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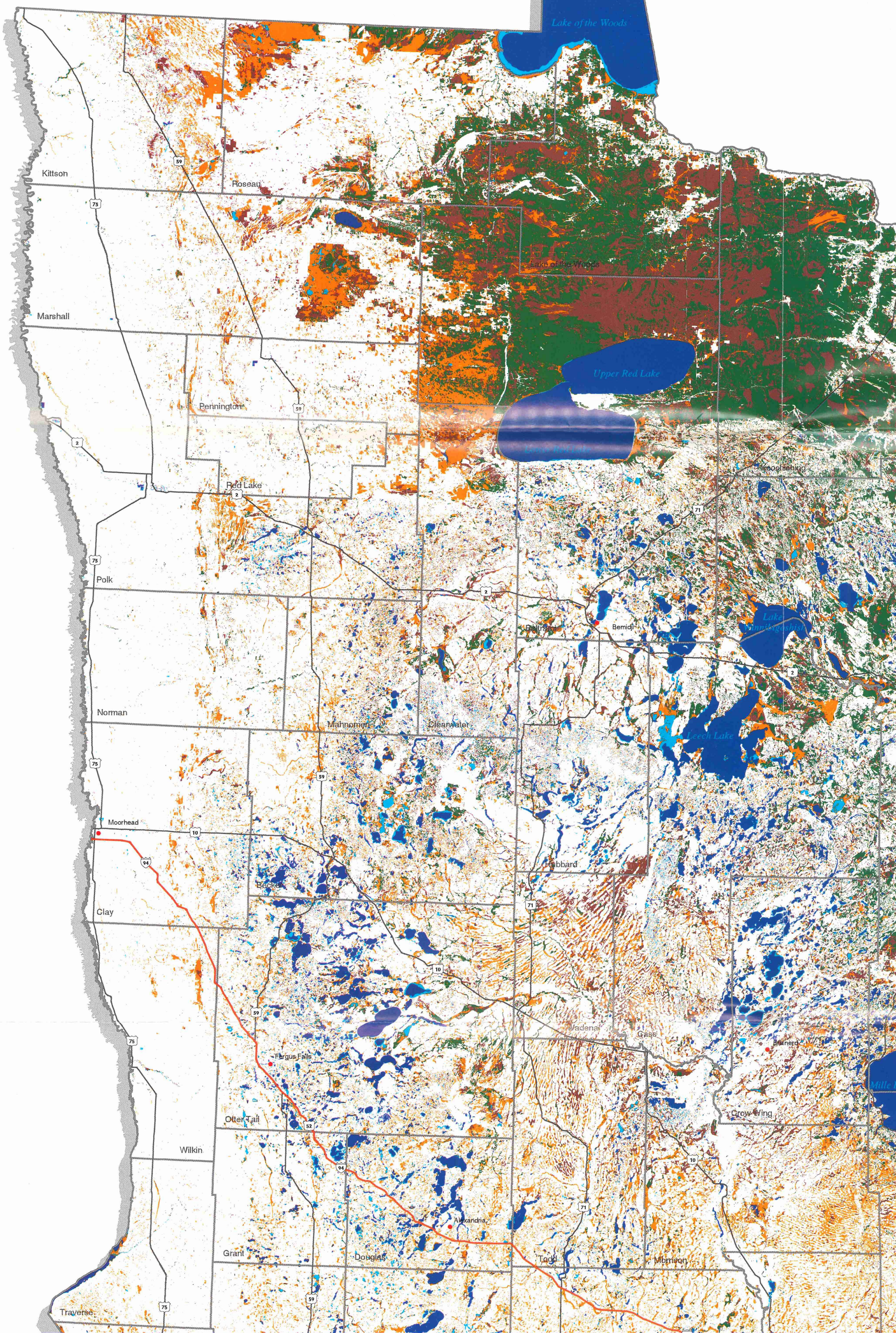

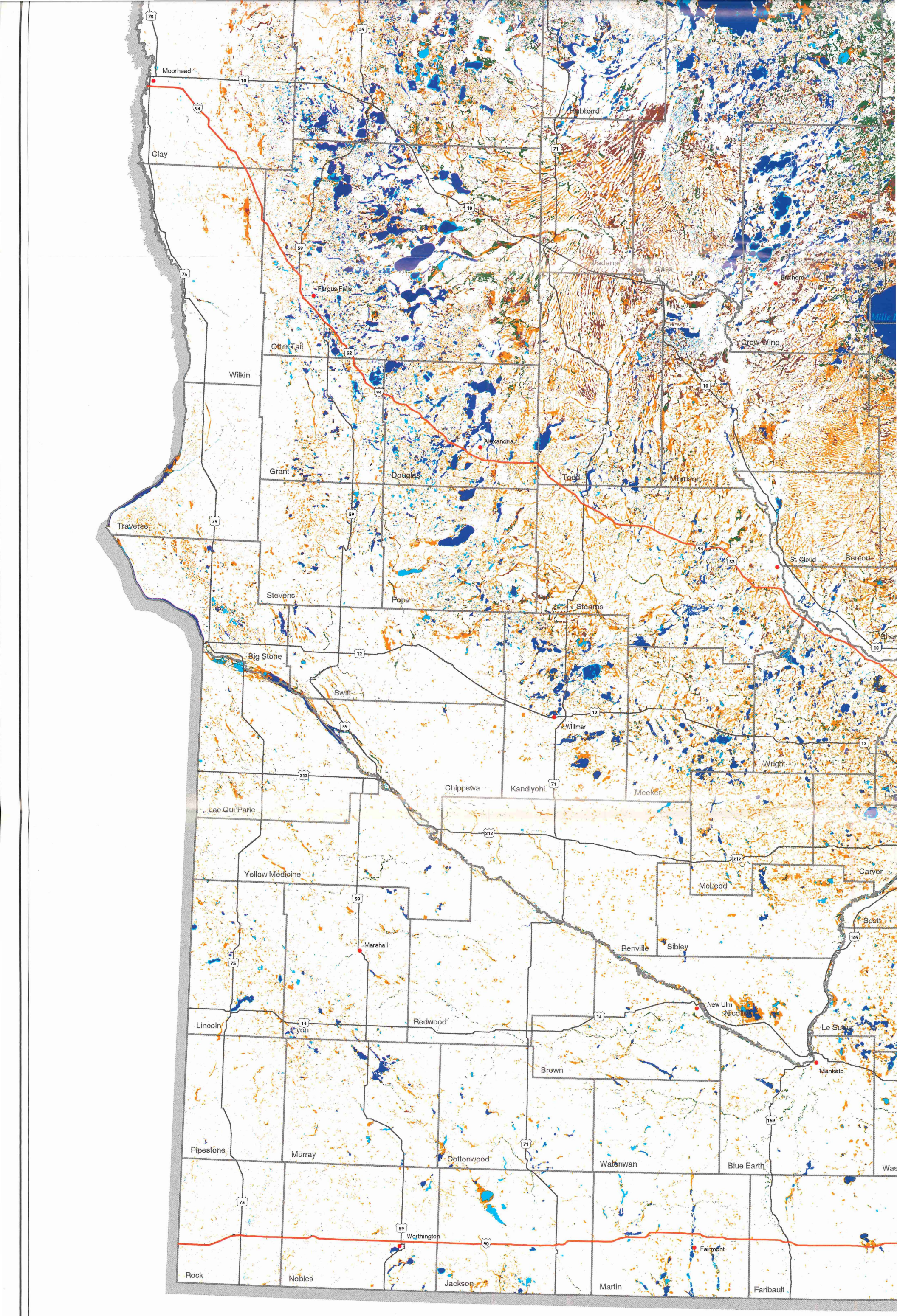
Moorhead
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Morrison
Traverse
St. Cloud
Benton
Stevens
Pope
Stearns
Big Stone
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Willmar
Wright
Chippewa
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Meeker
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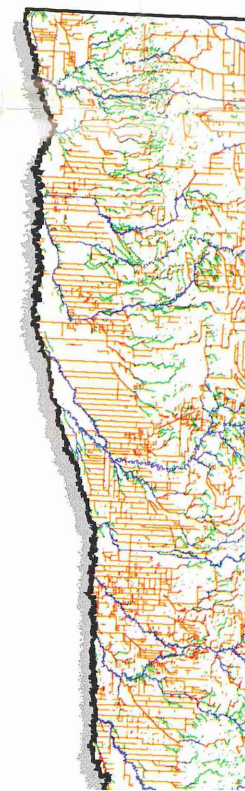
Lincoln
Lyon
Redwood
Brown
Mankato
Pipestone
Murray
Cottonwood
Watonwan
Blue Earth
Worthington
Fairmont
Rock
Nobles
Jackson
Martin
Faribault

Minnesota Wetlands and S

Minnesota has more than 15,000 lakes, 90,000 miles of rivers and streams, and over 10 million acres of wetlands including peatlands, marshes, sloughs, brushy swamps, forested lowlands, and wet meadows. Wetlands are lands transitional between uplands and aquat habitats where the water table is usually at or near the soil surface, or where the land is c by shallow water. Wetlands must have a predominance of water-oriented soils and under circumstances support specific vegetation adapted to such conditions. They are valuable resources because of their important functions, which include flood control, filtration of pollutants, fish and wildlife habitat, recreational opportunities, and scenic values.



Minnesota Wetlands

Symbol	Wetland Type	Acres (in 100,000s)	Percent of total state land area
	Emergent habitats	29.23	5.4
	Scrub-shrub habitats	28.40	5.3
	Forested habitats	43.51	8.1

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	Forested habitats	43.51	8.1
	Deepwater habitats (lakes)	25.06	4.7
	Shallow water habitats (lakes)	4.93	0.9
	Totals	131.13	24.4

County boundary
Interstate highways
U.S. Trunk highways
Cities >5000 population

Minnesota's wetlands fit into one of three major classifications: vegetation-dominated habitats (palustrine), open-water habitats (lacustrine), or some type of stream or channel (riverine).

Types of vegetation-dominated (palustrine) wetlands are:

- **Emergent habitats** - with plants such as grasses, cattails, bulrushes, or sedges
- **Scrub-shrub habitats** - with woody shrubs less than 20 feet tall, such as alder, willow, dogwood, black spruce, or tamarack
- **Forested habitats** - with trees larger than 20 feet tall, such as ash, silver maple, black willow, black spruce, tamarack, or northern white cedar

Types of open-water (lacustrine) wetlands are:

- **Deepwater habitats or lakes** - with water depths greater than 6 feet and lack of aquatic surface vegetation
- **Shallow water habitats or lakes** - with water depths less than 6 feet and presence of aquatic surface vegetation, such as water lilies, pondweeds, duckweed, reeds, or wild rice

AND SURFACE WATER RESOU

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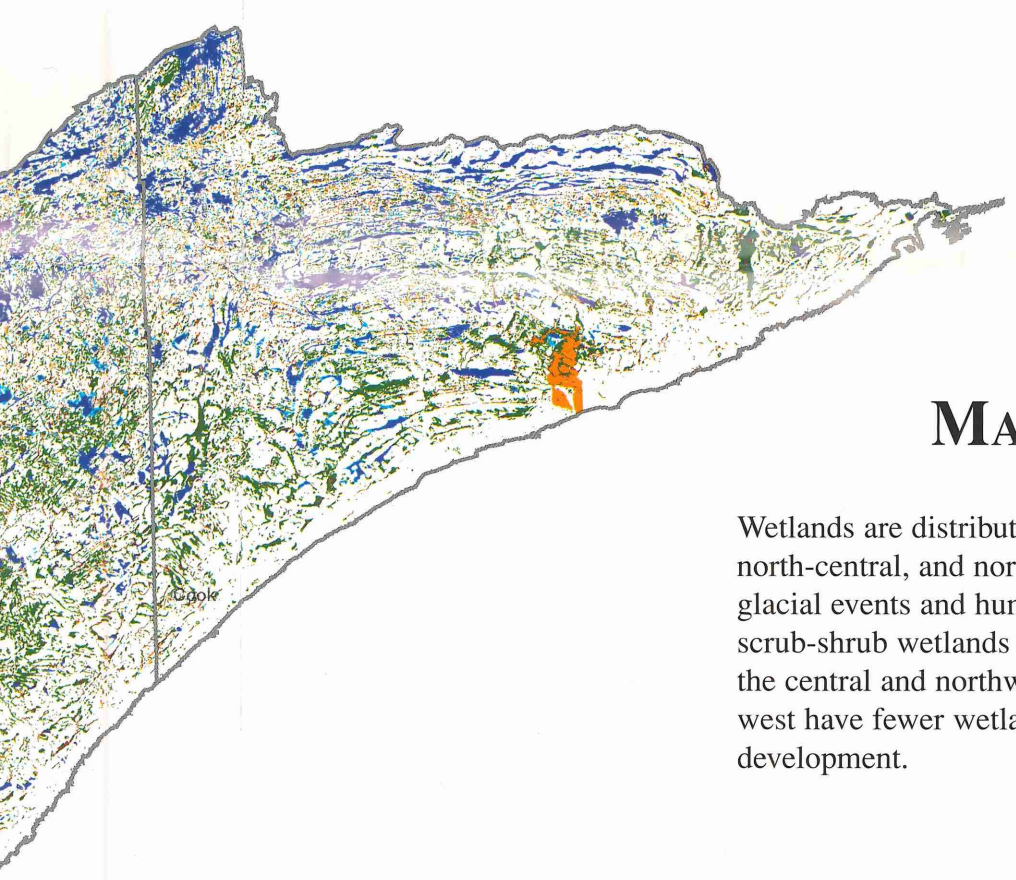
Minnesota is nationally recognized for establishing a no-net-loss policy for wetlands. Local governments and leading state agencies of the Minnesota Department of Natural Resources and Board of Water and Soil Resources, along with federal agencies, are implementing programs aimed at protecting existing wetlands and restoring wetlands. Restoration of wetland functions will benefit existing water and land resources of the state, as well as improve associated uses for humans and wildlife.

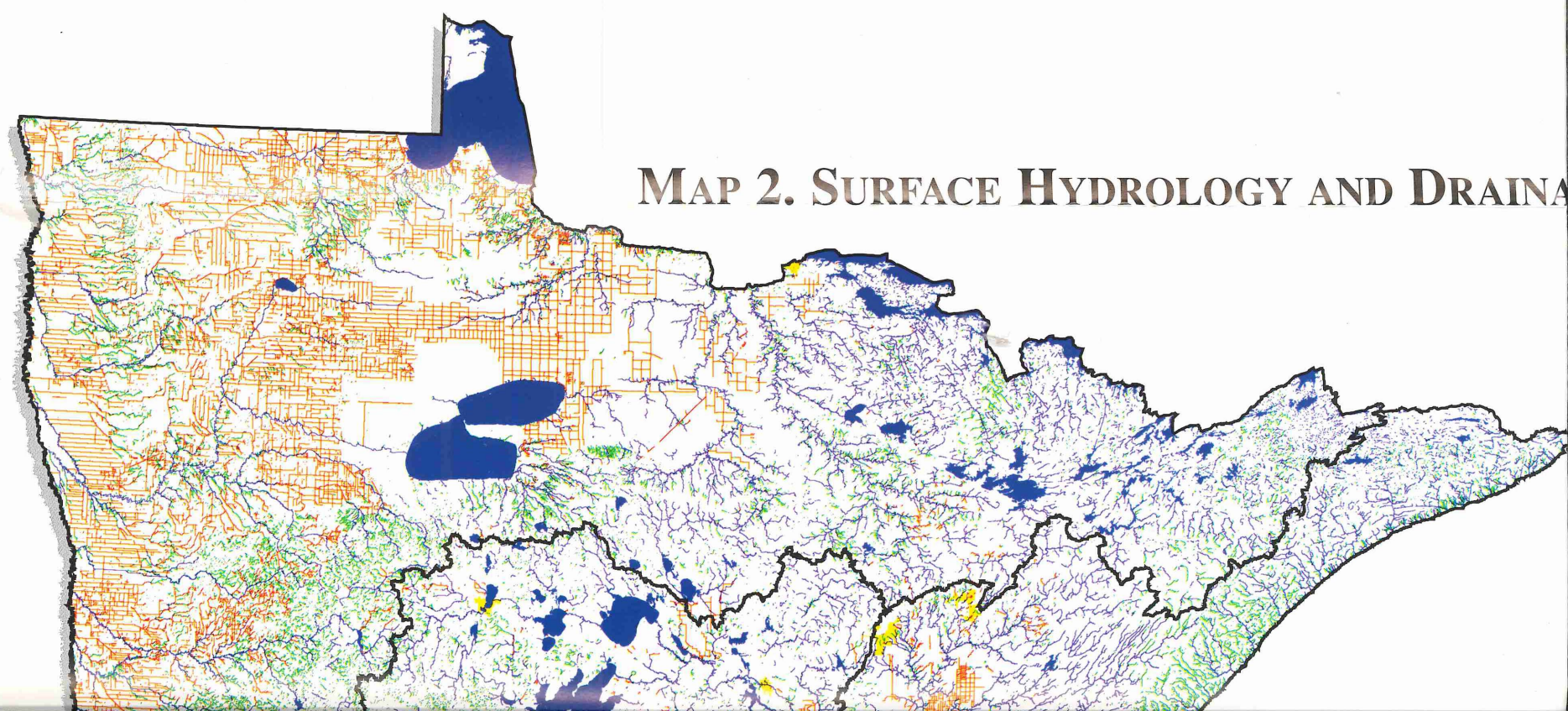
The present diversity and distribution of Minnesota wetlands (Map 1) a
related to the surface hydrology of the state (Map 2) as influenced by t
formed by past geologic and glacial events (Map 3). Human settlement
caused large losses of wetlands since pre-settlement times (Map 4).



MAP 1. MINNESOTA WETLANDS

Wetlands are distributed throughout Minnesota, with the greatest density occurring in the central, north-central, and northeastern portions of the state. This distribution has been shaped by past glacial events and human activities during the last 150 years. Heavy concentrations of forested and scrub-shrub wetlands exist in the north and northeast, while emergent wetlands are found mostly in the central and northwestern regions. The southern third of the state and the Red River Valley in the west have fewer wetlands due to artificial drainage of the landscape largely for agricultural development.

0 5 10 15 20 25 30 35 40 45 50
MILES

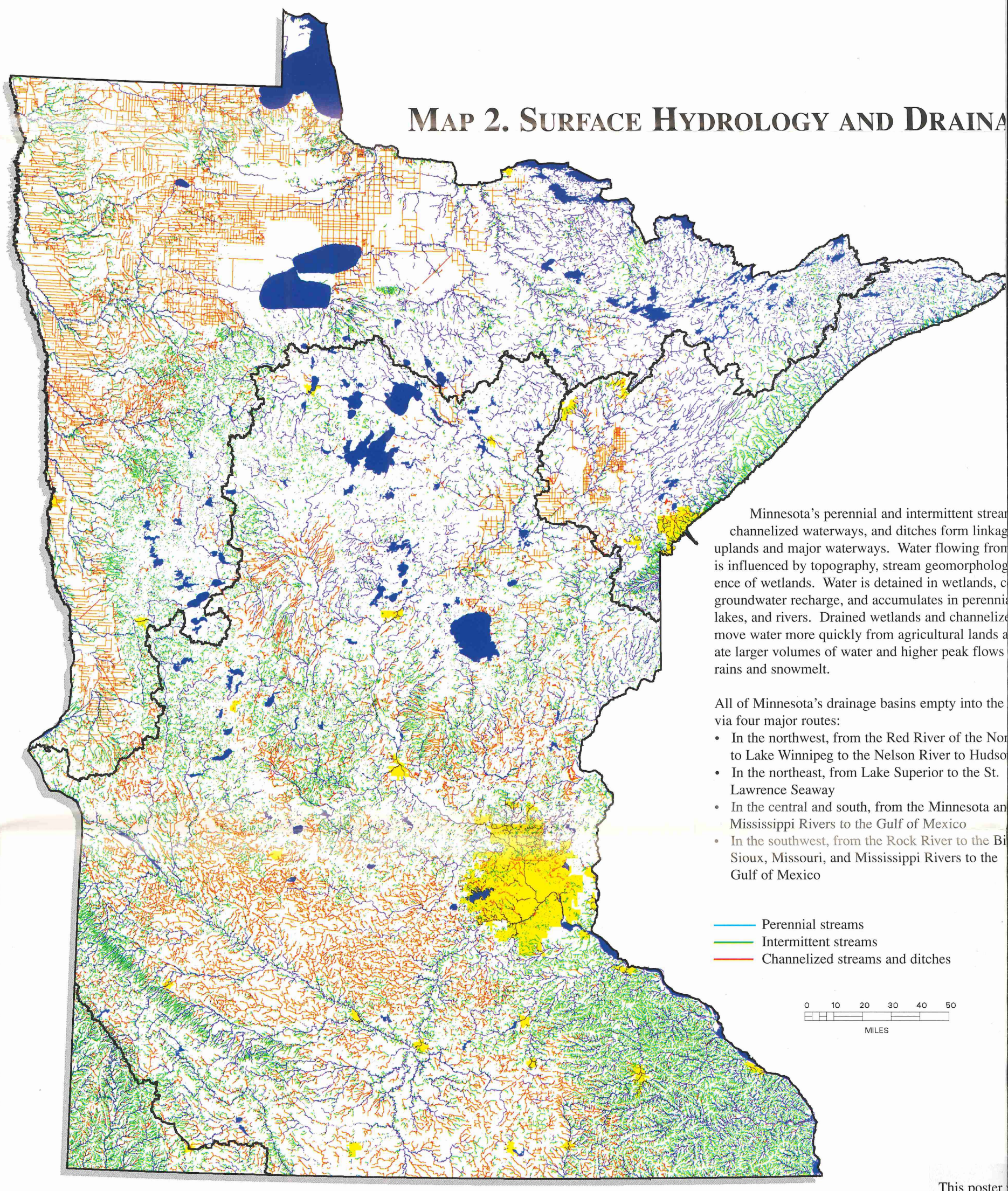


MAP 2. SURFACE HYDROLOGY AND DRAINA

ANDS

	Percent of total state land area
	5.4
	5.3

Map 2. Surface Hydrology and Draina



Minnesota's perennial and intermittent strea
channelized waterways, and ditches form linkag
uplands and major waterways. Water flowing from
is influenced by topography, stream geomorpholog
ence of wetlands. Water is detained in wetlands, c
groundwater recharge, and accumulates in perennia
lakes, and rivers. Drained wetlands and channelize
move water more quickly from agricultural lands a
ate larger volumes of water and higher peak flows
rains and snowmelt.

All of Minnesota's drainage basins empty into the
via four major routes:

- In the northwest, from the Red River of the Nor to Lake Winnipeg to the Nelson River to Hudso
- In the northeast, from Lake Superior to the St. Lawrence Seaway
- In the central and south, from the Minnesota an Mississippi Rivers to the Gulf of Mexico
- In the southwest, from the Rock River to the Bi Sioux, Missouri, and Mississippi Rivers to the Gulf of Mexico

Perennial streams
Intermittent streams
Channelized streams and ditches

Lakes > 5,000 acres
Urban Areas >10,000 population
Regional watershed divides

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ANDS

	Percent of total state land area
	5.4
	5.3
	8.1
	4.7
	0.9
	24.4

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000 population

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bitats (lacustrine),

tails, bulrushes, or

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such as ash,
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Human settlement activity has
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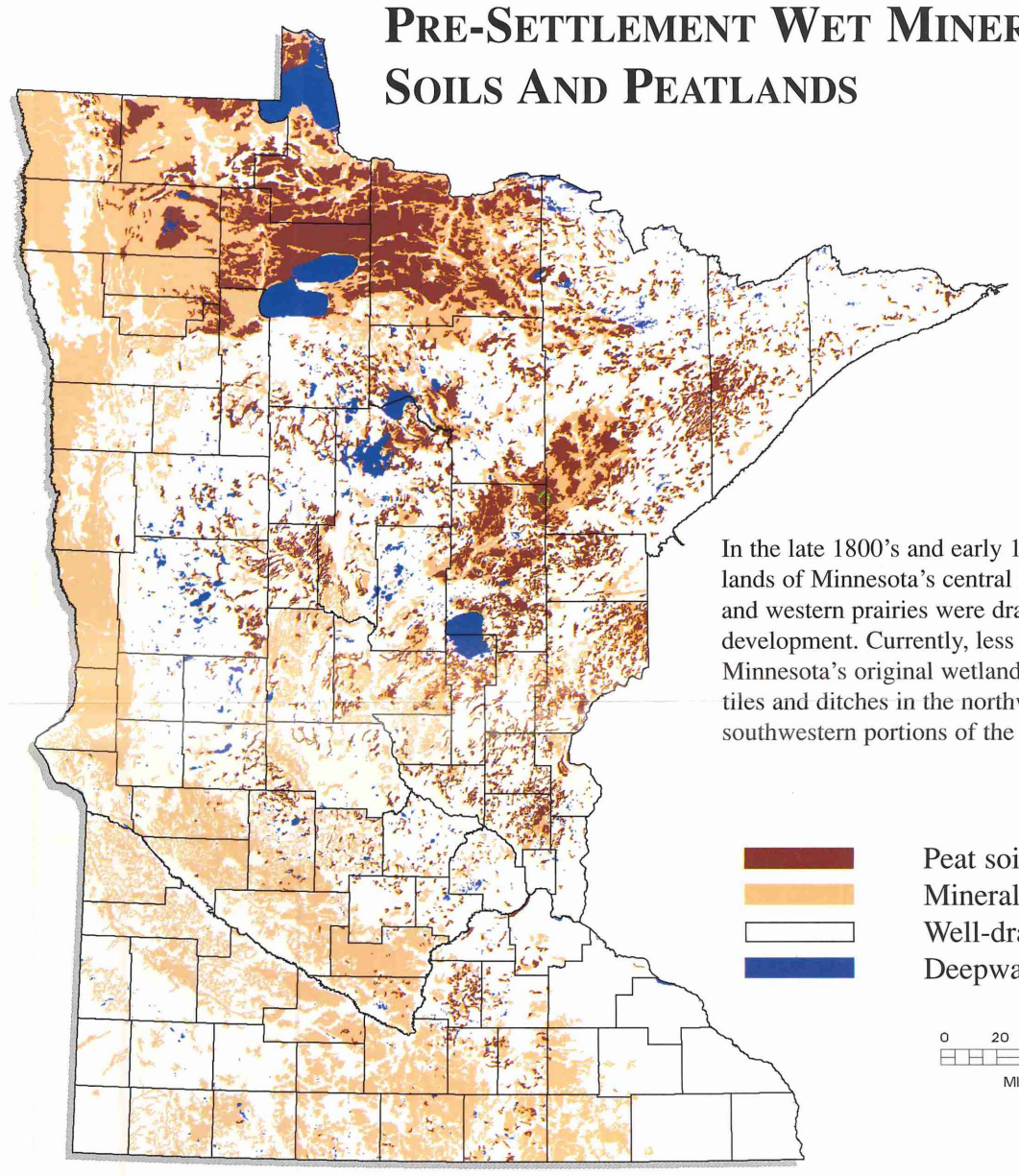
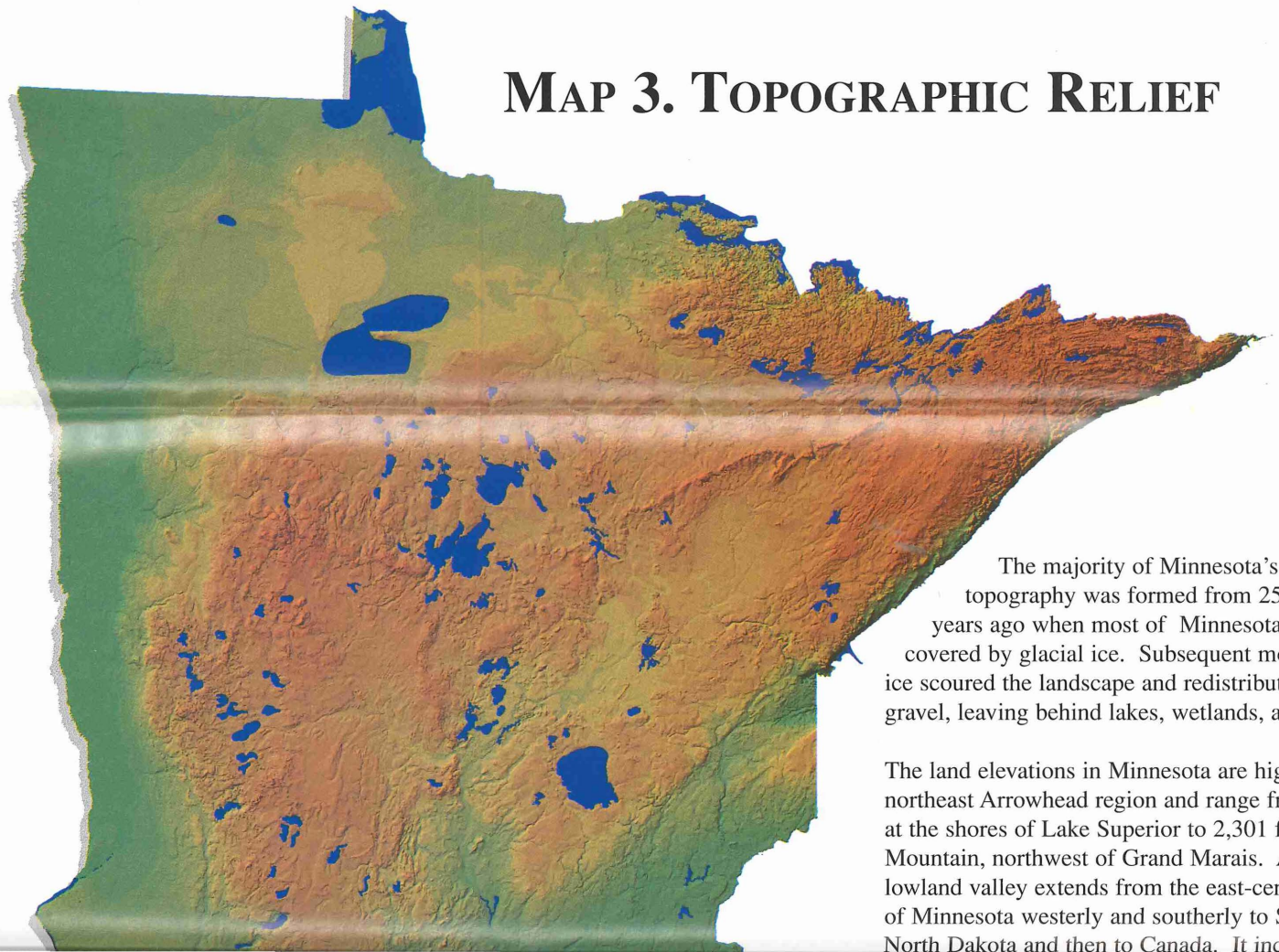
Map 4.
Pre-Settlement Wet Mineral Soils And Peatlands



In the late 1800's and early 1900's, many wetlands of Minnesota's central forests and southern and western prairies were drained for agricultural development. Currently, less than half of Minnesota's original wetlands remain due to drain tiles and ditches in the northwestern, western, and southwestern portions of the state.

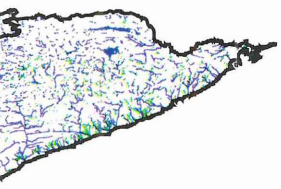
Map 3. Topographic Relief



The majority of Minnesota's present-day topography was formed from 25,000-10,000 years ago when most of Minnesota was covered by glacial ice. Subsequent movements of ice scoured the landscape and redistributed soils and gravel, leaving behind lakes, wetlands, and rivers.

The land elevations in Minnesota are highest in the northeast Arrowhead region and range from 602 feet at the shores of Lake Superior to 2,301 feet at Eagle Mountain, northwest of Grand Marais. A broad, lowland valley extends from the east-central region of Minnesota westerly and southerly to South and North Dakota and then to Canada. It includes the

D Drainage



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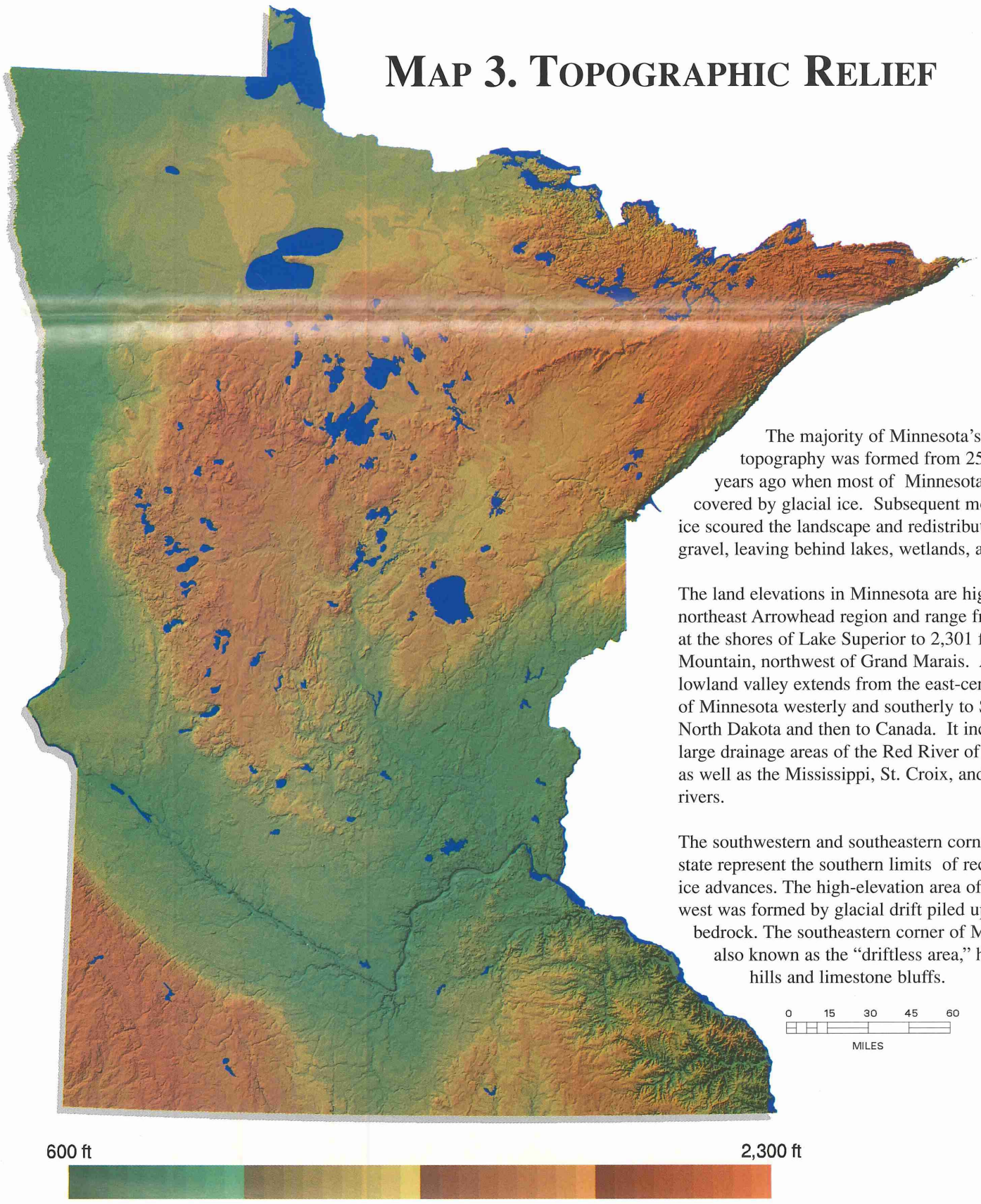

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The southwestern and southeastern corners of the state represent the southern limits of recent glacial ice advances. The high-elevation area of the southwest was formed by glacial drift piled upon deep bedrock. The southeastern corner of Minnesota, also known as the "driftless area," has rolling hills and limestone bluffs.

Sources of National Wetlands Inventory (NWI) data:

- Digital data are available from Minnesota's Land Management Information Center (LMIC) at Minnesota Planning, 658 Cedar Street, 330 Centennial Building, St. Paul, MN 55155, Tel. (612)-296-1211 or via Internet at http://www.lmic.state.mn.us.
- Paper maps are available from Minnesota's Bookstore, 117 University Avenue, St. Paul, MN 55155; Tel. (612)-297-3000 or (800)-657-3757 or via Internet at http://www.comm.media.state.mn.us.
- Additional NWI information are at: U.S. Fish and Wildlife Service, 9720 Executive Center Drive, Monroe Building, Suite 101, St. Petersburg, FL 33702; Tel. (813)-570-5412 or via Internet at http://www.nwi.fws.gov.
- National Wetlands Inventory Classification Reference, see: Cowardin, Lewis M., Virginia Carter, Francis C. Golet, and Edward T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. USDI Fish and Wildlife Service, Office of Biological Services FWS/OBS-79/31. 131 pages.
- Other references available upon request from the Minnesota Department of Natural Resources. Contact via Internet at http://www.dnr.state.mn.us or call the Division of Waters at Tel. (612)-296-4800.

This poster was funded by grant CD 99592501 104(d) Wetlands Planning Grant from the Environmental Protection Agency (EPA). The following staff (listed in alphabetical order) worked on this project: from the Minnesota Department of Natural Resources Division of Waters — Erv Berglund, Lyn Bergquist, Bruce Gerbig, Joe Gibson, J.D. Lehr, Tim Loesch, and Glenn Radde; from Minnesota Planning's Land Management Information Center — Norman Anderson and John Hoshal; and from the University of Minnesota — Roderick Squires.

These maps were compiled and generated using geographic information systems (GIS) technology from publicly available information. Every reasonable effort has been made to ensure the accuracy of the factual data on which this poster is based. However, the Department of Natural Resources does not warrant the accuracy, completeness, or any implied uses of these data. Every effort has been made to ensure the interpretation shown conforms to sound hydrologic and cartographic principles. Digital data products are available from the Land Management Information Center, Minnesota Planning Office, St. Paul.

The DNR Information Center
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(612) 296-5484
MN Toll Free: 1-800-657-3929

This information is available in an alternative format upon request.

NOTE:

Call: 612·296·4800

Available from the DNR, Division of Waters, is a set of 4 data CD-ROMs, "Minnesota's Wetland Resources: NWI 7.5 minute and County Shapefiles."