

MnModel Historical Hydrographic Model, Minnesota

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Section 1: Overview

Originator: Minnesota Department of Transportation

Title: MnModel Historical Hydrographic Model, Minnesota

Abstract: The Historical Hydrographic Model (HISTHYD) raster feature dataset was developed as a model of surface hydrographic features at the time of the Public Land Survey 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: 2011-2017

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, Historic Surface Hydrography, Historic Wetlands, Historic Landscape, Public Land Survey, Mn/Model4, MnModel

Theme Keyword Thesaurus: ISO 19115 Topic Category

Access Constraints: None

Use Constraints: 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 Prehistoric Hydrographic Model (PREHYD), MnModel Phase 4 Landscape Model (LANDMOD). Original Public Land Survey Plats of Minnesota, Original Land Survey Bearing Trees, PLS Corners with Presettlement

Vegetation Information, 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: HISTHYD is a model, based on historic maps and interpreted historic data combined with statistical modeling using modern soils, geomorphic, and terrain data. At best, it indicates approximate potential surface hydrography at the time of the Public Land Survey.

Logical Consistency: Data have been topologically structured and verified.

Completeness: Complete for Minnesota

Horizontal Positional Accuracy: Input data source scales vary from 1:20,000 (gSSURGO) to 1:24,000 (locations of section corners and survey lines to which surveyor's observations were attached). 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 as such the dataset is not intended for legal land survey use, and is best suited for general reference.

Lineage: In 2008, MnDOT and the University of Minnesota, Duluth, developed methods to model historic surface hydrography from modern hydrographic data and soils data (Stark et al. 2008). At that time we explored the use of polygons from Public Land Survey Plat maps, but these had not yet been georeferenced or digitized for the state.

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. In addition to the plat maps, surveyors' line notes indicate where wetlands were encountered. Data from these notes were available from DNR as points at section and quarter-section corners for nearly the entire state. Additional data, including transcription of the original notes, were available from DNR as lines for the northern half of the state. The point and line data proved to be more accurate and detailed than the digitized

polygons. These were interpreted to apply a detailed, standardized vegetation classification system and used to develop a statistical model of historic vegetation (VEGMOD).

MnDOT evaluated several sources of updated modern surface hydrographic data (National Wetlands Inventory, MnDNR Surface Water, National Hydrographic Dataset, MnPCA Altered Watercourses) as sources for the model. MnDOT determined that the MnModel Historic Vegetation model (VEGMOD) provided both wetland vegetation types and wetland boundaries that were more consistent with the Public Land Survey source data than were any of the modern data sources.

The resulting historic 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.
- River outlines (large rivers) from modern data, provided the modern river was not impounded, ditched, or relocated.
- River outlines (large rivers) from Public Land Survey plat maps, provided the historic river was surveyed or to replace modern rivers that are impounded, ditched, or relocated.
- Wetlands from the MnModel Historic Vegetation Model (VEGMOD). Areas mapped simply as WET LAND were designated as LAKE or RIVER by the vegetation model but are outside of historic lake/river outlines as documented by the Public Land Survey. Some of these areas are within modern reservoir basins.
- Historic floodplains from LANDMOD and gSSURGO. Areas mapped as FLOODPLAIN are floodplains lacking other wetland types.

Users should be aware that wetland types are based on a statistical model and are more accurate for dominant types (for example, marshes in southern Minnesota and conifer swamps in northern Minnesota) than for less dominant types. For this reason, wetlands were generalized in this model to larger categories to increase the level of certainty. Also, the terms surveyors used were often imprecise and may be the source of much error. Bogs may have been more extensive historically, but surveyors may have called them 'swamps.' Where available, bearing tree data were used to help with classification. However, this cannot help distinguish conifer swamps from bogs. The category 'Wet Meadow/Fen' was used when surveyors described 'meadow' or 'wet prairie'.

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: Historic Hydrographic Model

Detailed Citation:

Table Detail: Historical Hydrographic Model

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

Table Detail: Model Values for Hydrographic Features

Field Name	Valid Values	Definition
Model_Value	-	Unique class value per hydrographic feature
999	-	NoData
100	-	Lake
150	-	Wetland
200	-	River
210	-	Bog
230	-	Marsh
240	-	Floodplain Forest
270	-	Wet Meadow/Fen
280	-	Floodplain
290	-	Swamp

Section 6: Distribution

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Distributor's Data Set Identifier: Mn/Model4 Historical Hydrographic Model (HYSTHYD)

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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: Historical 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 Version: 1.2

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

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