

# North Dakota Hydrology Manual

7/10/2023

The North Dakota Hydrology Manual was prepared to assist those who are planning and designing measures for soil and water conservation practices and flood prevention measures in North Dakota. This is an historic document and sections have become obsolete and new information has been added. The manual includes the necessary basic data for determining hydrologic factors and developing a design discharge for a given site and intended purpose. The methods in the manual are for developing hydrology for on-farm conservation practices, watershed projects, Resource Conservation and Development project measures, and River Basin Studies.

The following document(s) may require [Adobe Reader](#).

Content	PDF Size
<a href="#">Preface, Introduction, Table of Contents</a>	100 KB
Chapter 1. Rainfall ( <i>Discontinued</i> )	
<i>Reference <a href="#">ND Supplement to NEH Part 650 (EFH) Chapter 2</a> for current rainfall distributions.</i> <i>Reference <a href="#">TR60</a> or <a href="#">PS-378</a> for principal spillway hydrologic criteria</i> <i>Reference <a href="#">PRISM (1991-2020)</a> data for average annual precipitation</i>	
Chapter 2. Hydrologic Soil Group ( <i>Discontinued</i> )	
<i>Reference <a href="#">Web Soil Survey</a> for hydrologic soil group data.</i>	
Chapter 3. Hydrologic Soil-Cover Complexes ( <i>Discontinued</i> )	
<i>Reference <a href="#">ND Supplement to NEH Part 650 (EFH) Chapter 2</a> for runoff curve number computation methodology.</i>	
Chapter 4. Time of Concentration ( <i>Discontinued</i> )	
<i>Reference <a href="#">ND Supplement to NEH Part 650 (EFH) Chapter 2</a> for time of concentration computation methodology.</i>	
Chapter 5. Estimating Peak Discharges ( <i>Discontinued</i> )	
Part I	
Part II	
<i>Reference <a href="#">ND Supplement to NEH Part 650 (EFH) Chapter 2</a> for peak discharge curve number computation methodology on drainage areas less than 2,000 acres. Use <a href="#">EFH-2 software and ND databases</a> for rainfall distribution type (1,2,3, or 4_ND) and DUH (PRF_325). The flow adjustment factors for ponding/wetlands presented in <a href="#">Tables 5-1, 5-2 and 5-3</a> are still applicable. Refer to <a href="#">USGS ND StreamStats</a> for larger drainage areas where a stream channel is present and the DA falls within the regional parameters, or <a href="#">TR55</a> when out of the range of USGS ND StreamStats.</i>	
Chapter 6. Hydrograph Development	
<i>Reference EFH-2 “Plot Selected Hydrographs(s)” option, or</i>	
<a href="#">Part I</a>	1.19 MB
<a href="#">Part II</a>	2.6 MB

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Chapter 7. Annual Runoff ( <i>Discontinued</i> )	
Reference <a href="#">USGS SIR2019-5144</a> ( <i>Small Basin Annual Yield and Percentage of Snowmelt Runoff in North Dakota, 1931-2016</i> ) <a href="#">Figures 10B and 11B</a> .	
<a href="#">Chapter 8. Evaporation</a> ( <i>Discontinued</i> )	176 KB
Reference <a href="#">NOAA Technical Report NWS 33, Map 3</a> for Annual Shallow Lake evaporation values. Monthly applications are from ND average stations in NOAA Technical Report NWS 34 (NOAA, 1982); values are Nov-Mar 0%, April 6%, May 17%, June 20%, July 20%, August 18%, September 12%, and October 7%. Reference <a href="#">University of Montana Miscellaneous Publication #48</a> ( <i>Estimation of Evaporation from Shallow Ponds and Impoundments in Montana</i> ) for daily evaporation rates. Use Figure 2 with daily temperature, dew point, wind, and solar radiation from nearest <a href="#">NDAWN site</a> .	
<a href="#">Glossary, Conversion Table, Appendix A, B, C</a>	1.09MB