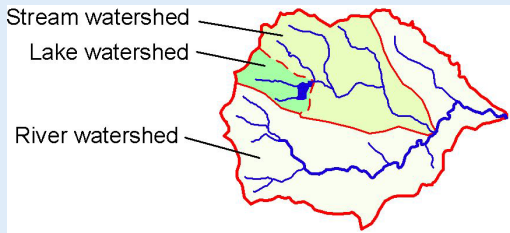


Mapping Watersheds in Minnesota



Definitions

A *watershed* or *drainage basin* is the area of land that drains water to a river, stream, or lake. Lake and stream watersheds are usually smaller components of river watersheds.



Lake Watershed Delineation Project

DNR Waters started the Lake Watershed Delineation Project in 1998 with support from state and federal entities: DNR Divisions of Fish and Wildlife, Legislative Commission on Minnesota Resources, U.S. Geological Survey, U.S. Fish and Wildlife Service, and Federal Emergency Management Agency.

There are two main objectives of this project. The first is to define watershed boundaries for all Minnesota lakes with a surface area of 100 acres or larger.

The second is to update and verify the existing statewide major and minor watershed delineations using geographic information system (GIS) technology.

Project Information

See new Watershed Website at www.dnr.state.mn.us/watersheds

- Detailed project description
- Project status map
- Project methodology

New Products

GIS data:

- Watershed boundaries
- Watershed outlet points
- Hydrologically corrected digital elevation model (DEM)
- DEM-generated flow network

Completed GIS data are available on the DNR Data Deli: <http://deli.dnr.state.mn.us/>

Why are watersheds important to Minnesotans?

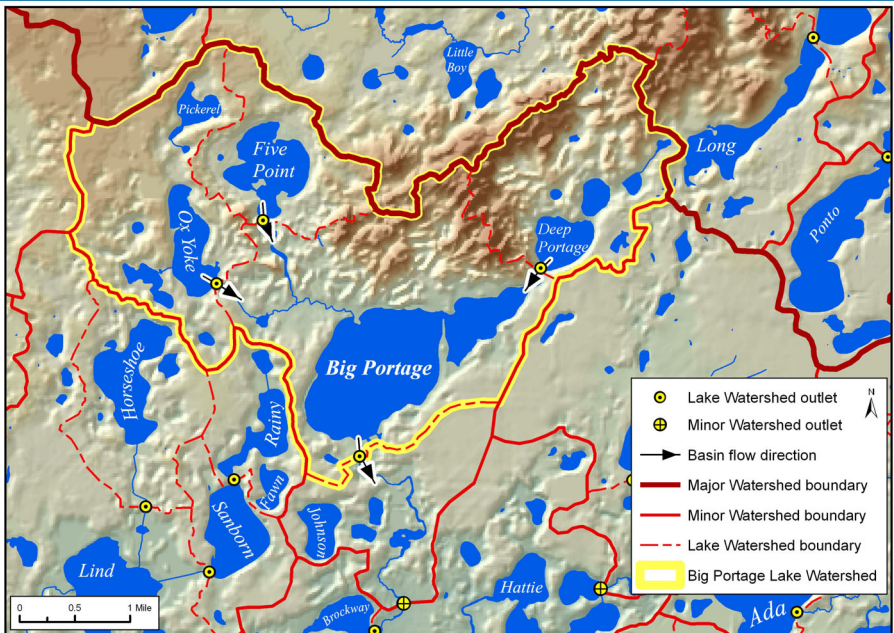
Minnesota's lakes and rivers are the pride of our state. They provide recreation opportunities, serenity, and habitat for fish and wildlife. To ensure the vitality of these waters, it is important to understand the connections between water and land. Being good land and water stewards improves the quality of life in Minnesota.



Every lake, river, and place in Minnesota is part of a watershed. Watersheds are areas defined by natural boundaries of topographic relief, not by political boundaries. What happens in a local watershed affects water quality and quantity not only in that watershed but also in downstream areas. Minnesota receives little water from outside our borders, but our water drains to many states and Canada. Protecting our water resources benefits Minnesota and other places downstream as well.

Lake and stream watersheds (see Big Portage Lake map, below) are the building blocks of larger river watersheds (see Pine River major watershed, next page) that eventually drain into the oceans.

The delineation of accurate lake watershed boundaries provides the information to help people understand where water moves and may affect other water resources downstream. In Minnesota, the Lake Watershed Delineation Project will provide the data and tools for hydrologic studies undertaken by local planners, watershed managers, consultants, biologists, and lake associations.



Watershed map of Big Portage Lake with smaller lakes that drain into it. Big Portage watershed is part of the Pine River major watershed shown on the next page.

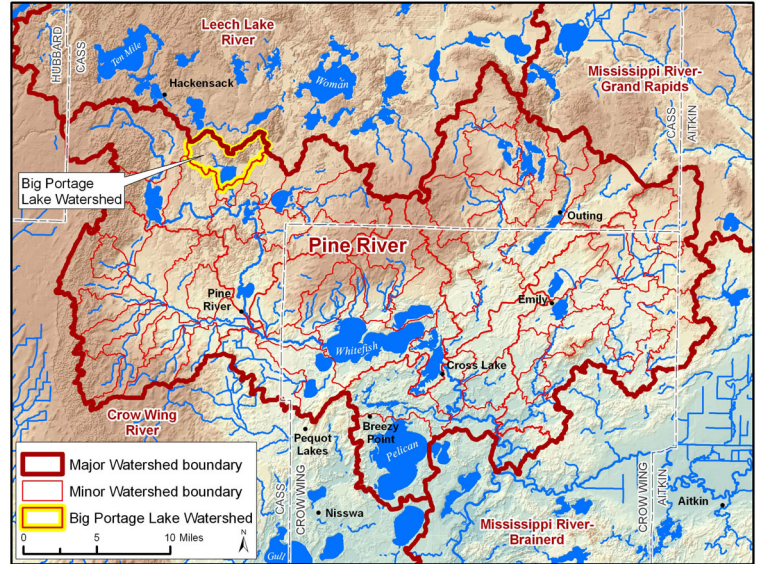
Mapping Watersheds in Minnesota

History of the Lake Watershed Project

In 1974, the U.S. Geological Survey delineated and published a map of 81 major watersheds, based on rivers, for the state of Minnesota. The DNR then delineated and published a map of 5,600 minor watersheds in 1979. These minor watersheds, based on lakes and streams, were subdivisions of the previously delineated major watersheds (see map at right).

The Lake Watershed Delineation Project, which began in 1998, augmented this watershed mapping effort. The impetus of the project was to use geographic information system (GIS) technology to delineate watersheds for all lakes in the state that have a surface area of 100 acres or larger—roughly 4,000 lakes. During this process, the major and minor watershed boundaries were also updated and verified.

Data from the Lake Watershed Delineation Project will be incorporated into a hierarchical classification system for watersheds called the Watershed Boundary Dataset (WBD).



Pine River major watershed and its minor watersheds.

The WBD (www.ncgc.nrcs.usda.gov/products/datasets/watershed) is an ongoing digital mapping project that provides standards for a nationwide data set. The standards include naming conventions, identification codes, and guidelines for matching watershed boundaries across state lines. Additionally, the availability of watershed boundaries in digital GIS format facilitates data sharing.

Data Improvements of the Lake Watershed Project

Using GIS, project staff now make more accurate delineation decisions by analyzing digital data, such as surface water features, topographic data, and aerial photography. Some of these data were unavailable during previous delineation efforts.

The new GIS data also are produced at a finer level of detail than the WBD or the 1979 minor watershed delineations. This finer detail makes the data applicable to projects from small to large scales. As a result, organizations of all sizes and interests from federal agencies to local watershed districts can work from a common data source.



Regional watershed hierarchy of the Watershed Boundary Dataset. The inset box identifies the Pine River major watershed, which is shown in detail at upper right.

DNR Contact Information



DNR Waters website lists Area Hydrologists:
www.dnr.state.mn.us/waters

DNR Waters in St. Paul:
500 Lafayette Road, Box 32
St. Paul, MN 55155
(651) 259-5700

DNR Information Center

Twin Cities: (651) 296-6157
Minnesota toll free: 1-888-646-6367
Telecommunication device for the deaf (TDD): (651) 296-5484
TDD toll free: 1-800-657-3929

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