USDA icon **Natural Resources Conservation Service**

Ecological site F094DY010WI
Wet Sandy Depressions

Accessed: 08/08/2026

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

MLRA 94D, the Northern Highland Sandy Drift, comprises 1.346 million acres of outwash plains, sandy moraines, wetlands and numerous water bodies (large lakes, small ponds, large rivers, small streams and flowages of all sizes). The Wet Sandy Depressions ecological site comprises about 20,000 acres in MLRA 94D.

Classification relationships

The Wet Sandy Depressions ecological sites correlate to the AbFnThAs habitat type developed by Kotar and Burger (2009); this habitat type is named after Abies balsamea (balsam fir)-Fraxinus nigra (black ash)-Thuja occidentalis (white cedar)/Arisaema triphyllum (Jack-in-the-pulpit). These species have very high constancy value relative to this site, i.e. they are present on a higher percentage of these sites than other species. This ecological site has a wet moisture regime and is poor to medium in nutrients.

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. This ecological site has poorly drained soils and has a thin muck surface over sandy sediments. The plant communities are composed of hydrophytes, although many of the species are facultative. Graminoid species--grasses, sedges and rushes--are very abundant on this site. Many of these graminoids species occur in patches, both large and small, of many individual plants.

Associated sites

F094DY009WI	**Wet Sandy Drainageways** Wet Sandy Drainageways frequently occur adjacent to Wet Sandy Depressions.

Table 1. Dominant plant species

Tree	(1) *Abies balsamea* (2) *Fraxinus nigra*
Shrub	(1) *Alnus incana* (2) *Acer spicatum*

Herbaceous	(1) *Osmunda cinnamomea* (2) *Coptis groenlandica*

Physiographic features

The Wet Sandy Depressions ecological site is found in small depressions within larger upland sites and in larger landscape-scale depressions adjacent to peatlands or near water bodies. Thus these sites are highly variable in size. They are however uniformly concave in shape even though they may appear linear due to low slope gradients.

Table 2. Representative physiographic features

Landforms	(1) Depression (2) Swamp
Ponding duration	Brief (2 to 7 days) to long (7 to 30 days)
Ponding frequency	Occasional to frequent
Elevation	420 – 560 m
Slope	0 %
Ponding depth	0 – 20 cm
Water table depth	0 – 60 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. The microclimate on this site generally cooler than the average for the region.

Table 3 Representative climatic features

Frost-free period (average)	110 days
Freeze-free period (average)	130 days
Precipitation total (average)	840 mm

- (1) RHINELANDER [USC00477113], Rhinelander, WI

- (2) REST LAKE [USC00477092], Manitowish Waters, WI
- (3) EAGLE RIVER [USC00472314], Eagle River, WI
- (4) MINOCQUA [USC00475516], Minocqua, WI

Influencing water features

This is a wetland site with hydric soils, hydrophytic vegetation, and clear evidence of wetland hydrology i.e. frequent ponding and evidence of ponding such as drown-out spots of bare soil, high water marks on trees, and organic detritus moved and collecting in piles. However, groundwater also flows through this site very rapidly giving it fen-like hydrology but not too wet to grow trees.

Soil features

The soil component most closely associated with Wet Sandy Depressions is the Kinross series. These soils are poorly drained, they have a muck or mucky sand surface layer about 6 inches thick and they classify as hydric. The subsoil and substratum is sand, so they should transmit water very rapidly, however, these soils will fill with water and pond frequently in spring and after heavy rains. Also these sites have daily fluctuations in water table during the growing season; during daylight hour's water is removed from the soil profile by evapotranspiration and then the water table is recharged at night.

Table 4. Representative soil features

Surface texture	(1) Mucky sand
Family particle size	(1) Sandy
Drainage class	Poorly drained
Permeability class	Rapid to very rapid
Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	7.62 – 15.24 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)	10
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The Wet Sandy Depressions ecological site is subject to ponding in spring and after heavy rains. These temporary ponds are important breeding sites for reptiles and amphibians. These sites also provide valuable wetland ecosystem services such as retention of potential floodwaters, surface water filtration and nutrient retention, as well as habitat for charismatic plants and animals. This site has dynamic hydrology; at various times the site serves as a groundwater discharge area, and at other times, as a recharge area. The hydroperiod is variable enough to permit a broad array wetland adapted species. The site is mostly forested, but also has areas where woody vegetation is restricted, and thus herbaceous plants are dominant in some areas. In short, this ecological site has valuable wetland functions that help protect surface water and groundwater, and benefit wildlife.

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 2.1 plant community composition

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

Table 8. Community 2.2 plant community composition

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

Table 9. Community 3.1 plant community composition

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

Table 10. Community 3.2 plant community composition

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

Table 11. Community 4.1 plant community composition

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

Table 12. Community 4.2 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):**

   _____

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:**
