

Soil Survey Geographic Database (SSURGO) Bulk Downloader for QGIS

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1. Overview

The following sections detail the instructions for installing the SSURGO Bulk Downloader into the QGIS Processing Toolbox and for using the SSURGO Bulk Downloader tool. The tool downloads the same data as <u>Web Soil Survey (WSS)</u>. However, the SSURGO Bulk Downloader can download many datasets at once, while WSS cannot. Another difference is that WSS downloads ZIP files, while the SSURGO Bulk Downloader saves unzipped datasets to the selected output directory.

This guide assumes the following:

- You have QGIS 3.0 or greater installed on your computer.¹
- Your operating systems is Microsoft Windows 10 or greater.²

2. SSURGO Bulk Downloader Installation

To install the SSURGO Bulk Downloader, complete the following steps:

- 1. Download SSURGO Bulk Downloader QGIS.zip from the <u>SSURGO Portal webpage</u> to the directory of your choice. You don't need to unzip the file.
- 2. Open QGIS, click the Plugins tab, and select Manage and Install Plugins.
- 3. Some users may encounter the following **SSL Errors** window when the Plugin Manager loads. It is okay to click the **Ignore** button since the plugin installation will be from a ZIP file rather than from a web connection.

¹ The developers tested SSURGO Bulk Downloader on 3.22 and 3.30.

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



Q Custo	m Certificate Configuration	×
▼ SSL E	SSL Errors occurred accessing URL: https://plugins.qgis.org/plugins/plugins.xml?qgis=3.14	
* Unab	le to Get Local Issuer Certificate: The issuer certificate of a locally looked up certificate could not be found	
•	Connection Certificates Connection Trusted CAs Save SSL Server Exception	
	Save & Ignore Abort	



4. In the plugin manager, select Install from ZIP.

Q Plugins Install from ZIP		×
All Installed Install from ZIP Settings	If you are provided with a zip package containing a plugin to install, please select the file below and click the <i>Install plugin</i> button. Please note for most users this function is not applicable, as the preferable way is to install plugins from a repository. ZIP file:	
	Close Help	,

- 5. Navigate to where you downloaded SSURGO Bulk Downloader QGIS.zip and then click **Install Plugin**.
- 6. A security warning will pop up. Click Yes to continue.

Q QGIS3	×
	Security warning: installing a plugin from an untrusted source can lead to data loss and/or leak. Continue? Don't show this again.
	Yes No

7. The installation happens quickly, after which you should see the following message at the top of the plugin manager.

	Q Plugins Install from 2	ZIP	×
	🏠 All	Plugin installed successfully	8
I	hstalled		

8. The **SSURGO Bulk Downloader** should now appear in the **Installed** section of the plugin manager. The plugin manager can now be closed.

Q Plugins Installed (10))	×
i All	Q Bearch	
Installed Install from ZIP	✓ ■ DB Manager ▲ Geometry Checker ● GPS Tools ✓ ● MetaSearch Catalog Client ● OfflineEditing ✓ ● Plugin Builder 3 ✓ ● Plugin Reloader ✓ ● SSURGO Bulk Downloader ● Topology Checker	Installed Plugins Here you only see plugins installed on your QGIS. Click on the name to see details. Click the checkbox or double-click the name to activate or deactivate the plugin. You can change the sorting via the context menu (right click).
		Upgrade All Uninstall Plugin Reinstall Plugin
		Close Help

9. Additionally, the **SSURGO Bulk Downloader** should now appear in the **Processing Toolbox** in the main QGIS application.



10. If the Processing Toolbox is not open, you can open it by clicking on the **Processing** tab and selecting **Toolbox**.

Processing Help	
🔆 <u>T</u> oolbox	Ctrl+Alt+T
- 🏇 <u>G</u> raphical Modeler	Ctrl+Alt+G
Listory	Ctrl+Alt+H
<u>R</u> esults Viewer	Ctrl+Alt+R
Edit Features In-Place	

3. Using SSURGO Bulk Downloader

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

- 1. Double click to launch the **SSURGO Bulk Downloader** in the Processing Toolbox.
 - SSURGO Bulk Downloader
 SSURGO Bulk Downloader
- 2. Fill in the **Parameters** according to the guidance provided to the right. On this screen, you are searching for soil survey areas by area symbols and setting the location where you will store the SSURGO data. After you fill out the parameters and click **Run**, a new window will appear with a list of candidate soil survey areas you can select for download. These are the soil survey areas returned by your search. You will then select from this list and begin the download. Additional notes are below.

Parameters Log	•	SSURGO Bulk Downloader	4
earch by Areasymbol Overwrite Existing Data utput Folder Save to temporary folder]		 Search by Areasymbol Use the following guidance to enter text strings to search Web Soil Surveys, and then click the Run button to see results. Enter '*' to get all SSURGO surveys Enter 'CONUS' to get SSURGO surveys for the continental United States A wildcard, '*', can be used at the beginning or end of a string. For instance, 'NE*' will find all Nersaks surveys and '*101' will find all Area Surveys ending in 101. (Note, '*' can't be in the middle) Enter 'NE109' to get just one survey Enter multiple surveys by separating them with commas, such as 'CA101,TX107,HI9*' Overwrite Existing Data By default, if a subfolder with an Areasymbol name already exists in the Output Folder, the data inside will be overwritten. Uncheck the box if you do not wish for this to happen. Output Folder Select the folder where you want the Web Soil Survey data to be downloaded. 	
0%	,	Cancel	



- a. Search by Areasymbol.
 - 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).
 - The quotation marks used in the guide are not necessary. Single and double quotes are removed before the search string is parsed.
 - This field is not case sensitive, so, for example, hi701, Hi701, and HI701 all work.
 - If you include special characters other than the wildcard ("*"), the tool prompts the user to remove them before the tool can run successfully.
 - If your search string doesn't yield any Areasymbol matches (i.e., 'ZZ*'), then, when you click **Run**, a dialog box will pop up informing you, "No Area Survey Matches". After clicking **OK**, you can modify the search string.
- b. **Overwrite Existing Data**. If this setting remains checked, the tool only overwrites the files that are standard for an Areasymbol. If you changed any names or added any items, the tool will not affect them.
- c. **Output Folder**. Data downloaded to the default (Save to temporary folder) location ends up buried in C:\Users\[USER]\AppData\Local\Temp and will be deleted once QGIS is closed, so it is highly advisable to select your own location.
- 3. With "Hi*, CA101, ZZ*" as an example search string and C:\BulkDownloads as the output folder, clicking **Run** results in one dialog box for the tool's log messages and another for the Areasymbols that matched the terms in the search string. As explained above, "ZZ*" doesn't yield any matches. In this case there are other matching results, so a log entry prints a list of any search terms that did not yield matches.

QGIS version: 3.14.15-Pi QGIS code revision: d51142cfa QGI code revision: d51142cfa QGI version: 5.1.2 GDAL version: 3.0.4 GGOS version: 3.0.4-CAPI-1.1.3.3 PROJ version: 8.0.4-CAPI-1.1.3.3 PROJ version: 8.0.4-CAPI-1.3.3 PROJ version: 8.0.4-CAPI-1.3.3 PROJ version: 8.0.4-CAPI-1.3.3.3 PROJ version: 8.0.4-CAPI-1.3.3.3 PROJ version: 8.0.4-CAPI-1.3.3.3.3 PROJ version: 8.0.4-CAPI-1.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3	', 'Soverwribe' : True }	
9 Area Surveys matched search string Rejects (effer 1. badly formatted search string or 2. search string yielded no results): ZZ [#]	Q SSURGO Bulk Downloader 9 Area Surveys Matched. Select Items to download. CA101, 2022-09-01, Sutter County, California H1701, 2022-08-30, Hawaii Volcances: National Park, Hawaii H1801, 2022-08-30, Island of Hawaii Area, Hawaii H1905, 2022-08-30, Island of Molokai, Hawaii H1906, 2022-08-30, Island of Kaui, Hawaii H1970, 2022-08-30, Island of Kaui, Hawaii H1980, 2022-08-30, Island of Maui, Hawaii H1990, 2022-08-30, Island of Maui, Hawaii H1990, 2022-08-30, Island of Kahoolawe, Hawaii H1995, 2022-08-30, Island of Kahoolawe, Hawaii	
0%	Select All	

- 4. In the Areasymbols results box, select at least one dataset to download and click OK. If nothing is selected, a popup box will state, "No items were selected," and the tool will return to its initial state. Cancel behaves the same except no popup box will appear.
- 5. The tool will now perform the downloading, as indicated by log messages as well as a status bar at the bottom of the dialog box. Note that some large Areasymbols can take many minutes to download, and downloading all Areasymbols can take several hours. Once all datasets have been downloaded, a popup box states that the tool has completed. Clicking OK will return the tool to its initial state. You can now see the logs that were in the popup window in the tool's Log tab. Also, the downloaded datasets will be in the selected output folder.

'Success': 0}		
<pre>oading resulting layers lgorithm 'SSURGO Bulk Downloader' finished /GIS version: 3.14.15-Pi /GIS code revision: d5114d2cfa ft version: 5.11.2 IDAL version: 3.0.4 FCOS version: 3.0.4 RCO version: 8.16.6.3.2, May 1st, 2020 rocessing algorithm Ugorithm 'SSURGO Bulk Downloader' starting nput parameters: 'lareaSymbol': 'Hi*, CA101, Z2*', '2outDir': 'C:\\Bul</pre>	lkDownloads', 'Soverwrite' : True }	
Area zon verya macuna semich aunig ejects (either 1. badly formatted search string or 2. search string yielded Z ⁴ soil survey(s) selected for Web Soil Survey download	I no results):	
Area Soliverys instances senich sung ejects (either 1. badly formatted search string or 2. search string yielded Z ⁴ soil survey(s) selected for Web Soil Survey download 1995: Survey successfully downloaded 1950: Survey successfully downloaded 1950: Survey successfully downloaded 1980: Survey successfully downloaded 1990: Survey successfully downloaded 1990: Survey successfully downloaded 1990: Survey successfully downloaded 1990: Survey successfully downloaded 1960: Survey successfully downloaded 1960: Survey successfully downloaded 1910: Survey successfully downloaded	I no results): QGIS3 × The SSURGO Bulk Downloader has completed. See the Log tab for details. OK	

6. In a second scenario, the developers attempted to download data to a full drive to illustrate how the tool handles download failures. Below is a screenshot of the final log messages. If the tool experiences any download failures, it generates a comma-separated list of those Areasymbols. A user can then cut and paste that list into another session of the tool rather than having to try again from the beginning.

9	Successfully downloaded 1 of 8 surveys.
7 H E F {	7 surveys failed to load. Cut/paste list into another session of the SSURGO Bulk Download tool to try again. H1950,H1970,H1701,H1960,H1980,H1990,H1801 Execution completed in 216.87 seconds (3 minutes 37 seconds) Results: {'Success': 0}
L /	Loading resulting layers Algorithm 'SSURGO Bulk Downloader' finished

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