

TECHNICAL NOTES

MO-1 Technical Note 48

July 29, 2009

Procedure for Adding the Mapunit Key and Mapunit Name Fields to the Spatial Data Attribute Table for Progressive Soil Surveys

The mapunit key (mukey) field needs to be in the spatial data attribute table in order to use the Soil Data Viewer ArcGIS extension. It is also very useful when working with spatial and tabular data that contains more than one subset survey area. The mukey is unique nationally. Every mapunit in each NASIS legend has a unique mukey. The mukey originates from the NASIS mapunit record ID (muiid) in the Mapunit table. It is stored in NASIS as an integer but is converted to text (30 characters) with a SSURGO export from NASIS.

The following are steps that can be used to add the mukey and muname fields to the spatial attribute table for progressive soil surveys:

1. Load the data for the soil survey into a NASIS selected set. Use a query that will load all the mapunits that are in the spatial data. An MO-1 query that can be used is "Load Major Components (all objects) by area symbol". Set target tables to Area, Legend, Component to load all mapunits, including additional symbols - this will load only major components. To include minor components, set the target tables to Area, Legend, Data Mapunit.
2. In NASIS click on File > Export > SSURGO format. The following dialog box will appear:

SSURGO Export Manager

Choose mapunits for legends in the selected set, based on:

- ◆ Mapunits in selected set
- ◆ Mapunits from permanent tables with status of:
 Provisional Approved Correlated Additional

Choose data mapunits based on:

- ◆ Data mapunits in selected set
- ◆ All data mapunits from permanent tables
- ◆ Data mapunits from permanent tables with certification status of:
 Not For Distribution Not Certified Partly Certified Certified

For mapunits with additional status:

- ◆ Use representative data mapunit to which correlated
- ◆ Use representative data mapunit for additional mapunit

Choose components based on:

- ◆ Components in selected set
- ◆ All components from permanent tables
- ◆ Major components from permanent tables
- ◆ Components from permanent tables with % comp greater or equal to percent.

Select/View Interpretations Select/View Text Kinds

Email Notification Address:

Choose State Directory: Export File name: .gz

Run Export Cancel Help

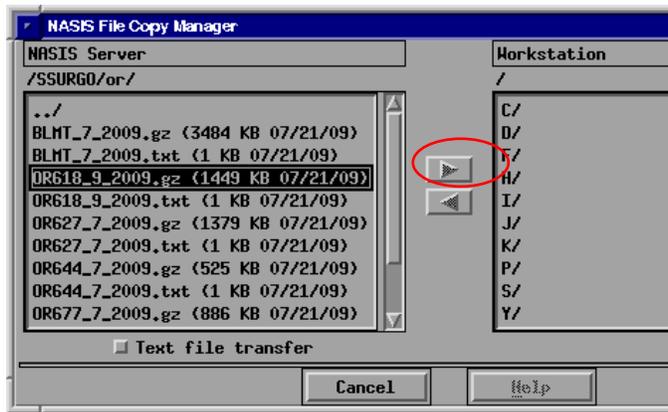
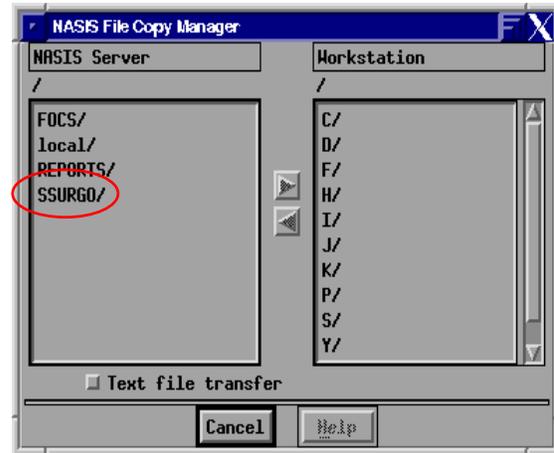
Use the settings in the example to the left. Your e-mail address should appear. The state directory should auto populate, based on the location of the survey area. The "Select/View Interpretations" button can be used to add interpretations to the export.

More information on SSURGO exports from NASIS is available in the NASIS tutorial manual at <ftp://ftp-fc.sc.egov.usda.gov/NASIS/documents/tutorial5/5n8.pdf>. Click the "Run Export" button after you've selected all the desired settings. You will receive an e-mail message, generally within an hour, when the SSURGO export is ready to download.

3. In NASIS click on File > Download. The following File Copy Manager dialog box will appear:

Left double click on the SSURGO folder under the NASIS Server heading, then scroll down to the applicable State folder. Double click on the State folder.

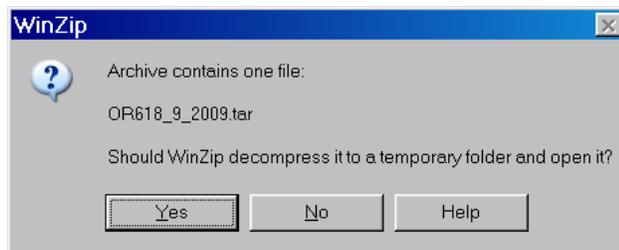
For each SSURGO export there will be two files, one with a .gz extension, and another with a .txt extension, as in the example below. The file with the .gz extension contains the exported data. This is a compressed file similar to a zip file. The .txt file has information about the export that is identical to the text in the NASIS export e-mail message.



Click on the .gz file you want to download, and then left double click on the Workstation drive letter where you want to download the file. It is recommended that you create an empty folder on your computer to save the .gz file in. Navigate to this folder. When the file to download and the workstation folder are selected, click the right arrow button. Don't select the "Text file transfer" option". More information on downloading NASIS files is available at:

<http://soils.usda.gov/technical/nasis/products/citrixinfo.html>.

4. The next step is to extract the files in the .gz file. Locate the file in Windows Explorer, right click on the file, select WinZip > Extract to here. The following dialog box will appear. Click "Yes".



WinZip will extract a number of text files that contain the exported NASIS data. Additional information on working with NASIS exports is available at:

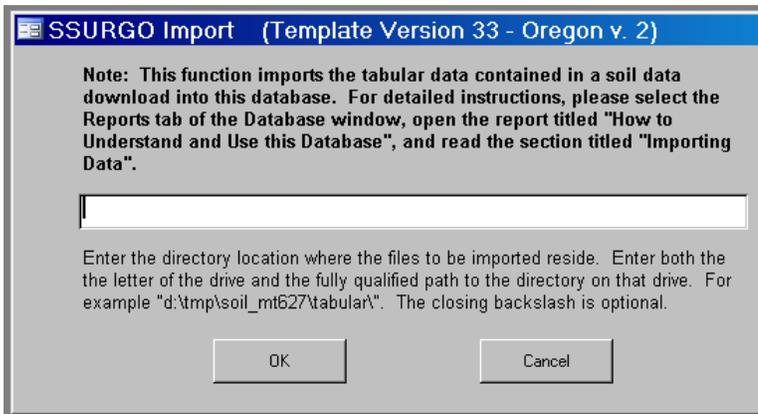
<http://soils.usda.gov/technical/nasis/products/nasisexport50.html>.

- Obtain a SSURGO Microsoft Access template to import the text files into. Templates are available for Idaho, Oregon, and Washington from the MO-1 web site at:

http://www.or.nrcs.usda.gov/pnw_soil/mo1_templates.html

Save the template zipfile in the same folder as the NASIS export text files. Use WinZip to extract the template. Rename the template file using a convention with the soil survey area symbol and the date. An example would be "or618_d_7_2009". The "d" is the SSURGO convention for database files.

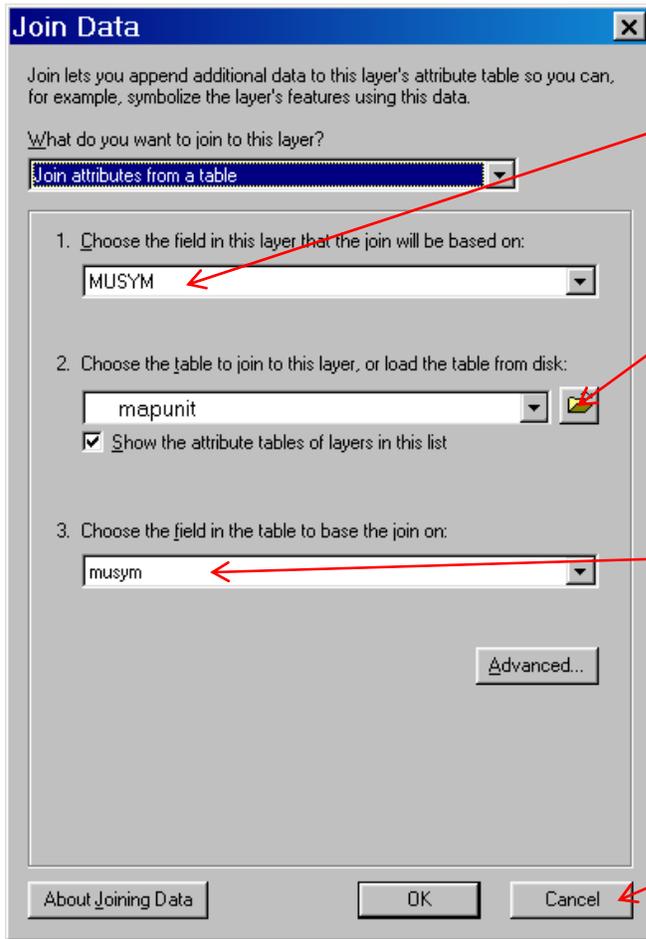
- Left double click the Access template file to open it. When the file opens, the following dialog box will appear. It is asking for the path where the NASIS export text files are located. The easiest way to obtain this is to go back to Windows Explorer and copy the path in the Address box, then right click and paste into the SSURGO import box. Then click OK. The template will begin importing the text files. This process can take up to 5 minutes, depending on the number of mapunits and components in the survey area.



- When the process in Step 6 is complete, the "mapunit" table in the Access template will be populated with the mapunit symbol (musym), mapunit key (mukey) and mapunit name. See the example below:

Mapunit Symbol	Mapunit Key	Mapunit Name	Status	Kind
214	1015235	Blancocanyon ashy loam, 0 to 5 percent slopes	Approved	Consociation
245	1015456	Anatone-Ateron-Polkbutte complex, 12 to 30 percent north s	Provisional	Complex
246	1015478	Anatone-Ateron-Polkbutte complex, 30 to 65 percent north s	Provisional	Complex
247	1015479	Anatone-Ateron complex, 12 to 30 percent south slopes	Approved	Complex
248	1015519	Anatone-Ateron complex, 30 to 65 percent south slopes	Approved	Complex
249	1015538	Embal-Luckycreek complex, 0 to 5 percent slopes	Additional	Complex
250	1015539	Luckycreek-Polkbutte complex, 0 to 5 percent slopes	Provisional	Complex
263	1015546	Finsel-Royst-Polkbutte complex, 12 to 30 percent north slop	Provisional	Complex
264	1015551	Finsel-Polkbutte complex, 30 to 65 percent north slopes	Provisional	Complex
265	1015558	Bonnieview-Observation-Anatone complex, 12 to 30 percent	Provisional	Complex
266	1015563	Erakatak-Tuscor-Anatone complex, 30 to 65 percent south s	Approved	Complex
267	1015568	Bonnieview-Bonnieview, thin surface, complex, 0 to 12 perce	Provisional	Complex
268	1015578	Bonnieview clay loam, depressional, 0 to 5 percent slopes	Provisional	Consociation
269	1015581	Powellbutte-Bonnieview, thin surface-Bonnieview complex, 0	Provisional	Complex
270	1015582	Bonnieview, depressional-Luckycreek complex, 0 to 5 perce	Provisional	Complex
131	1015683	Lickskillet-Badlands complex, 15 to 70 percent south slopes	Approved	Complex
3440CO	1017187	Maucav-Yawkey-Sintuf complex, 30 to 60 percent slopes	Provisional	Complex

- Start ArcMap and add the spatial data for your survey area. Right click on the layer. Select Joins and Relates > Join. The following dialog box will appear:



Use the MUSYM field from the spatial data for the join.

Click on the browse button and browse to the Access database created in Step 6. Double click on the Access database file name and all the table names will appear. Click on the "mapunit" table then click "Add".

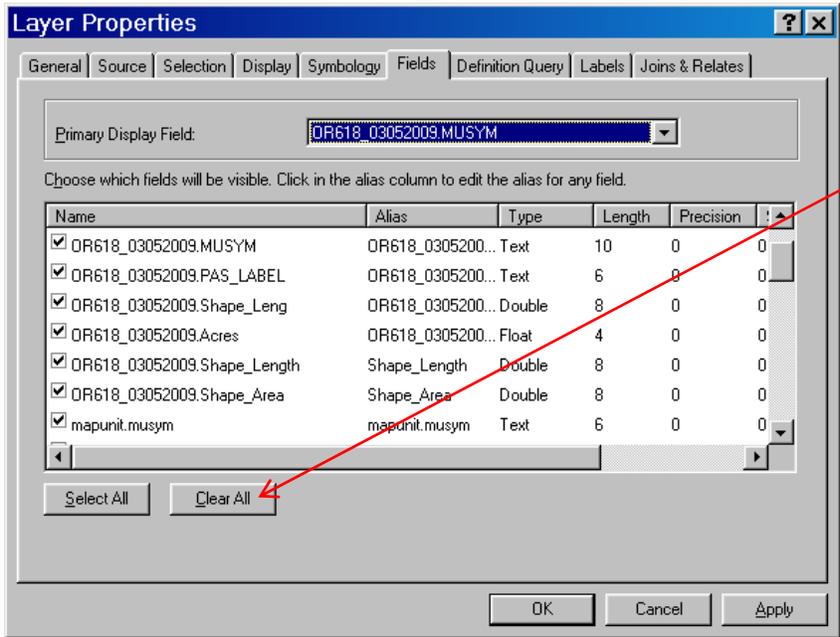
Use the MUSYM field from the mapunit table for the join

Click OK. A message may appear about indexing to improve performance. Click OK to create index.

- Open the attribute table and sort ascending by mukey. A null mukey for a polygon indicates that the mapunit is not in the NASIS legend. These mapunits should be added to NASIS or the spatial mapunit symbol (musym) should be corrected for incorrectly attributed polygons.

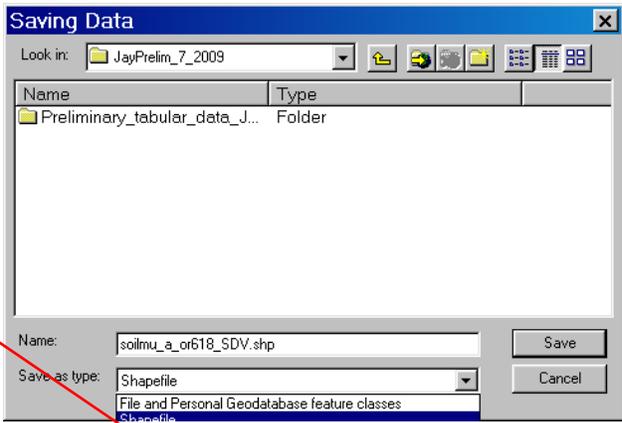
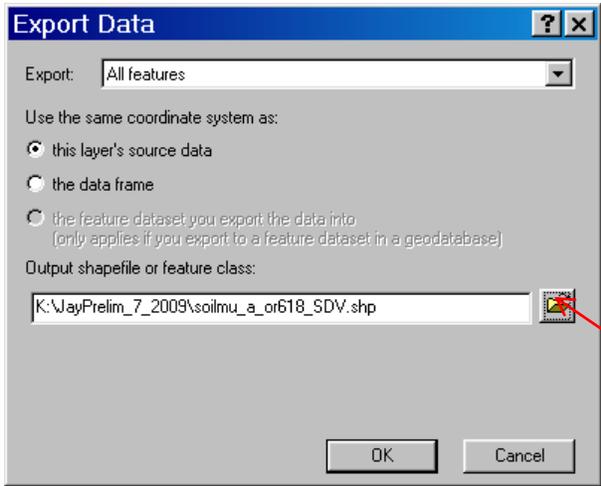
OR618_03052009.MUSYM	mapunit.musym ^	mapunit.muname	mapunit.mustatus	mapunit.mukey ^
1777BO	<Null>	<Null>	<Null>	<Null>
1738AO	<Null>	<Null>	<Null>	<Null>
3443NO	<Null>	<Null>	<Null>	<Null>
3451AO	<Null>	<Null>	<Null>	<Null>
1782AO	<Null>	<Null>	<Null>	<Null>
3444AO	<Null>	<Null>	<Null>	<Null>
1753CO	<Null>	<Null>	<Null>	<Null>
3438BO	<Null>	<Null>	<Null>	<Null>
1753CO	<Null>	<Null>	<Null>	<Null>
3443NO	<Null>	<Null>	<Null>	<Null>
174	<Null>	<Null>	<Null>	<Null>
174	<Null>	<Null>	<Null>	<Null>
3438BO	<Null>	<Null>	<Null>	<Null>
3443NO	<Null>	<Null>	<Null>	<Null>
3443NM	<Null>	<Null>	<Null>	<Null>
3443NO	<Null>	<Null>	<Null>	<Null>
3438BO	<Null>	<Null>	<Null>	<Null>
3443NO	<Null>	<Null>	<Null>	<Null>
1781CO	<Null>	<Null>	<Null>	<Null>
1730CO	<Null>	<Null>	<Null>	<Null>
1730CO	<Null>	<Null>	<Null>	<Null>

10. The next step is to export the spatial layer out as a new feature class or shapefile. Soil Data Viewer requires a shapefile. First we're going to select the attribute fields we want to include in the attribute table of the new spatial layer. Right click on the spatial layer, select "Properties", then click on the "Fields" tab. Suggested fields to include are the "musym" from the spatial layer, and the following from the mapunit table: musym, muname, mustatus, and mukey.



When the mapunit table is joined to the spatial layer, a number of fields are added to the attribute table that may not be needed. The "Clear All" button can be used to unselect all the fields, then the desired fields can be selected by clicking the box to the left of the field name

11. Right click on the spatial layer in the table of contents, select Data > Export Data. The dialog box below on the left will appear. The layer can be exported into an existing personal or file geodatabase, or as a shapefile. If you want to use the layer with Soil Data Viewer it needs to be a shapefile.



The browse button will open the dialog box above right. The file name and folder location can be set, and the file type (shapefile or feature class) can be selected.

12. See the image below. The attribute table of the new layer created in step 11 above has a column named "MUSYM" that came from the original spatial layer. It has a field length of 10 characters. Soil Data Viewer requires a text (string) field named "musym" with a length of 6 characters. The musym_1 field came from the joined "mapunit" table and has a length of 6 characters.

FID	Shape *	MUSYM	musym_1	muname	mustatus	mukey
0	Polygon	19Am	19Am	Borobey ashy sandy loam, 0 to 5 percent slopes	Approved	78457
1	Polygon	93Bm	93Bm	Ninemile-Dester complex, 1 to 8 percent slopes	Approved	78472
2	Polygon	93Bm	93Bm	Ninemile-Dester complex, 1 to 8 percent slopes	Approved	78472
3	Polygon	095	095	Erakatak-Ateron complex, 40 to 70 percent south slopes	Approved	78390
4	Polygon	070	070	Simas-Sorf complex, 12 to 30 percent south slopes	Approved	78586
5	Polygon	030	030	Polly loam, 1 to 15 percent slopes	Approved	78385
6	Polygon	204	204	Ayres cobbly loam, moist, 3 to 8 percent slopes	Approved	817866
7	Polygon	161	161	Lickskillet-Rock outcrop-Searles complex, 40 to 80 percent south slopes	Approved	78438
8	Polygon	030	030	Polly loam, 1 to 15 percent slopes	Approved	78385
9	Polygon	030	030	Polly loam, 1 to 15 percent slopes	Approved	78385
10	Polygon	085	085	Erakatak-Ateron complex, 12 to 30 percent south slopes	Approved	78412
11	Polygon	091	091	Bonnieview-Polkbutte complex, 8 to 40 percent north slopes	Provisional	78386
12	Polygon	095	095	Erakatak-Ateron complex, 40 to 70 percent south slopes	Approved	78390
13	Polygon	091	091	Bonnieview-Polkbutte complex, 8 to 40 percent north slopes	Provisional	78386
14	Polygon	091	091	Bonnieview-Polkbutte complex, 8 to 40 percent north slopes	Provisional	78386

Field Properties

Name: MUSYM
 Alias: MUSYM
 Type: String

Display
 Turn Field off
 Use Field as Primary Display Field
 Number Format: []

Data
 Length: 10

OK Cancel Apply

One way to create a new "musym" field with length of 6 characteristics is to use the following steps:

- Open the attribute table. Click on the "Options" button and select "Add Field". Use a field name of "musym2". Set the field properties as "text" with a length of 6.
- Right click on the header of the musym2 field and select "Field Calculator". Set the field calculator to musym2 = MUSYM. This will calculate the new field, including the musym's that were not in the NASIS legend.
- Delete the fields MUSYM and musym_1
- Add a new field named "musym" as text with length of 6. Calculate the field with criteria of musym = musym2.
- Delete the musym2 field.

13. The shapefile is now ready to use with Soil Data Viewer. Below is an example of an ecological site ID map for the dominant condition created with Soil Data Viewer.

Soil Data Viewer is a useful tool for checking soil properties and interpretations spatially. It can also be used to check consistency of soil properties and interpretations across subset survey area boundaries.

The shapefile with mukey and the SSURGO Access database can be provided to users as interim data products while the survey is progressing.

The Soil Data Viewer software and user guide are available at:

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

