen – Waterlogged, spongy ground containing alkaline decaying vegetation, characterized by reeds, that develops into peat. It sometimes occurs in sinkholes of karst regions. Compare – bog, marsh, swamp. GG

flood plain – The nearly level plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the streams. HP

hillslope – A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of the hill. Compare – mountain slope. HP

interdune – The relatively flat surface, whether sand-free or sand-covered, between dunes. GG

lake – [water] An inland body of permanently standing water fresh or saline, occupying a depression on the Earth's surface, generally of appreciable size (larger than a pond) and too deep to permit vegetation (excluding subaqueous vegetation) to take root completely across the expanse of water. GG

meander – [streams] One of a series of regular freely developing sinuous curves, bends, loops, turns, or windings in the course of a stream. GG

oxbow – A closely looping stream meander having an extreme curvature such that only a neck of land is left between the two parts of the stream. (colloquial: northeastern USA) The land enclosed, or partly enclosed, within an oxbow. Compare – meander belt, oxbow lake, bayou. GG

oxbow lake – The crescent-shaped, often ephemeral body of standing water situated by the side of a stream in the abandoned channel (oxbow) of a meander after the stream formed a neck cutoff and the ends of the original bend were silted up. Compare – meander belt, oxbow. GG

sand sheet – A large, irregularly shaped, commonly thin, surficial mantle of eolian sand, lacking the discernible slip faces that are common on dunes. GG

stream terrace – One, or a series of flat-topped landforms in a stream valley that flank and are parallel to the stream channel, originally formed by a previous stream level, and representing remnants of an abandoned flood plain, stream bed, or valley floor produced during a past state of fluvial erosion or deposition (i.e., currently very rarely or never flooded; inactive cut and fill and/or scour and fill processes). Erosional surfaces cut into bedrock and thinly mantled with stream deposits (alluvium) are called "strath terraces." Remnants of constructional valley floors thickly mantled with alluvium are called alluvial terraces. Compare – alluvial terrace, flood-plain step, strath terrace, terrace. HP & SW

swale – (a) A shallow, open depression in unconsolidated materials which lacks a defined channel but can funnel overland or subsurface flow into a drainageway. Soils in swales tend to be moister and thicker (cumulic) compared to surrounding soils. SW. (b) A small, shallow, typically closed depression in an undulating ground moraine formed by uneven glacial deposition; Compare – swell-and-swale topography. (c) (not preferred; refer to interdune) A long, narrow, generally shallow, trough-like depression between two beach ridges, and aligned roughly parallel to the coastline. GG