Mapping out the future of resource management

The Minnesota Land Cover Classification System (MLCCS)

The Minnesota Land Cover Classification System is a relatively new tool that fills an important informational niche for natural resource managers and planners. Developed by the Minnesota Department of Natural Resources - Metro Region, in cooperation with other state, federal and local agencies, the system is unique in that it categorizes urban and built up areas in terms of land cover, rather than land use.

Development of the MLCCS began in 1998 during efforts to conduct a natural resource inventory and management plan for a portion of the Mississippi River corridor in the metro region. Existing data from aerial and satellite photos was too coarse and it was presented in terms of land use -- such as industrial, commercial, residential -- rather than land cover. Land use data offered little information about the amount or type of vegetation or the amount of artificial surfaces such as pavement covering a parcel of property. To address these shortcomings, the DNR convened a steering committee comprised of representatives from the National Park Service, the U.S. Fish and Wildlife Service, the Corps of Engineers, the Dakota Soil and Water Conservation District, Ramsey County Parks, Friends of the Mississippi River and Great River Greening. The group created a hybrid system incorporating the National Vegetation Classification System (NVCS) and the Minnesota Natural Heritage native plant community types, along with a cultural classification system to distinguish among different types and amounts of land cover, vegetation and impervious surfaces.

The classification system consists of five hierarchical levels. At the most general level, land cover is divided into either Natural/Semi-Natural cover types or Cultural cover types. The Natural/Semi-Natural classification system is a hybrid of the NVCS and the Minnesota Natural Heritage plant communities. The NVCS is used for Levels 1, 2 and 3 of the system (the coarser levels), while Levels 4 and 5 use the Minnesota Natural Heritage system to more explicitly identify plant community types.

> Level 1 - General growth patterns (e.g. forest, woodland, shrubland, etc.)
> Level 2 - Plant types (e.g. deciduous, coniferous, grasslands, forbs, etc.)
> Level 3 - Soil hydrology (e.g. upland, seasonally flooded, saturated, etc.)
> Level 4 -
> Level 5 - } Plant species composition, (e.g. floodplain forest, rich fen sedge, jack pine barrens, etc.)

The Cultural classification system is designed to identify built-up / vegetation patterns and an area's imperviousness to water infiltration. Most other land inventory classification systems, such as the USGS Anderson system, employ land use terminology (e.g. urban, commercial, residential). This system distinguishes among land cover types at the following levels of detail:

> Level 1 - Presence of built-up elements (i.e. built-up vs. cultivated land)
> Level 2 - Dominant vegetation (trees, shrubs, herbaceous)
> Level 3 - Plant type (deciduous, coniferous, etc.)
> Level 4 - Percent of impervious surface or soil hydrology
> Level 5 - Specific plant species

This cultural classification is unique in that it emphasizes vegetation land cover instead of land use, thus creating a land cover inventory especially useful for resource managers and planners.

For more information contact:

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Questions & Answers

Q: **What is the Minnesota Land Cover Classification System?**

A: A vegetation oriented classification system designed to identify natural and cultural land cover types using a standardized methodology.

Q: **Why was it created?**

A: During efforts to inventory and map remaining habitat in the Twin Cities metro Mississippi River corridor, it became evident that no existing classification system could supply the detailed land cover information needed to develop sound natural resource protection and restoration plans. The MLCCS was created to meet this specific need, then refined to make it applicable elsewhere in the metro region and Minnesota.

Q: **What does MLCCS do that other systems don't?**

A: The MLCCS is the only classification system in Minnesota that allows for true land cover classification of all lands within a project area. The MLCCS provides the ability to identify all lands in true land cover terms (rather than land use), regardless of ecological quality or function. Built-up areas are classified according to type and amount of vegetation, as well as the percentage of the area that consists of impervious surfaces.

Q: **What has it been used for?**

A: The MLCCS is flexible and can be customized through the use of modifiers, leading to its use for a variety of applications, including: greenways and open space planning, municipal comprehensive plans, natural resource inventories, hydrological and non-point source pollution calculations.

Q: **Who besides the DNR is using the MLCCS?**

A: The MLCCS is being used by a growing number of agencies and organizations, including: the U.S. Fish and Wildlife Service, soil and water conservation districts, watershed districts, parks departments, counties, and cities.
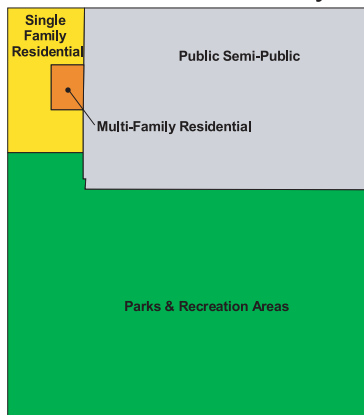
Q: **Is the MLCCS a state standard?**

A: It's not currently an official state standard, but it's gaining popularity among land managers. Mapping methodologies have been developed and the system is widely used throughout the metropolitan area.
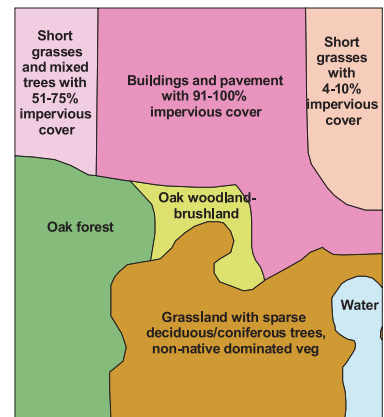
2000 aerial photograph

Land use inventory

Single Family Residential

Public Semi-Public

Multi-Family Residential

Parks & Recreation Areas

Metropolitan Council, 1997

MLCCS inventory

Short grasses and mixed trees with 51-75% impervious cover

Buildings and pavement with 91-100% impervious cover

Short grasses with 4-10% impervious cover

Oak woodland-brushland

Oak forest

Grassland with sparse deciduous/coniferous trees, non-native dominated veg

Water

National Park Service Mississippi National River & Recreation Area, DNR Metro Region and Great River Greening, 1999 - 2000