USDA icon **Natural Resources Conservation Service**

# Ecological site F094DY015WI
# Wet Loamy-Mantled Depressions

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## General information

**Provisional**. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

## MLRA notes

Major Land Resource Area (MLRA): 094D–Northern Highland Sandy Pitted Outwash

The Wet Loamy-Mantled Depressions ecological site occupies about 10,000 acres in MLRA 94D.

## Classification relationships

The wetland forest Habitat Type developed by Kotar and Burger (2009) for sites similar to this site is AbFnThAs (Abies-Fraxinus-Thuja/Arisaema. However, this ecological site is much more variable in species composition than the Habitat Type would indicate, however Habitat Types apply to the forested condition and this site has non-forested states and phases as well as forested ones.

## Ecological site concept

ATTENTION: This ecological site meets the NESH 2014 requirements for PROVISIONAL. A provisional ecological site is established after broad ecological site concepts are identified and an initial state-and-transition model is drafted. Following quality control and quality assurance reviews of the ecological site concepts, an identification number and name for the provisional ecological site are entered into ESIS. A provisional ecological site may include literature reviews, land use history information, some soils data, legacy data, ocular estimates for canopy and/or species composition by weight, and even some line-point intercept information. A provisional ecological site does not meet the NESH 2014 standards for an Approved ESD, but does provide the conceptual framework of soil-site correlation for the development of the ESD. For more information about this ecological site, please contact your local NRCS office. The Wet Loamy-Mantled Depression ecological site has poorly drained soils that have a brief periods of ponding and a thin muck surface layer. These sites often occur along the margins of large peatlands or in closed depressions in uplands. These are wetland sites with plant communities contain both obligate and facultative hydrophytes.

## Associated sites

| | |
|---|---|
| F094DY014WI | **Wet Loamy-Mantled Drainageways**<br><br>Wet Loamy-Mantled Depressions are often adjacent to and hydrologically connected to Wet Loamy-Mantled Drainageways. |

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | (1) *Fraxinus nigra*<br>(2) *Acer rubrum* |
| Shrub | (1) *Alnus incana*<br>(2) *Acer spicatum* |
| Herbaceous | (1) *Impatiens capensis*<br>(2) *Calamagrostis canadensis* |

## Physiographic features

These sites often occur along the margins of large peatlands or in closed depressions in loamy mantled uplands on outwash plains, especially pitted outwash. Loamy sediments were washed into these depressions as buried remnants of the glaciers melted. The low-lying position and concave shape of these sites leads to nearly continuous high water tables ( 0 to 12 inches deep), plus the potential long duration ponding in spring and after heavy rains, and thus the accumulation of a thin (<17 inches) muck surface layer due to anaerobic conditions.

**Figure 1. Wet Loamy-Mantled Depressions**

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Outwash plain<br>(2) Outwash terrace<br>(3) Lake plain |
| Ponding duration | Long (7 to 30 days) |
| Ponding frequency | Frequent |
| Elevation | 360 – 570 m |
| Slope | 0 % |
| Ponding depth | 0 – 20 cm |
| Aspect | Aspect is not a significant factor |

## Climatic features

The climate is humid continental with very cold winters and warm summers. As is common across northern Wisconsin, two-thirds of the precipitation falls as rain during the relatively short growing season of late May to early September. Most of the rainfall is transpired by plants. Snow cover is likely in the months of November through April. Snow cover prevents deep frost penetration which promotes groundwater recharge.

**Table 3 Representative climatic features**

| | |
|---|---|
| Frost-free period (average) | 100 days |
| Freeze-free period (average) | 120 days |
| Precipitation total (average) | 860 mm |

- (1) LONG LAKE DAM [USC00474829], Eagle River, WI
- (2) NORTH PELICAN [USC00476122], Rhinelander, WI

- (3) REST LAKE [USC00477092], Manitowish Waters, WI
- (4) WILLOW RSVR [USC00479236], Hazelhurst, WI

### Influencing water features

This is a wetland site.

### Soil features

This ecological site has hydric soils that are subject to frequent ponding. These soils are members of the Minocqua series and other similar soils. Minocqua has a mucky surface layer of less than 8 inches, which is indicative of the poorly drained condition. The mineral layers beneath the organic surface layer, especially the loamy mantle, are strongly gleyed, again indicating anaerobic conditions.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Mucky sandy loam<br>(2) Loam<br>(3) Fine sandy loam |
| Family particle size | (1) Sandy |
| Drainage class | Poorly drained |
| Permeability class | Moderate to moderately rapid |
| Soil depth | 200 cm |
| Surface fragment cover <=3" | Not specified |
| Surface fragment cover >3" | Not specified |
| Available water capacity (0-101.6cm) | 10.16 – 20.32 cm |
| Calcium carbonate equivalent (0-101.6cm) | Not specified |
| Electrical conductivity (0-101.6cm) | Not specified |
| Sodium adsorption ratio (0-101.6cm) | Not specified |

| | |
|---|---|
| Soil reaction (1:1 water) (0-101.6cm) | 4.9 – 6.1 |
| Subsurface fragment volume <=3" (Depth not specified) | 10 – 20 % |
| Subsurface fragment volume >3" (Depth not specified) | Not specified |

## Ecological dynamics

The Wet Loamy-Mantled Depressions ecological site is a forested wetland characterized by hydrophytic vegetation, hydric soils, and saturated soil conditions throughout most of the growing season. As such, tree growth and the species present are restricted by the extended hydroperiod. On the other hand, there is some soil aeration which is necessary to facilitate tree growth, but most often trees are limited to microsites that are slightly elevated above the persistent high water table. The concave areas within the site are covered by shrub and herbaceous species that are more water tolerant. Alder is the most common shrub and sedges, reeds, and grasses dominate the herbaceous layer. The number of species found on these is variable; micro-topography is the key to increased diversity. Micro-relief is produced by windthrow, where fallen logs produce both a mound of soil at the root clump and the log itself provides habitat for tree seedlings to sprout and grow as a so-called "nurse log". Trees that initially colonize the site are tamarack, black ash and balsam fir. Yellow birch, hemlock, white cedar, white and black spruce, and white pine will take root on nurse logs and stumps and other areas that have a slighty more aerated root zone. Areas that pond more frequently and with longer duration are often sparsely vegetated. But these ephemeral ponds are important breeding habitat for reptiles and amphibians. Broadleaf herbaceous species include, spotted jewelweed, marsh marigold, bugleweed or water horehound, water hemlock and goldthread. A variety of interesting ferns, fern allies and mosses also occupy this site. These include royal fern, cinnamon fern and maidenhair fern, horsetails, feather mosses and polytrichum mosses, and the suite of Sphagnum moss species which have adapted to richer sites. The reference state is still relatively common on this site, especially in remote areas, and also as small relatively undisturbed sites within the otherwise highly manipulated upland matrix.

## State and transition model

## Additional community tables

**Table 5. Community 1.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

**Table 6. Community 1.2 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

**Table 7. Community 1.3 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

**Table 8. Community 2.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

**Table 9. Community 2.2 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

**Table 10. Community 3.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

**Table 11. Community 3.2 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|

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## Contributors

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## Rangeland health reference sheet

**Interpreting Indicators of Rangeland Health** is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

| | |
|---|---|
| Author(s)/participant(s) | |
| Contact for lead author | |
| Date | |
| Approved by | |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

## Indicators

1. **Number and extent of rills:**

   _____

2. **Presence of water flow patterns:**

   _____

3. **Number and height of erosional pedestals or terracettes:**

   _____

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

   _____

5. **Number of gullies and erosion associated with gullies:**

   _____

6. **Extent of wind scoured, blowouts and/or depositional areas:**

   _____

7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    **Dominant:**

    **Sub-dominant:**

    **Other:**

    **Additional:**

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth ( in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**

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