

Soil Survey Geographic Database (SSURGO) Bulk Downloader for ArcGIS Pro

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1. Overview

The following sections detail the instructions for installing the SSURGO Bulk Downloader into ArcGIS Pro and for using the SSURGO Bulk Downloader tool.

SSURGO data is delivered as a series of datasets on <u>Web Soil Survey (WSS)</u>, delivered in zip files. There are over 3,000 SSURGO datasets for the United States and Island Territories, but WSS only allows you to download a single SSURGO dataset at a time. The SSURGO Bulk Downloader can download many datasets at once, and, unlike WSS, it will unzip (i.e., extract) the files as part of the download process.

This guide assumes the following:

- You have ArcGIS Pro 2.6 or greater installed on your computer.¹
- Your operating system is Microsoft Windows 10 or greater.²

2. SSURGO Bulk Downloader Installation

The SSURGO Bulk Downloader tool comes in a zip file. You will need to unzip (i.e., extract) the contents after downloading the file. You can store the tool in any local directory. To install the SSURGO Bulk Downloader, complete the following steps:

1. Download SSURGO Bulk Downloader ArcGIS Pro.zip from the <u>SSURGO Portal</u> <u>webpage</u> to the directory of your choice and unzip (extract) the contents.

The example below shows file extraction through **WinZip**, but, depending on your software, you may have to use **Extract All** or some other option to extract the contents.



² The developers tested SSURGO Bulk Downloader on Windows 10 and 11.

¹ The developers tested SSURGO Bulk Downloader on ArcGIS Pro 2.6, 2.7, and 3.0.



You should see the information below once you extract the data. The actual tool is in the SSURGO Bulk Downloader folder.

> This PC > OS (C:) > SSURGO Portal > Downloader				
Name	Date modified	Туре		
SSURGO Bulk Downloader ArcGIS Pro	9/6/2023 10:39 AM	File folder		
💐 SSURGO Bulk Downloader ArcGIS Pro	9/6/2023 11:16 AM	WinZip File		

2. Add the SSURGO Bulk Downloader tool to ArcGIS Pro.

Open an ArcGIS Pro project. If the Catalog isn't already open, click on the **View** tab and then click **Catalog Pane**, which should open the Catalog on the right side of the application by default.





3. In the Catalog pane, right click on Toolboxes, and select Add Toolbox.



4. Navigate to the location of the SSURGO Bulk Downloader.tbx file and click **OK**. The file is in the SSURGO Bulk Downloader you unzipped (extracted) in step 1. The .tbx extension is the ArcGIS Toolbox file format.

Ac	dd Toolbox				
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Or	rganize 🖌 New Item 🗸				EII
A	Project	ame		Туре	Date Mo
	Databases	SSURGO Bulk Downloader.tbx		Toolbox	5/15/2023
	Folders				
4	Computer				
	Quick access				
	🔺 💻 This PC				
	Image: Strange Stra				
	Desktop				
	Documents				
	Downloads				
	Music				
	Pictures				
	Videos				
	OS (C:)				
	DATA (D:)				
	ORPO2 (\\USDA\NRCS\Data) (F				
<					>
	Name SSURGO Bulk Downle	oader.tbx	Tool	boxes (All Types)	•
				ОК	Cancel



5. The step above added the SSURGO Bulk Downloader toolbox to the project.



click on the SSURGO Bulk Downloader.tbx file and select **Add to Favorites**. Doing this will permanently add the toolbox to the Favorites section of the Catalog pane and it will be available in new projects. It will not appear in the Toolboxes section of the Catalog pane, but it can be run from the Favorites section.

3. Using SSURGO Bulk Downloader

This section assumes you have an open ArcGIS Pro project with the SSURGO Bulk Downloader toolbox installed in the Toolboxes folder and the Catalog pane is open. If the SSURGO Bulk Downloader Toolbox is not installed or the Catalog pane is not visible, refer to section 2 for additional guidance.

To begin using the SSURGO Bulk Downloader, complete the following steps:

1. Under **Toolboxes** in the ArcGIS Pro project **Catalog**, descend to the script icon and double click it to launch the **SSURGO Bulk Downloader**.



2. The tool will open in the **Geoprocessing** pane. A series of **Parameters** appear, which all need valid values before the tool will run. The guide discusses this below. Access guidance for each parameter by hovering over the red asterisk adjacent to each field. The **Environments** tab does not apply for this tool.

Geoprocessi	ng	~ å ×
	SSURGO Bulk Downloader	\oplus
Parameters Er	vironments	2
* Search by Area	symbol	
* Output Folder		
* Soil Surveys)	
Overwrite	Existing Data	
		🕞 Run 👻
Catalog Geopre	ocessing History	



3. Enter a value in **Search by Areasymbol**. You can search for area symbols several ways. The following pages show three different options.

Option One: You can enter a single soil survey area symbol. For example, you can enter "KS001" and it will download the SSURGO data for KS001 – Allen County, Kansas.

Geoprocessing	~ 4 ×
SSURGO Bulk	Downloader 🕀
Parameters Environments	?
Search by Areasymbol KS001	

Option Two: You can use the asterisk (*) symbol to search for more than one soil survey area symbol. For example, you can enter "KS*" to retrieve all SSURGO data for the entire state of Kansas.

Geoprocessing		~ 4 ×
SSURGO Bulk Downloader		\oplus
Parameters	Environments	?
Search by Are KS*	easymbol	



Option Three: You can enter a list of area symbols separated by commas to download more than one soil survey area symbol. For example, you can enter "KS001, KS002, KS003" to retrieve the SSURGO data for these three soil survey areas.

Geoprocessing		× □ ×
SSU SSU	RGO Bulk Downloader	\oplus
Parameters Environ	nments	?
Search by Areasymb	ol	
KS001, KS002, KS003		

Notes:

- (a) An asterisk (*) is a wildcard.
- (b) After you enter a value in the Search by Areasymbol parameter and click out of the box, the tool executes the search and the soils surveys will populate the Soil Surveys section below, although you need to expand the list.
- (c) If you include search terms that yield no match results, those search terms will simply be ignored by the tool (i.e., 'HI701, ZZ*' will match only HI701 and ZZ* will be disregarded).
- (d) With one exception, the format for Areasymbols is two letters for the U.S. state or territory followed by a three-digit number (i.e., HI701).
- (e) The quotation marks used in the guide are not necessary. The tool removes single and double quotes before the search string is parsed.
- (f) This field is not case sensitive, so for example, hi701, HI701, and HI701 all work.
- (g) If you include special characters other than the wildcard ("*"), the tool prompts you to remove them before the tool can run successfully.
- 4. Select **Output Folder** by clicking the folder icon on the right of the **Output Folder** parameter. The Downloader stores the SSURGO downloads here.

Geoprocessing	~ † ×
SSURGO Bulk Downloader	\oplus
Parameters Environments	?
Search by Areasymbol KS001	
Output Folder C:\SSURGO Portal\SSURGO	

5. Select soil surveys to download by clicking the arrow next to Soils Surveys and then choosing the ones you want to download. You can select all by clicking the box at the bottom right after the dropdown list appears. Click Add to finish. The example shows "KS*" as the search parameter, so the tool returned all soil survey areas for Kansas.

Geoprocessing	~ å ×	
SSURGO Bulk Downloader	\oplus	
Parameters Environments	?	
Search by Areasymbol KS*		
Output Folder SSURGO		Click to show drop down list. Boxes
✓ KS001, 2022-09-13, Allen County, Kansas ✓ KS002, 2022-09-13, Allen County, Kansas	^	are unchecked initially.
KS005, 2022-09-12, Atchison County, Kansas		
 ✓ KS007, 2022-09-13, Barber County, Kansas ✓ KS009, 2022-09-13, Barton County, Kansas ✓ KS011, 2022-09-13, Bourbon County, Kansas 		Click to select all.
 KS013, 2022-09-12, Brown County, Kansas KS015, 2022-09-13, Butler County, Kansas KS015, 2022-09-13, Butler County, Kansas 		
 ✓ KS017, 2022-09-13, Chase County, Karsas ✓ KS019, 2022-09-13, Chautauqua County, Kansas ✓ KS019, 2022-09-13, Chautauqua County, Karsas 		
 ✓ KS021, 2022-09-13, Cherokee County, Kansas ✓ KS023, 2022-09-13, Cheyenne County, Kansas ☑ 	Add	Click Add to add these to the tool so they can be downloaded

Notes:

- (a) The down-arrow opens the dropdown list.
- (b) Individual items can be clicked, or the icon on the bottom-left of the list toggles the checkboxes on and off.
- (c) After you make the selections, click Add.
- (d) **WARNING:** Loading the entire list of nearly 3,400 Areasymbols can take as long as 5 minutes.



6. After clicking Add, the final list of soil survey areas to be downloaded appears. The Overwrite Existing Data box is checked by default. You can either leave it checked, which will overwrite any SSURGO data in the output folder that uses an area symbol you are downloading, or you can uncheck the box. Typically, you will want to overwrite the data to ensure you are using the most up-to-date SSURGO information from Web Soil Survey.

Geoprocessing	~ † ×	
	\oplus	
Parameters Environments	?	
Search by Areasymbol DE*		
Output Folder SSURGO		
Soil Supreys (x) DE001, 2022-09-14, Kent County, Delaware DE003, 2022-09-14, New Castle County, Delaware DE005, 2022-09-14, Sussex County, Delaware	~	Soil surveys areas that will be downloaded.
✓ Overwrite Existing Data]	Will overwrite existing soil survey areas in the output
		and one of the area symbols you are downloading exists
		in the output folder

7. Click Run to download SSURGO data.

Geoprocessing	~ 🗆 ×
SSURGO Bulk Downloader	\oplus
Parameters Environments	?
Search by Areasymbol	
Output Folder SSURGO	
DE001, 2022-09-14, Kent County, Delaware	÷
DE003, 2022-09-14, New Castle County, De	laware ~
DE005, 2022-09-14, Sussex County, Delawa	re ~
	~
✓ Overwrite Existing Data	🕞 Run 🗸

The status bar at the bottom of the tool shows the tool is working. For more details, click on the **View Details** link at the bottom of the tool. Note that some large Areasymbols can take many minutes to download and downloading all Areasymbols can take several hours. Below is a screenshot of the tool details after a run has been completed. The downloaded datasets will be in the selected output folder.

SSURGO Bulk Downloader (TestSDDT)	×
Started: Today at 6:13:55 PM	
Completed: Today at 6:14:39 PM	
Elapsed Time: 44 Seconds	
Parameters Environments Messages (13)	P
0 1 2	
9 soil survey(s) selected for Web Soil Survey download	
Running on 9 threads.	- 1
Survey successfully downloaded	- 1
Survey successfully downloaded	- 1
HI950: Survey successfully downloaded	- 1
HI701: Survey successfully downloaded	- 1
HI960:	- 1
Survey successfully downloaded HT990:	
Survey successfully downloaded	- 1
M1980: Survey successfully downloaded	- 1
CA101: Survey successfully downloaded	- 1
HI801: Survey successfully downloaded	- 1
	- 1
Successfully downloaded 9 of 9 surveys.	
Succeeded at Friday, June 16, 2023 6:14:39 PM (Elapsed Time: 43.84 seconds)	

You should also see the SSURGO files in the output folder.

SSURGO		
Share View Share View SSURGO Portal > SSURGO		
KS001	6/30/2023 1:22 PM	File folder
KS003	6/30/2023 1:23 PM	File folder
KS005	6/30/2023 1:22 PM	File folder
KS007	6/30/2023 1:25 PM	File folde
KS009	6/30/2023 1:22 PM	File folde
KS011	6/30/2023 1:22 PM	File folde
KS013	6/30/2023 1:22 PM	File folde
KS015	6/30/2023 1:26 PM	File folde
KS017	6/30/2023 1:23 PM	File folde
KS019	6/30/2023 1:22 PM	File folde
V\$001	6/20/2022 1.20 DM	Eile felder



When downloading numerous soil survey areas, such as the entire SSURGO dataset, failures may occur due to issues on the server. If this happens, the tool may not have downloaded some soil surveys. Below is a screen shot of the final log messages that list the soil surveys that did not download. Rather than trying to download all the soil surveys again, you can make a comma-delimited string from the error log, paste it into the **Search by Areasymbol** parameter, and rerun the tool. This will download the soil surveys that failed. In this example, you make the list: CA013, CA011, CA041, CA031, CA033, CA021, CA053.

