Attachment 9.

Ecological Land Classification as related to Lake Koshkonong

Wisconsin DNR's Division of Forestry uses an ecological land classification system based on the National Hierarchical Framework of Ecological Units (NHFEU). The structure of the NHFEU was developed by staff of the USDA-Forest Service, in cooperation with federal and state partners. The National Hierarchical Framework of Ecological Units (NHFEU) is a hierarchical ecological land classification system. Ecological units are identified and differentiated based on unique combinations of physical and biological characteristics, which may include climate, geology, geomorphology, soils, hydrology, or potential natural vegetation. Ecological units at each spatial scale are nested within the broader scales. Appropriate uses of ecological units vary by scale. The scales used by WDNR are **Province, Section, Subsection,** and **Landtype Association.**

Province: 222, Eastern Broadleaf Forest
The broadest spatial scale of the NHFEU used by WDNR is the Province level. Provinces are distinguished by climatic factors that control the distribution of biomes, such as solar radiation and continental precipitation patterns. Potential natural vegetation zones like those mapped by Kuchler often correspond with Province boundaries. Province 222, the Eastern Broadleaf Forest Province, includes southern Wisconsin as well as much of the central portion of the Eastern United States.

Section: 222K, Southwestern Great Lakes Moraino Section
Section-level ecological units are nested within Provinces. Sections are based primarily on climate and broad-scaled glacial or bedrock geology. Section boundaries in Wisconsin follow former glacial lobes of the Wisconsin glaciation, and also separate the Driftless Area.

Subsection: 222KE, Southern Green Bay Lobe Subsection
Subsection-level ecological units are nested within Sections. Subsections in Wisconsin are often based on associated groups of glacial features such as morainal systems. In the parts of the state not glaciated during the Wisconsin Ice Age, patterns of topography formed by erosion on different bedrock surfaces are the basis for differentiating Subsections.

Landtype Associations (LTA): 222Ke02 (East Johnstown-Milton Moraines) and **222Ke08 (Dane-Jefferson Drumlins and Lakes)** abut Lake Koshkonong. Landtype Associations (LTA's) are nested within Subsections. They are identified by surficial geology, patterns of vegetation, soil parent materials, and water tables. LTA's are mapped at a landscape scale (1:60,000 to 1:250,000). At the landscape scale, these ecological units are defined by general topography, geomorphic process, surficial geology, associations of soil families, and potential natural communities, patterns, and local climates (Forman and Godron 1986). These factors affect biotic distributions, hydrologic function, natural disturbance regimes, and general land use. Local landform patterns become apparent at this level in the hierarchy, and differences among units are usually obvious to on-the-ground observers. At this level, terrestrial features and processes may also have a strong influence on ecological characteristics of aquatic habitats.Most LTA's in the Lake States are between 10,000 and 300,000 acres in size. In Wisconsin, they are usually based on glacial features like individual moraines or outwash plains. LTA's that are formed in outwash sand are often infertile and droughty, and support vegetation adapted to these harsh conditions. LTA's on moraines have nutrient-rich, moist conditions, and vegetation adapted to a rich environment. These are groupings of landtypes or subdivisions of subsections based on similarities in geomorphic process, geologic rock types, soil complexes, stream types, lakes, wetlands, subseries or plant association vegetation communities. Repeatable patterns of soil complexes and plant communities are useful in delineating map units at this level. Names of Landtype Associations are often derived from geomorphic history and vegetation community.

The purpose of the classification is to distinguish land areas that differ from one another in ecological characteristics. A combination of physical and biological factors, such as climate, geology, topography, soils, water, and vegetation, are used to differentiate areas. These factors are known to control or influence biotic composition and ecological processes. Together, they provide a useful approximation of ecosystem potentials. Land areas identified and mapped in this manner are known as ecological units. Maps of ecological units can be developed at many spatial scales, depending on the needs of the user. The maps, along with information about the ecological units, convey information about land characteristics and capability.

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An important application of this information is in planning for future land uses. Understanding an area's ecological characteristics informs resource management decisions about vegetation composition and structure, wildlife species to feature, and desirable recreational uses

Note-SE Glacial Plains Ecological Landscape is used for WDNR planning purposes and is comprised of 222Ke (Southern Green Bay Lobe Subsection), and the following additional subsections:

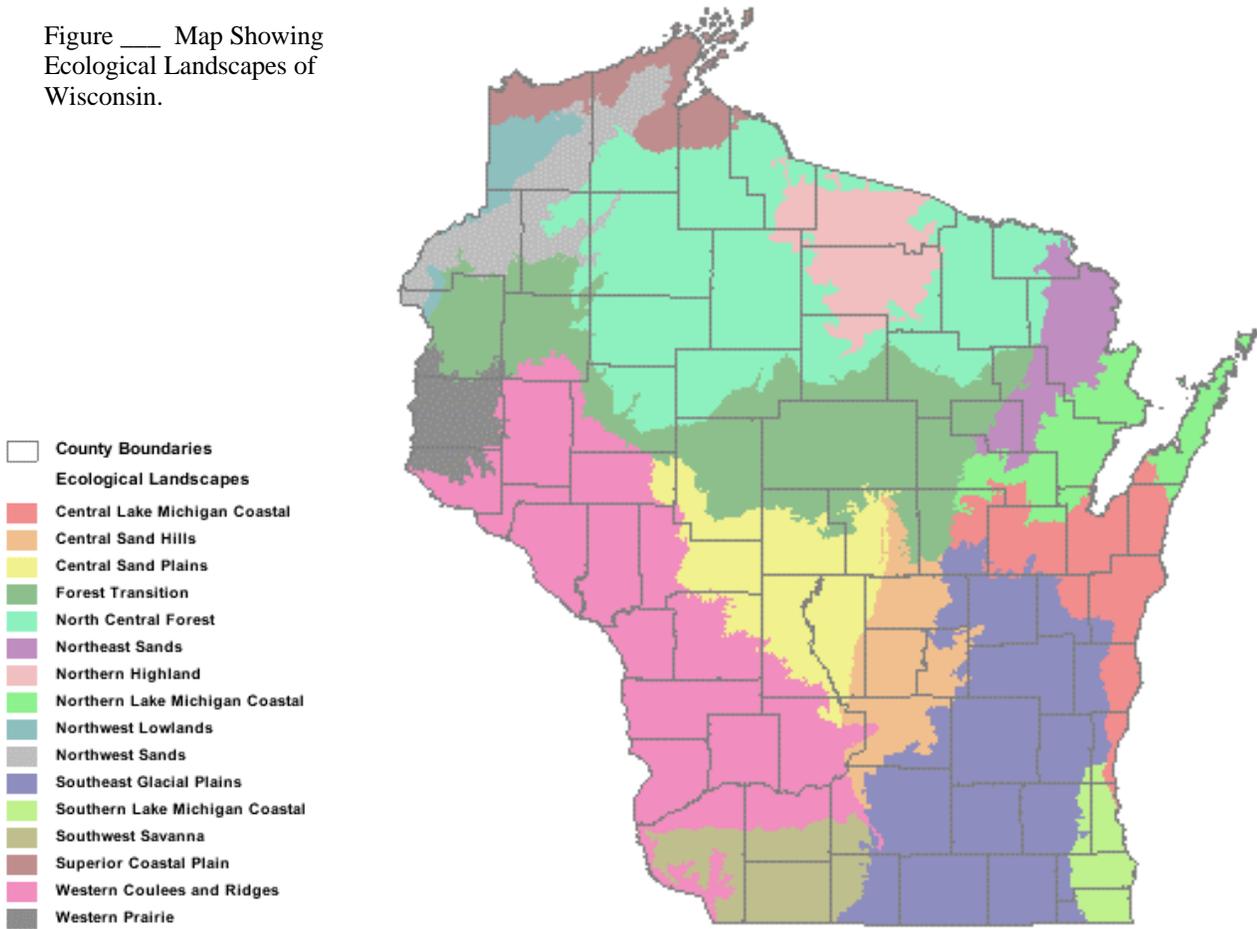**222Kc: Lake Winnebago Clay Plain** (49,276 acres, 6%)
Flat lake plains and ground moraines reworked by glacial lakes characterize this subsection, which extends into the northeastern part of the FRHE. Red clay soils dominate, and are high in carbonates because of the dolomitic rock that underlies the area. Sugar-maple basswood forests dominated this subsection prior to settlement, but oak openings and forests were common on the portion within the FRHE because of high fire frequency (Albert, 1995). Extensive wetlands and agriculture dominate the area today.

222Kh:

222Kf :

Figure__The heaviest line shows the division between Provinces, approximating the location of the Tension Zone. The line of medium thickness indicates Section boundaries. The thinner lines are Subsection boundaries.

Attachment 9.

Figure ____ Map Showing
Ecological Landscapes of
Wisconsin.

County Boundaries

Ecological Landscapes

- Central Lake Michigan Coastal
- Central Sand Hills
- Central Sand Plains
- Forest Transition
- North Central Forest
- Northeast Sands
- Northern Highland
- Northern Lake Michigan Coastal
- Northwest Lowlands
- Northwest Sands
- Southeast Glacial Plains
- Southern Lake Michigan Coastal
- Southwest Savanna
- Superior Coastal Plain
- Western Coulees and Ridges
- Western Prairie

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