

MAPSS TECHNICAL COMMITTEE MEETING MINUTES

Purpose: Determining Hydrologic Soil Group Designations from Soil Test Pit Data

Augusta, ME, USDA Service Center Conference Room – 1:30 pm April 25, 2014

Attendees: Chris Dorion, Tony Jenkins, Steve Howell, Dave Marceau, Lindsay Hodgman, Greg Granger, Dave Rocque, Don Phillips

The MAPSS Technical Committee met with NRCS State Soil Scientist Tony Jenkins, NRCS Assistant State Soil Scientist Lindsay Hodgman, and NRCS Soil Scientist Greg Granger to discuss how to determine Hydrologic Soil Groups from test pit data for anticipated adoption as a part of our services during the development of High Intensity Soil Surveys by our members. The meeting was called to order at 1:30 by Tony, who then passed out the following handouts:

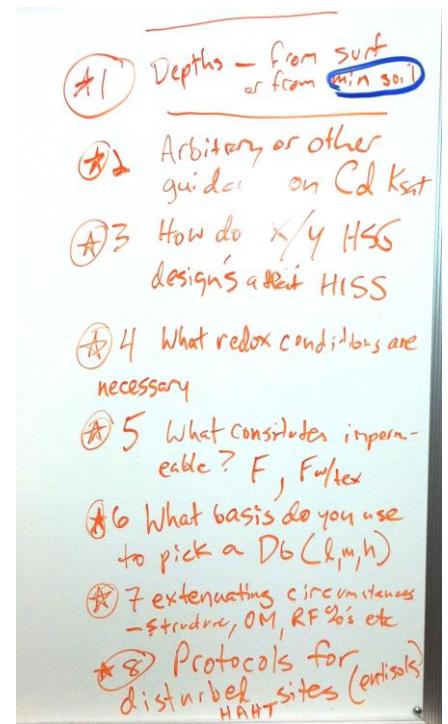
- 1) Chapter 7: Hydrologic Soil Groups, NRCS National Engineering Handbook; 12 pp, January, 2009;
- 2) Table 7-1, from above;
- 3) NRCS Soil Survey Technical Note No. 6 - Saturated Hydraulic Conductivity: Water Movement Concepts and Class History, 12 pp, December, 2004;
- 4) 618.88 Guide for Estimating K_{sat} from Soil Properties, NSSH Part 618 (Subpart B) | NRCS; and
- 5) Primary Characterization Data sheets documenting technical soil properties (including lab generated physical properties, and official pedon descriptions) associated with the Raghmuff, Chesuncook, and Nicholville soil series.

Tony began by quickly going through the process using data from the Raghmuff series, using Table 7-1 as a guide. Discussion followed an order suggested by the eight *Key Issues* he wrote on the whiteboard during his discussion, and which were subsequently emailed to attendees (see figure, below right).

Determining Depth to Water Impermeable layer: Tony cautioned that soil scientists must be certain where the reference point is, with respect to depth – the top of the soil surface, or the top of the mineral layer - since this is not clearly stated in Table 7-1. He recommended that a reference should be determined as policy by MAPSS, and wrote this as *Key Issue #1* on the whiteboard. Consensus from attendees stated that it should be at the top of the mineral soil surface. Determining the proper depth is critical to using Table 7-1.

Determining Depth to High Water Table: A debate ensued as to whether the typical Maine soil scientist would call a horizon with 1% redox concentrations, as noted on the pedon description for Raghmuff, as the depth that marks the high water table.

Assigning K_{sat} of Least Transmissive Layer in depth range: Two avenues can be used. The 1st avenue is by using representative K_{sat} values from an analogous soil survey source, like SoilWebSurvey for respective series and horizons. The 2nd is by following NSSH/NSSM guidance based on in-situ soil properties. Tony recommends going through the 2nd avenue first, but not neglecting to review published NRCS sources afterwards. To get this value, Tony used the Guide for Estimating K_{sat} from Soil Properties. Similar to the textural triangle, it delimits “Bulk Density Classes” (medium, low, or high density with a range of values for each) overlying the textural limits. Tony chose the “High Density” triangle, with the appropriate texture



documented for Raghmuff's Cd horizon (silt loam), based on the assumption that a Cd horizon typically has higher bulk density values. Discussion here led to Tony recommending that MAPSS should establish arbitrary or other guidance for certain properties and/or circumstances, like what dense basal till has (see *Key Issue #2*).

Going through the exercise for the Raghmuff series, Table 7-1 showed a dual HSG of C/D. This decision led to *Key Issue #3*, in which MAPSS must decide how to deal with dual HSG designations for a HISS?

Discussion proceeded to using the **Chesuncook** data as an exercise, and attendees had more comments and asked more questions. For instance, with respect to where the Seasonal High Water Table (SHWT) is and whether 1% redox marks its depth, Dave Marceau commented that practicing soil scientists in Maine should be held to the industry standard, not the very technical standards that are practiced by NRCS soil scientists. Dave Rocque agreed. Tony's response was that we should use "more subtle" standards of recognizing soil properties as opposed to thinking that we should hold ourselves to a higher standard. Another very important consideration, according to Tony, is to select a test pit at a representative location. For instance, Tony stated that if a soil scientist chose to place a soil test pit at a "wetter" part of a moderately well drained soil when the representative location should be on the "dryer" part, then the data may not be representative. Discussion led to Tony's *Key Issue #4* – what redox conditions will be necessary to mark the SHWT?

Discussion proceeded to using the **Nicholville** data as an exercise, and similar comments and questions arose. For instance, Tony believes the impermeable layer, as documented on the Nicholville pedon description, begins at its "very firm" 2C2 horizon – not the "firm" 2C1 horizon – due to a combination of physical soil differences between the two horizons. This led to Tony's *Key Issue #5*, what property would be considered as "firm"? Ditto for *Key Issue #6*, what basis will MAPSS use to pick a bulk density class? And ditto for *Key Issue #7*, what kind of extenuating circumstances, as explained in the narrative, should a Maine soil scientist use when considering organic material, redoximorphic features, etc? And finally, MAPSS should establish protocols for determining HSG's in HA/HD soils, and ditto for soil series that can transmit water fast (HSG: A) along with those that transmit water much slower (HSG: D).

Upon finishing his talk, Tony re-emphasized that the value of determining our own HSG's lies in making a decision based on *what's actually there*, not what is based on an unrelated set of data collected elsewhere. He summarized by reminding attendees that coming up with our own HSG depends on utilizing a greater degree of nuance at identifying soil properties than what we may currently be currently doing.

Lindsay Hodgman wrapped up the talk by showing how to get into various WebSoilSurvey pages, including the Primary Characterization Data for Maine soil series.

The MAPSS TC meeting was adjourned at about 3:45 pm.

submitted on April 27th, 2014 by Don Phillips