SSURGO Query Tool

STONE ENVIRONMENTAL
100% EMPLOYEE-OWNED

Services / Expertise
Geospatial Data & Solutions
Web Application Development
ArcGIS Enterprise Hosting
Database Performance Tuning
Scientific Data Comprehension
Application Hosting

Technology
ArcGIS Server Enterprise
ArcGIS Web App Builder Developer Edition
ArcGIS JS API
ArcGIS Enterprise
Amazon AWS
PostGreSQL/PostGIS
HTML/JS/CSS
Python

Market
Federal Government
University Research Centers

Project Location
NRCS Arizona Office

Project Duration
2020–Present

Project Owner
University of Arizona

USDA Natural Resources Conservation Service, Conservation Effects Assessment Project for Grazing Lands (CEAP-GL)

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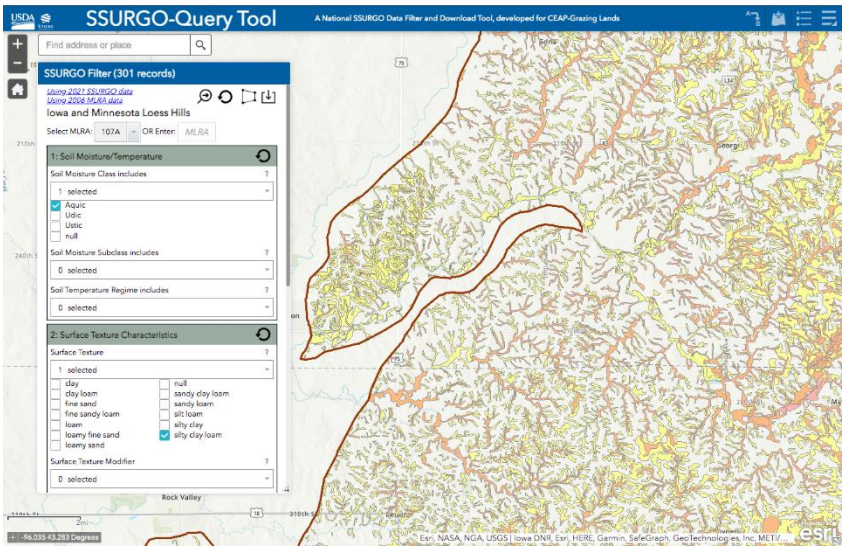
Application Link
http://www.ssurgoqt.com

esri Partner Network Member

State and Local Government Specialty



Using SSURGOQT.com to filter out the Soil Moisture Class and Surface Texture Characteristics for an MLRA

THE SSURGO soils data is crucial for a variety of conservation modeling efforts at the USDA NRCS, and beyond. However, the dataset is cumbersome to work with because of its size and is not easy for part-time users to dig into given the complexity of the data. In 2020, Stone worked with the USDA-NRCS CEAP-Grazing Lands team to develop the SSURGO-Query Tool (SSURGO-QT)—an application designed to help soil scientists, conservationists, rangeland/pastureland management specialists, agronomists, foresters, ecological site specialists, and other users query specific soil properties or characteristics at the major land resource area (MLRA) scale from current soil survey geographic information (SSURGO). The online application was designed to aid users in identifying soil/ecological sit concepts, group landscapes for modeling purposes, obtain management-pertinent soils data for more efficient - conservation planning, and to link research-scale data to soils data.

The NRCS CEAP-Grazing Lands (CEAP-GL) team needed a spatial and tabular means of displaying soil characteristics that typically indicate potential changes in ecological sites, and to both discretize and aggregate heterogeneous landscapes for modeling purposes. In the absence of an application to do this, the team partnered with Stone to provide that utility in an online, map-based application. This query tool allows users to choose desired soil characteristics from current SSURGO and 30m SSURGO data. CEAP-GL team members identified the most useful soil characteristics that influence vegetation and water dynamics needed for grazing land modeling and other project work. Data is displayed by soil map unit components within the user selected MLRA. Users can select from 14 different soil and site physical and chemical properties, which include 51 nested soil properties, to query all mapped soil components within the selected MLRA. The querying of data starts at the MLRA scale, but the scale of the tool is the mapping scale - the map unit component

level, which is digitized by NRCS at either the 1:12,000 or 1:24,000 scale, depending upon the objectives and order of each soil survey. As users zoom below either of those map scales, ground-truthing the soil data is highly recommended. The output soil map unit component data will allow users to group soil components more efficiently for modeling, aid NRCS planners, ranchers and other agencies to develop conservation and monitoring plans and display or create ecological site concepts.

The SSURGO-QT ver. 1.0 web application uses of the most recent NRCS Soil Survey Geographic (SSURGO) soils data (SSURGO and 30m gSSURGO data). Annual updates to SSURGO-QT will provide refreshed soil spatial and tabular data approximately one month after those annual data refreshes are completed by NRCS. Supporting map layers include the Esri World Topographic Map and other ESRI base map products (Sources include: Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, and the GIS User Community), Major Land Resource Areas (MLRA; Soil Survey Staff, USDA NRCS 2006).

The application is available at http://www.ssurgoqt.com