

**Operational Nomenclature Used for Various Hydrologic Digital Elevation Models\*\***  
 February 13, 2017

HEI Conditioning Level	None	Low	Medium	Medium Plus	High	High Plus
<b>DNR Nomenclature (modified by HEI)</b>	H1DEM**	H2DEM-Planning Equivalent	H2DEM**	H2DEM Plus	H3DEM**	H3DEM Plus
<b>Hydro-conditioning Process / Description</b>	None, Raw Bare-Earth, Hydro-flattened DEM Products	NHD Plus streams or other watercourses burned into DEM OR automated enforcement process for streams	Stream-lines used to guide placement of user-defined burnlines	H2DEM plus specific modified by placing burn lines at the pour point of Level 8 lakes to ensure correct drainage areas to lakes	User-identified burnlines, informed by depression analysis capturing water movement through public and private culverts and ephemeral watercourses. Generally lacks local review of product at field (40 acres or less) scale, documentation describing reasons for burn-line placement and formal QA/QC due diligence process for field scale flow direction	User-identified burnlines, informed by iterative depression analysis <u>and</u> hydrologic routing, capturing water movement through public and private culverts at field scale, and field scale flow path. Includes local review of product at field (40 acres or less) scale, documentation describing reasons for burn-line placement and formal QA/QC due diligence process for field scale flow direction
<b>Typical Burnline Density*** (burnlines/sq-mi)</b>	0	0	1-3	1-3	3-16	12-20+
<b>Fraction of Watershed With Non-Contributing Depressions† (%)</b>	>30% ‡	20-30% with little to no analysis of depressions	20-30% with little to no analysis of depressions	20-30% with little to no analysis of depressions	Typically 10-30% and includes analysis of depressions but no incorporation of local knowledge or within-field analysis	% varies but based on hydrologic analysis compared to depression locations, Intensive analysis based on local knowledge of tile and limited field review
<b>Description of Burnline Efficacy</b>	No burnlines placed on landscape, numerous digital dams exist with potential for incorrect hydrologic routing	Use stream or other water course or other automated methods to enforce flow path. May include enforcing existing watershed boundaries	Stream-line enforcement at road crossings (larger public and some private) removes some but not many digital dams to less than field scale	Based product is H2DEM but burn lines added to ensure proper representation of the location and drainage area of lake or other large storage locations	Digital dams removed at public and private roadways and some other locations as determined by user (e.g. private roadways, field accesses and crossings, etc.). Digressional analysis used to guide burn line placement.	Digital dams removed at all locations supported by geospatial evidence including within specific fields. Extensive analysis of non-contributing areas using hydrologic analysis.
<b>QA/QC Procedure</b>	None	None to minor review, no stakeholder input	None to minor review, no stakeholder input	None to minor review, no stakeholder input	Some review, none to little documentation supporting procedures, little to no independent review, varied stakeholder input	Documented methods, independent review, input and review of field scale flow patterns provided by local, knowledgeable individuals

† 'Non-contributing depressions' defined as depressions which do not overflow for rain events up to the 10-yr, 24-hr design storm; Often a function of landscape terrain. Certainty that an area is "land locked" and non-contributing should increase greater level of conditioning.

‡ Values may range based on watershed characteristics (e.g. hydrologic connectivity, history of drainage, etc.)

\*\* See definitions for H1DEM, H2DEM and H3DEM are described by Vaughn, S.R. (2015), hDEM. L Definitions and Classifications of Hydrologic DEM Modifications for Minnesota

\*\*\* Not the sole factor used to develop nomenclature. Burnline density is a function of the landscape slope and extent of human modification of the landscape. More burnlines are needed in flat versus hilly terrain.

**Prioritize, Target, and Measure Application Hydrologic Digital Elevation Model Decision Matrix**  
 February 13, 2017

PTMApp Product Use Analysis Scale	Flow and Load Routing w/ Field-Scale BMP Siting, BMP Effectiveness Analysis, Buffer Alternative Practice Analysis and <b>Preliminary BMP Design</b>	Flow and Load Routing w/ Field-scale BMP siting analysis. Limited BMP Effectiveness Analysis	Flow and Load Routing at Watershed Scale and Planning Level BMP Analysis <b>with Lake Routing*</b>	Flow and Load Routing at Watershed Scale and Planning Level BMP Analysis <b>without Lake Routing*</b>	Watershed Delineation and Simple Terrain Analysis									
Single Field (< ~40 acres)	<table border="1"> <tr> <td data-bbox="520 662 858 751" rowspan="2">PTMApp Planning and Field Scale Implementation (H3DEM Plus)</td> <td colspan="4" data-bbox="858 662 1879 751" style="background-color: #00b050; color: white; text-align: center;"><b>PTMApp Planning and Field Scale Implementation (H3DEM)</b></td> </tr> <tr> <td data-bbox="858 751 1108 933" rowspan="2" style="background-color: #00b050;"></td> <td data-bbox="1108 751 1360 933" style="background-color: #ffff00; text-align: center;"><b>PTMApp Planning (H2DEM Plus)</b></td> <td colspan="2" data-bbox="1360 751 1879 933" style="background-color: #ffff00; text-align: center;"><b>PTMApp Planning (H2DEM &amp; Equivalent)</b></td> </tr> </table>					PTMApp Planning and Field Scale Implementation (H3DEM Plus)	<b>PTMApp Planning and Field Scale Implementation (H3DEM)</b>					<b>PTMApp Planning (H2DEM Plus)</b>	<b>PTMApp Planning (H2DEM &amp; Equivalent)</b>	
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PLSS Section (40 acres to 1 sq-mi)														
Subwatershed (1 to 50 sq-mi)														
Major Watershed (>50 sq-mi)														

\* 'Lake routing' is an analysis technique that adjusts Sediment, Total Nitrogen, and Total Phosphorus loads based on lake dead storage in PTMApp-Desktop