

# MnModel Prehistoric Hydrographic Model, Minnesota

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## Section 1: Overview

**Originator:** Minnesota Department of Transportation and the Minnesota State University, Mankato

**Title:** MnModel Prehistoric Hydrographic Model, Minnesota

**Abstract:** The Prehistorical Hydrographic Model (PREHYD) raster feature dataset was developed as a model of prehistoric surface hydrographic features in Minnesota.

**Purpose:** The purpose of this dataset is for use deriving variables for predicting archaeological site locations in Mn/Model Phase 4 (Mn/Model4).

This dataset is best suited for general reference only. It is not suitable for precise land measurements or ground surveys.

For more information please visit MnModel's website: <https://www.dot.state.mn.us/mnmodel/index.html>

**Time Period of Content Date:**

**Currentness Reference:** Estimated from about 10,000 BP to the time of the Public Land Survey in Minnesota (1848-1907). gSSURGO data for 2017 were used. PREHYD was created in 2018.

**Progress:** Complete

**Maintenance and Update Frequency:** None Planned

**Spatial Extent of Data:** Minnesota

**Bounding Coordinates:**-97.508970  
-89.028990  
49.652543  
43.192405

**Place Keywords:** Minnesota

**Theme Keywords:** Water, Inland Waters, Prehistoric Surface Hydrography, Prehistoric Wetlands, Prehistoric Landscape, Mn/Model4, MnModel

**Theme Keyword Thesaurus:** ISO 19115 Topic Category

**Access Constraints:** None

**Use Constraints:** PREHYD is a model, based on historic maps combined with modern soils and geomorphic data. At best, it indicates approximate potential surface hydrography in prehistoric times. The features mapped may not have all been present at the same time in the past.

This dataset is best suited for general reference only. It is not suitable for precise land measurements or ground surveys.

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**Browse Graphic:** [Click to view a data sample.](#)

**Associated Data Sets:** Mn/Model4, MnModel, MnModel Phase 4 Historic Vegetation Model (VEGMOD), MnModel Phase 4 Historic Hydrographic Model (HISTHYD), MnModel Phase 4 Landscape Model (LANDMOD). Original Public Land Survey Plats of Minnesota, gSSURGO Soils.

For more information please visit MnModel's website: <https://www.dot.state.mn.us/mnmodel/index.html>

## Section 2: Data Quality

**Attribute Accuracy:** This dataset is best suited for general reference only. It is not suitable for precise land measurements or ground surveys.

**Logical Consistency:** Data have been topologically structured and verified.

**Completeness:** Complete for Minnesota

**Horizontal Positional Accuracy:** Unknown. Input data source scales vary from 1:20,000 (gSSURGO) to 1:100,000 (DNR geomorphic data). The map scale of the Public Land Survey plat maps, from which many lake boundaries were derived, is not reported. This is a model, and is intended for general reference only.

**Lineage:** In 2008, MnDOT and the University of Minnesota developed methods to model prehistoric surface hydrography from modern hydrographic data and soils data (Stark et al. 2008). In 2012, MnDOT began digitizing the Public Land Survey plat maps that had been georeferenced. Most lake outlines on these maps are relatively accurate, since they were meandered, but the wetland outlines are rather imaginative. The MnModel Phase 4 Landscape Model (LANDMOD) was another source of information, as it is a compilation of the best digital geomorphic data currently available for the state. Finally, soils showing evidence of past saturation for long periods were extracted from gSSURGO data (Stark et al. 2008), as were lake beds, floodplains, and shorelines.

The resulting prehistoric hydrographic model is a composite of the following:

- Lake outlines from the Public Land Survey plat maps.
- Additional lake outlines from modern data if the lake did not intersect a section line, was coded in the data source as a natural lake, and did not otherwise appear to be artificial or impounded.
- Additional lake outlines from lakebeds mapped in LANDMOD and gSSURGO.
- Shores (beaches) from LANDMOD and gSSURGO.
- Floodplains from LANDMOD and gSSURGO.
- Wetlands from gSSURGO soil indicators.

The model is based on the following assumptions:

- Modern and historic natural lakes were also present prehistorically.
- Additional prehistoric lakes may be identified by basin and soil characteristics and are mapped in the available geomorphic and soils data.
- River channels change constantly; floodplains are better indicators of river activity over time.
- Modern and historic floodplains were probably floodplains prehistorically; additional prehistoric floodplains can be identified from geomorphic and soils mapping.
- Beaches can be identified from geomorphic and soils mapping, even though there may no longer be a water feature associated with them.
- Long-term wetlands leave signatures in the soil that can be identified long after the wetland dries out or is drained (Stark et al. 2008).

### Section 3: Spatial Data Organization (not used in this metadata)

### Section 4: Coordinate System

**Horizontal Coordinate Scheme:** Universal Transverse Mercator

**UTM Zone Number:** 15

**Horizontal Datum:** NAD83

**Horizontal Units:** meters

**Vertical Datum:** not applicable

**Vertical Units:**

**Depth Datum:** not applicable

**Depth Units:**

**Cell Width:** 10

**Cell Height:** 10

## Section 5: Attributes

**Overview:** Prehistoric Hydrographic Model

**Detailed Citation:**

**Table Detail:** Prehistoric Hydrographic Model

Field Name	Valid Values	Definition
OBJECTID	-	Unique record identifier.
Value	-	Numeric code per hydrographic feature.
Count	-	Number of cells containing class value.
Model_value	-	Description of hydrographic feature.

Field Name	Valid Values	Definition
Model_Value	-	Unique class value per hydrographic feature
999	-	NoData
100	-	Lake
110	-	Shore
150	-	Wetland
280	-	Floodplain
290	-	Swamp

## Section 6: Distribution

**Publisher:** Minnesota Department of Transportation and Minnesota State University, Mankato

**Publication Date:** 08/28/2019

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**Distributor's Data Set Identifier:** Mn/Model4 Prehistoric Hydrographic Model (PREHYD)

**Distribution Liability:** USE OF THIS DOCUMENT IS SUBJECT TO MNDOT'S DISCLAIMERS, LEGAL NOTICES AND POLICIES FOUND at <http://www.dot.state.mn.us/information/disclaimer.html>

**Ordering Instructions:** Please visit the download page for this dataset on the Minnesota Geospatial Commons website using the web link below (Online Linkage).

The following citation is suggested for reference: Minnesota Department of Transportation. Mn/Model4: Prehistoric Hydrographic Model. Saint Paul, MN.: Cultural Resources Unit, Office of Environmental Stewardship, 2018.

**Online Linkage:** [I AGREE](#) to the notice in "Distribution Liability" above. Clicking to agree will either begin the download process, link to a service, or provide more instructions. See "Ordering Instructions" above for details.

## Section 7: Metadata Reference

**Metadata Date:** 09/03/2019

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**Metadata Standard Name:** Minnesota Geographic Metadata Guidelines

**Metadata Standard Version:** 1.2

**Metadata Standard Online Linkage:**

<http://www.mngeo.state.mn.us/committee/standards/mgmg/metadata.htm>

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