LAB ACTIVITY

Finding Soil Material for a Construction Project

Introduction:

Using 'Web Soil Survey (WSS)', an online program developed and operated by United States Department of Agriculture- Natural Resources Conservation Service (USDA-NRCS), a small area around Marietta City will be chosen and possible sources of soil as a construction material for an engineering project will be determined. You will prepare soil maps and data tables using the soil database from USDA-NRCS web.

Goals:

- Become familiar with soil types, creating and using soil maps
- Develop data table and analyzing results
- Develop decision making skills by finding appropriate sites
- Analyze environmental sustainability using surface erosional concepts
- Support your approach or decision with scientific concepts

Assignment:

1. To construct a new building for the Department of Petroleum Engineering and Geology, Marietta College is looking for soil material to use in foundation and also as the backfill material. Congratulations ! The contractor has hired you as a consultant geologist. Your responsibility is to find the appropriate soil material in the area and recommend the best two sites. You are also assigned to study the erosion potential of the surface area around the city.

2. In order to find the site, first, you need to determine what types of soil are appropriate for your purpose (Use USCS and AASTHO soil classes). Listing them as excellent, good, fair, and poor would be helpful for your analysis.

3. Using 'Web Soil Survey (WSS)' (link: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx), develop a soil map and data table. Check here (link: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm) to learn how to access and use the soil data. Select the area of interest (AOI) that will include Marietta College in your map.

4. Using the same procedure as in #3, also prepare a map and database for sources of sand and gravel (as a construction material) and check if your previously selected area is appropriate for obtaining sands or gravels.

5. Support your decision to choose a particular site/(s). For the soils in selected sites, what is the suitability of these soils as a highway subgrade (use AASTHO classes)? Are these soils also useful as a backfill material for a landfill site, why or why not?

6. Describe the potential for erosional susceptibility in your area of interest. How would you consider environmental sustainability in using the soil materials for construction purposes in your recommended sites and around the city?