

Model Decentralized Wastewater Practitioner Curriculum

SOILS 250 **Matching the System to the Site and Soil**

Suggested Course Materials

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February 2005

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Agenda

845-900	Welcome Introduction Course Objectives Schedule Instructors Homework assignment
900-945	Principles of site evaluation
945-1015	Soil morphological properties and siting requirements for on-site wastewater systems
1015-1030	Break
1030-1200	Field Study No. 1 Site evaluation using the morphological approach in backhoe pits (independently by each participant) Soil morphology profile descriptions Landscape position descriptions at each site
1200-1245	Lunch
1245-230	Field Study No. 1 (continued) Faculty review of soil morphological descriptions and landscape position descriptions in the field Class discussion in the field with the faculty
230-245	Break
245-345	Site suitability assessment for on-site wastewater systems with loading rate determination on the basis of soil morphology described in the field – faculty assessment
345-445	Mapping soils for subdivision – scale site evaluations
445-500	Introduction to small group homework exercise – Matching the technology to the soil and site conditions

DAY 2

800-930	Homework review - Small groups report back to the larger group and faculty
930-945	Break
945-1200	Field Study No. 2 Field exercise – Soil mapping for evaluation of a proposed subdivision on a large parcel of land Morphological descriptions from auger borings Mapping in groups (4-6 people per group) Participants map the soils using an aerial photo base map
1200-1245	Lunch
1245-200	Field Study No. 2 (continued)
200-300	Mapping review in the field by participants and faculty Review of soil units Review of site suitability for on-site systems
300-315	Break
315-400	Relating the soil to its three dimensional landscape when predicting behavior
400-500	Soil Taxonomy revisited and contrasted to state sewage rules that utilize soil morphology

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Overview

This is a two-day short course that will demonstrate how soil morphological characteristics can be used to assess land use needs by utilizing on-site wastewater treatment systems as an example. It is assumed that participants already have soil morphology description capabilities and an understanding of the technologies. In this course, they will combine this knowledge so as to develop an advanced ability to match the correct on-site systems with the soil and landscape conditions at a particular site. Students will also learn how to utilize soil morphology to determine the correct loading rates, that is, the proper long-term acceptance rates (LTARs) for these technologies so as to properly determine on-site system size. The course addresses the differences between preliminary evaluations of land tracts and final site evaluations for assessing suitability. Finally, students utilize their abilities to match the system with the soil by conducting a field mapping exercise (working in small groups) of a subdivision-sized tract of land. The purposes are to learn 1) how to map on-site system suitability on multiple-acreage parcels that are intended as subdivisions and 2) to make the most efficient use of the available land.

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Goals

- 1) Participants will develop an advanced ability to utilize soil morphological descriptions to determine site suitability for on-site systems and other land uses
- 2) Participants will have an advanced ability to match on-site system designs with existing soil and landscape characteristics at a site

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Learning Objectives

- 1) Participants will be able to determine on-site system loading rates from soil morphological investigations
- 2) Participants will be able to produce preliminary soil/site suitability assessments of large land tracts proposed for subdivision-scale developments
- 3) Participants will be able to compare and contrast how soil morphological terms are used in Soil Taxonomy/Soil Survey Manual with how they are used in state sewage rules

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Prerequisites

Soils 100, 110, 120, 230

Soils 250 Evaluation Form

Matching the System to the Site

Evaluation Form

Name (optional): _____

With a rating scale of 1 (Disagree) to 5 (Agree), please respond to the following questions

Review of printed materials:

	Disagree				Agree
The text completely covers the topic area.	1	2	3	4	5
The visuals completely cover the topic area.	1	2	3	4	5
The discussion notes completely cover the topic area.	1	2	3	4	5

Review of learning objectives:

I gained a better understanding of how soils and site affect system selection.	1	2	3	4	5
I gained a better understanding of how soils vary across the landscape	1	2	3	4	5
I gained a better understanding of how to interpret soil and site data.	1	2	3	4	5

What specific recommendations would you provide for the text. _____

What specific recommendations would you provide for the visuals.

What specific recommendations would you provide for the notes. _____

Please give specific positive comments on the topic/module. _____

Soils 250 Problem Sets

None

Additional Materials

Munsell Color Books

Augers

Tape Measures

County Soil Survey

Soil Monoliths or Cores

Soil Pits

GPS/GIS data for a site

Topographic map for site at 1"=100'

Clinometers

100'-300' Tape Measure

Level