

PROCEDURES FOR OBTAINING AND PROCESSING INFORMATION FOR OMBIL PROJECT SITE LAND (SOILS) CAPABILITY CLASSES

Download Soils data needed from the NRCS Soil Data Mart

- <http://soildatamart.nrcs.usda.gov/Default.aspx>
- Click on Select State, then select a state from the list
- Click on Select County, then select a county from the list
- Click on Select Survey Area, then select area from the list
- Click on Download Data
- Select Tabular and Spatial Data, ArcView Shapefile, and appropriate coordinate system
- Enter your email address, then click on Submit Request. Soil Data Mart will send e-mails with links to each dataset.
- Download the file(s) to their appropriate directories, and unzip/extract all.
- The extraction will contain an additional soildb_**_2002.zip file, which must also be unzipped. This is the soils template Access SURRGO database template.

Load tabular data into the database template.

- Open the MS Access SSURGO template database, e.g., soildb_IA_2002.mdb.
- When the SSURGO import dialog box opens, type the full path to the "tabular" directory for the county dataset. Click OK. The data will process for several minutes.
- Exit out of Access.
- Rename the database to describe the county the database will represent. This file will be used in the Soil Data Viewer.

Download and install Soil Data Viewer

<http://soildataviewer.nrcs.usda.gov/download51.aspx>

Soil Data Viewer can be added as a tool in ArcMap.® It allows you to easily create soil-based thematic maps such as the soils capability map. Soil Data Viewer shields users and applications from the complexity of the soil database and incorporates rules for appropriate use of soil data. It provides an easy to use tool for geospatial analysis of soil information for resource assessment and management.

Clip the downloaded county soils shape file

- Add two files to ArcMap: COE lake boundary; county soils shape file
- In Arc Toolbox, click on Analysis Tools / Extract / Clip.
- In the Clip dialog box:
 - Input Features – e.g., soilmu_a_ks139.shp,
 - Clip Features – cddodins.shp,
 - Output Feature Class -- e.g., po_soilmu_a_mo095_Clip.shp
 - Save it in your working directory and add the lake identifier, e.g., po for Pomona Lake).
 - The file will be added to ArcMap after processing.

Create Soils Capability Class.

- In ArcMap, initialize the Soil Data Viewer.
- Click Tools / Customize.
- Under the Toolbars tab, check Soil Data Viewer Tools and close the window. This adds the Soil Data Viewer icon to ArcMap.
- Add the file you just clipped, e.g., po_soilmu_a_mo095_Clip.shp.
- Click on the Soil Data Viewer icon and select the clipped soil map layer.
- Click on the Options tab and browse to the .mdb file that you previously downloaded and renamed (soil_d_mo095.mdb). Select this file to load.
- In Soil Property Categories, on the left side of the dialog box, double click on Interpretative Groups / Nonirrigated Capability Class.

- In expanded options on the right side of the dialog box, click the down arrow and change the selection to Dominant Soil.
- Under Components check Interpret Nulls as Zero.
- Click on Produce Map at bottom of page. Message popup states that Dominant Soil will be added to the view (in ArcMap) as a temporary theme. The theme name is the name of the soil property that you selected. The map displays the soil property for each soil mapping unit in the clipped area that matches the corps lake boundary soils theme. The view shows the 8 soil classifications. Empty areas are areas with no data for soils.
- Activate your newly made temporary theme (Nonirrigated Capability Class – Dominant Soil), in the Soil Data Viewer
- Under Soil Property Categories, double click Soil Qualities and Features.
- Select Map Unit Name. This will produce a map with a theme table column named MUName, which describes what types of soils are outlined.
- Select Produce Map to create another theme in ArcMap that will contain both soil property classes (Nonirrigated Capability Class and MUName). This is also a temporary theme that needs to be converted into a Shapefile.
- Add the theme to the project by activating it. Select Convert to Shapefile from the Theme menu. Use Corps lake name that you are processing. This final shapefile will be used in ArcMap for further processing.
- *If you have a lake that covers multiple counties follow the same procedures to clip the area. Create the soils capability class and map unit name. Merge the shapefiles together to make one complete shapefile for the lake.*

Setup the spatial reference in ArcCatalog

- Right click on the lake shapefile.
- Select Properties / XYZ Coordinate System / Select. Select appropriate spatial reference.

Set up display properties in ArcMap

- Load lake shapefile into mxd
- Right click on shapefile and check Label Features.
- Right click on shapefile and select Properties / Labels tab. Click on down arrow at Text String / Label Field and scroll down to NIRRLDS, which contains the soil classification numbers.
- Next select Symbology tab / Categories / Unique Values. In the Value field, scroll to MUNAME and click on Add All Values button to assign a unique color to different map unit names for soils.
- *Tip – Scroll down symbol values to water. If it isn't blue, click Add All Values until the desired color is obtained / click Apply / OK.*

Update attribute table in ArcMap

- Add class definition field.
 - Right click shape file. Select Open Attribute Table. Click Options / Add Field.
 - In Add Field dialog box – Name: CLASS_DEF / Type: Text / Field Properties: Precision: 150 / OK.
- Start an editing session to populate CLASS_DEF field.
 - Click Options / Select by Attributes. Double click NIRRLDS / equal sign. Click Get Unique Values. Double click on the first number in the list.
 - Expression should look like this: "NIRRLDS" = '1' Click Apply to select soil classes with the number 1.
 - Put the mouse cursor over the CLASS_DEF field (it will turn cursor into a down arrow) / right click / Calculate Values. This will open the Field Calculator dialog.
 - Copy and paste the appropriate definition into the field calculator (see list below). Click OK.
 - Repeat these steps with each class that displays in the Unique Values of the Select by Attributes dialog box.
 - Save an expression for each of the 8 soil classes. Name them for the soil class number that each represents. The extension will be .cal and they will default to My Documents C: drive.
 - Save your edits and stop your editing session when done.

List of the Class Definitions:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Calculate acreage in ArcMap

This process will create a new table containing one record for each unique value of the selected field, along with statistics summarizing any of the other fields.

- With Attribute Table still open, move cursor over the Acres field / right click / scroll to Summarize.
- In the Summarize dialog box Field 1 should be NIRRLDLS, Field 2 should be Acres.
- Check the Sum box. This will summarize output table statistics and create a .dbf file on your hard drive.
- Name this file to match your lake name. Click OK.
- Select "Yes" to add data to the map.
- Check the data you just created to verify the acreage.