# Soils Study Guide 2018

## Expectations

Students are expected to:

* Recognize soil as an important resource
* Describe basic soil properties and formation factors
* Understand soil drainage classes and know how wetlands are defined
* Determine basic soil properties and limitations, such as mottling and permeability, by observing a soil pit or soil profile
* Identify types of soil erosion and discuss methods for reducing erosion
* Utilize soil information, including soil surveys, in land use planning
* Utilize modern soils interpretations such as thematic maps and data tables to make land management decisions.

The study references listed are not an exhaustive list of sources from which test questions are drawn.  Students are expected to research other sources for more information according to the learning objectives.

The 2018 Area IV Envirothon Committee has decided to use the most up to date soil survey information, and will not be supplying each school with a copy of the historic Montgomery County Soil Survey.  The National Cooperative Soil Survey decided about 15 years ago that the booklet format was no longer a practical way to deliver soil survey information in a timely manner.  Instead soil surveys are now updated annually (in some way), and are provided in digital formats throughout the nation.  Each school should utilize the websites below to obtain the information that will be part of this year’s contest.  The Web Soil Survey contains the most up to date soils information, and in utilizing this site, students will become familiar with today’s soil survey.  A custom Soil Resource Report, from the Web Soil Survey, of the 2018 Envirothon site will be supplied at the soil station for students to use.

The following list of topics is a summary of key terms, soil interpretive tables, narrative sections and soil map unit and series descriptions from the soil survey of Montgomery County.  Participants of the 2018 Envirothon Competition should concentrate their study time on these materials to prepare for the soils questions on the test.

**Guide to Texture by Feel and Soil Textural Triangle:**

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054311>

**Soil Survey Maps & Interpretations:**

<http://websoilsurvey.nrcs.usda.gov/app/>

If you experience any issues with the web soil survey, please check and make sure that you have turned off your browser's pop-up blocker.

​

**Field Book for Describing Soils:**

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/ref/>

Then use the “Quick Link” menu for “Field Book for Describing Soils” Then open the pdf version.  The following pages will be helpful:

* Soil texture (p. 2-38)
* redoximorphic features (p. 2-12)
* horizons (pp. 2-2 to 2-4)
* Roots (pp. 2-70 to 2-72)
* Pores (pp. 2-73 to 2-76)
* soil structure (pp. 2-52 to 2-54)

​

Other links on the NRCS web page above which are useful:  Become familiar with the soil health/soil health management links; and the soil health/Biology Primer/Photo Galley.  Three of those photos which are useful are:  Components of Soil Organic Matter (a pie chart), Soil Organisms Living within a Soil Aggregate, Mineralization/Immobilization (of soil nutrients).

Today’s soil survey maps are delivered through the Web Soil Survey.  In Web Soil Survey, students should be familiar in navigating to the location via the quick navigation tool.  The Envirothon location will be at the Possum Creek Metropark.  Use the address:  ***4790 Frytown Road, Dayton, Ohio 45417***.

You can navigate to almost any area in the United States by simply using the quick navigation tools, and the soil survey of that area will be available to you. There are multiple search navigation tools available to use. Make sure to utilize the different tools in searching for an area.

After setting the AOI, students should explore the information available under the Soil Map and Soil Data Explorer tabs. Under the Soil Data Explorer tab, students should become especially familiar with the following Suitabilties and Limitations for Use, Soil Properties and Qualities, and Soil Reports:

**​**

**Data sets under the *Suitabilities and Limitations for Use* tab:**

* Land Classification: Farmland Classification
* Land Classification:  Hydric Rating
* Land Classification:  Pasture and Hayland Suitability
* Land Classification:  Farmland Classification
* Building Site Development : Dwellings with Basements (OH)
* Building Site Development : Small Commercial Buildings (OH)
* Building Site Development : Local Roads and Streets.

**Data sets under the *Soil Properties and Qualities* tab:**

* Soil Health Properties: Organic Matter.
* Water Features:  Depth to Water Table
* Soil Physical Properties: Available Water Supply, 0 to 150 cm
* Water Management: Ponds
* Water Management: Embankments

**Data Sets under the *Soil Report* tab:**

* AOI Inventory: Map unit Description
* AOI Inventory: Component Test Descriptions

The following soil map units will be helpful to become familiar with:

* Bp, Brookston silt loam
* CeB, Celina silt loam
* CoA and CoB, Corwin silt loam
* MlA, MlB, and MlB2, Miamian silt loams
* MnD3, Miamian clay loam.  ​

In addition, students should utilize the Shopping Cart (Free) function. This feature creates a customized, printable soil survey report for the area indicated in the AOI in PDF format. The printed packet that will be supplied to students during the test will be created in the Web Soil Survey using the Shopping Cart, so familiarity with this report format will be advantageous. Under the Soil Data Explorer tab, find the Intro to Soils tab. Students should use this resource as an introduction to soils in general, the Web Soils Survey, and this year’s contest theme. Recommended sections include:

* Introduction to Soils – Soils 101
* Introduction to Soils – Information for Land Users

For a more detailed explanation on using all of the features provided in Web Soil Survey please refer to the following site: <http://websoilsurvey.nrcs.usda.gov/app/Help/WSS_HomePage_HowTo.pdf>

In addition to soil survey and general soil questions, students should also become familiar with the Natural Resources Conservation Service’s Soil Health Initiative. Test questions can include general concepts of soil health and the benefits of following NRCS guidelines related to soil health. Information is available at: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>

​

## 2018 Test Writer:

George Derringer, NRCS