MOWA Soils CE Course Agenda

8/8/2025 – Cook, MN

Instructors: Dan Wheeler, Stacey Feser, Dave Gustafson, Cody Robinson

8:00 am – 4:30 pm

Course Objective: This workshop has been designed to meet the requirements for soils specific training under MN Rules Chapter 7083.0160 Subp 1 A. Course topics were specifically chosen to reference 7080.1100, 7080.1710, 7080.1720, 7080.1730, 7080.2150, 7080.2270, 7082.0700 Subp 5.

Welcome/Soils: 8:00 – 9:30AM: The welcome talk will identify the schedule and goals for the class. During this time we review geology and soil formation as well as the regional landscape(s) and soil conditions in depth. We discuss proper identification and description of topsoil, red parent materials, soil structure, soil colors, soil texture including sand sizes, redox features, organic soils, and observable water tables. We also provide tools and resources to help practitioners make determinations.

Learning objectives: Soil characteristics details (including Mottles/redox, soil textures, soil structure, Munsell soil color, parent materials); Review tools available (including Web Soil Survey, MPCA/UMN staff, sand cards, rock analyses, soil observation logs, and locating regional specialists).

Break: 9:30 – 9:40AM

Site Evaluation: 9:40 – 10:10AM: Included in the discussion will be brief reviews and updates of current OSTP activities, relevant site and soils-based MN Rule 7080 rule discussion as well as relationships the performance of systems in MN. We will spend the majority of the time covering site evaluation.

Learning objectives: Become familiar with UMN and OSTP activities and website; Update industry around current issues and research; Region-specific context and detailed description as related to site evaluation and reporting; General soil observation (site evaluation, contours, % rock determination, geography). Review tools and forms used to assist field evaluations, such as the soil texture chart and perc tests, and determining soil loading rates per MN Rules chapter 7080 Table IX and IXa.

Break: 10:10 – 10:20AM

Redox Basics: 10:20 – 11:00AM: At this time we will review the basics of the soil redoximorphic feature formation process focusing on the conditions necessary for soil reduction to take place in the soil, especially with respect to iron and manganese reduction. We will also discuss the accumulation of organic matter in surface soils as another potential indicator of periodically saturated soil conditions.

Learning objectives: Understand the predictable and scientific nature of redoximorphic feature formation; relate observable soil properties to periodically saturated soil conditions; familiarize and apply terminology/definitions used in 7080.1100.

Problem Soils: 11:00-12:00PM: The purpose of this talk is to build on the understanding of the redoximorphic feature formation process. By understanding the previous talk, we can now present many scenarios common in places in Minnesota soils where we might have a periodically saturated soil (7080.1100), but no observable redoximorphic features. This discussion takes the learner through several observable problem soil characteristics and then reiterates the redox formation process to identify the specific problem encountered. This talk also presents solutions for interpretation in this difficult conditions.

Learning objectives: Apply redox feature formation to specific soil characteristic(s) and 7080.1100 Periodically saturated soil; use web soil survey information related to proper periodically saturated soil identification; understand the importance of a complete soil observation log in interpreting soil suitability for an SSTS; basics of hydrologic monitoring.

Lunch break: Noon – 12:45

Field visit:

12:45 – 4:30: At this time we will review provided materials in the Resource and Reading materials packets. Included in the Resource packet are materials helpful to practitioners to use in the field and back in the office for documentation. The Reading packet includes a site specific Web Soil Survey map and soil information. These materials preface the soil descriptions and interpretations which will be completed in the field.
We visit the aforementioned site and use the information reviewed in the morning session to conduct a complete soil description and interpretation and application according to MN Rule Chapter 7080's relevant sections (dependent upon site). We also allow for any further question and answers on soil and site evaluation topics.

Learning objectives: Apply geological formation knowledge to site conditions; identify landscape position, topography and contour mapping; depth to periodic saturation and appropriate soil sizing factor/loading rates for each pit; other design applications as they apply to MN Rules chapter 7080; complete a UM Soil Observation Log exercise based on attendees participation; rock percent determination; percolation test discussion. Review suitability ratings from the Web Soil Survey for Septic Tank Absorption Fields related to soils and conditions observed and described on site.