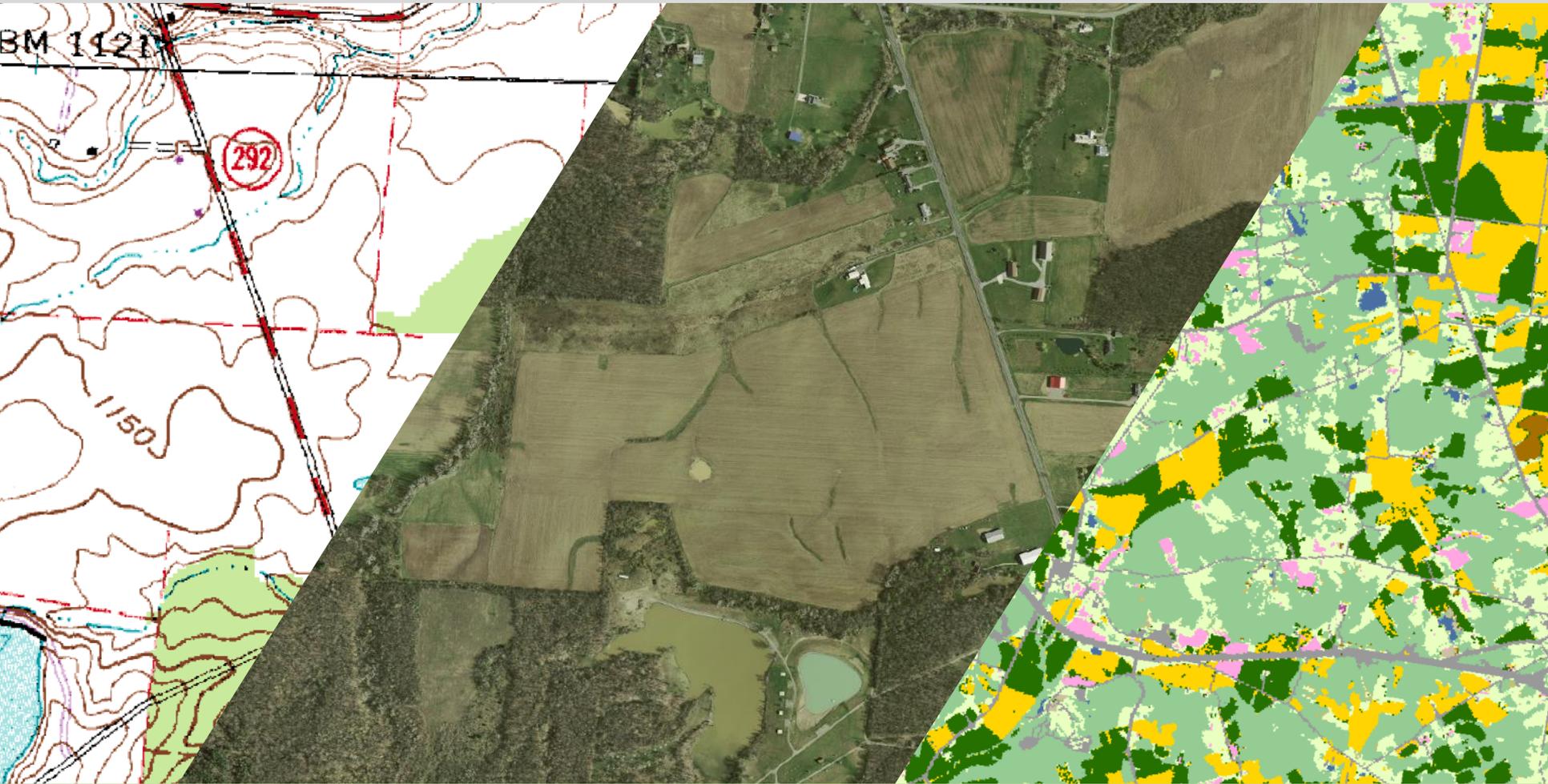


An Overlooked Asset?

GIS at Your County Conservation District



JEREMY A. KELLER, CF GISP

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USDA Natural Resources Conservation Service

Soil & Water Conservation Districts (SWCD)

- 88 special-purpose districts contiguous with every county in Ohio
- Staffing varies:
 - Rural Counties: May only have 2-3 staff
 - Urban Counties: May have 15+
- Led by District Administrator, with conservationists, engineering technicians and other technical staff
- Mission varies but typically includes:
 - Ditch maintenance & drainage issues
 - Conservation practice planning
 - Conservation education
 - Other related areas

SWCD employees are technically part of a separate political subdivision from the county; MOUs would need to be worked out on a case-by-case basis



“Soil and Water Conservation Districts (SWCDs) are independent political subdivisions of state government organized along county boundaries providing technical assistance to urban and rural land users. An elected board of local citizens provides SWCD leadership.”

Other Denizens of the SWCD Office Spaces

USDA Natural Resources Conservation Service (NRCS)

- USDA agency charged with planning and implementation of conservation practices on private lands to protect soil, water and air quality
- Staff are co-located with SWCD counterparts, and work cooperatively
- Local offices led by the District Conservationist, supported by Soil Conservationists and Engineering Technicians
- Formerly present in all counties, but now cover multiple counties from one office

As federal employees, NRCS staff not immediately available without FEMA mission order, but could be signed up as volunteers

USDA Farm Service Agency (FSA) office may also be co-located with SWCD



Other Denizens of the SWCD Office Spaces

Ohio Department of Agriculture (ODA)

- Division of Soil and Water Conservation provides technical support and administrative oversight to SWCDs (formerly part of ODNR)
- A few ODA technical staff are co-located at SWCD offices

Other Cooperating Agencies / NGOs

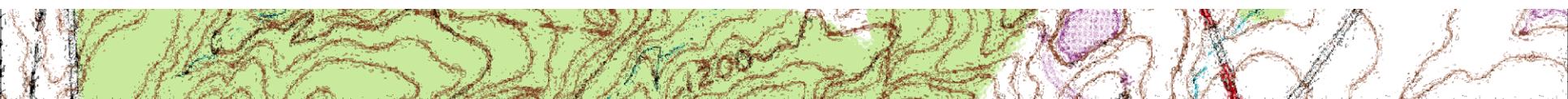
- Some districts have additional staff from conservation NGOs, such as Pheasants Forever





SWCD Geospatial Information Systems (GIS) Resources

- **Software:** NRCS provides full ESRI ArcGIS packages to all SWCD technical staff via national USDA contract at no charge to districts
- **Hardware:** Some SWCD operate on the USDA network with federally-owned IT systems; others operated on county-owned IT systems
- **Peripherals:** Every office has, at minimum:
 - GIS-capable and equipped workstations (laptop and/or desktop; numbers vary by district)
 - GPS units for field data collection
 - Color laser-jet and plotter printers (capabilities vary by district)
 - SWCD staff trained to operate GIS and GPS systems (numbers and skill level vary by district)



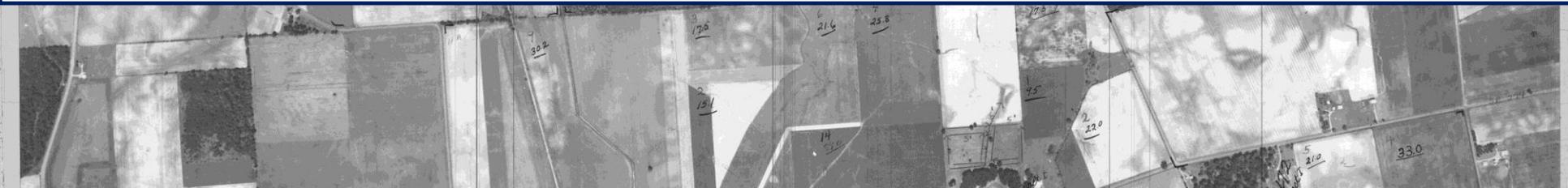


Geospatial Data Resources

- All SWCD have access to the standard suite of USDA geodata holdings, including:
 - Aerial imagery (NAIP 1-m; bi-annual)
 - Hydrologic data: FEMA floodplains; USGS hydro; wetlands
 - Transportation, including LBRS roads
 - Topo maps (USGS quads)
 - Elevation (DEM; contours)
 - Soil surveys

- Counties may provide additional geodata, such as high-resolution and/or oblique imagery (typically via the Auditor's Office)

- NRCS can provide additional geodata upon request, to include:
 - High-resolution imagery (1-ft, 0.5-ft)
 - Color infrared (CIR) imagery
 - LiDAR elevation data (1-ft, 0.5-ft)



Web Soil Survey (WSS)

On-line access to the all soils data maintained by USDA

Web Soil Survey

Secure | <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

Search

Area of Interest

Open All Close All

AOI Properties

Clear AOI

AOI Information

Name

Map Unit Symbols

Use Soil Survey Area Map Unit Symbols

Use National Map Unit Symbols

Area (acres) 12,527

Soil Data Available from Web Soil Survey

Logan County, Ohio (OH091)

Data Availability Tabular and Spatial, complete

Tabular Data Version 14, Sep 23, 2016

Spatial Data Version 6, Sep 19, 2014

Clear AOI

Import AOI

Export AOI

Quick Navigation

Address

State and County

View

State Ohio

County (optional) Logan

View

Soil Survey Area

Latitude and Longitude

Area of Interest Interactive Map

Legend

View Extent Contiguous U.S.

Scale (not to scale)

Logan

0 5,000 ft

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

Pro Tip: Just Google for “Web Soil Survey”

Web Soil Survey (WSS)

On-line access to the all soils data maintained by USDA

Interpretations of use to the EMA

- Disaster Recovery Planning
- Land Management
- Military Operations
- Recreational Development

Interpretations: The "So What?" of Soil Science

The screenshot shows the USDA Web Soil Survey interface. At the top, there is a navigation bar with links for Contact Us, Subscribe, Archived Soil Surveys, Soil Survey Status, Glossary, Preferences, Link, and Logout. Below this is a secondary navigation bar with tabs for Area of Interest (AOI), Soil Map, Soil Data Explorer (which is selected), and Download Soils Data. A dropdown menu for 'View Soil Information By Use' is set to 'All Uses'. The main content area has three tabs: Intro to Soils, Suitabilities and Limitations for Use (selected), and Soil Properties and Qualities. On the left, there is a 'Search' section and a 'Suitabilities and Limitations Ratings' table. The table has 'Open All' and 'Close All' buttons. The table lists various soil uses with a question mark icon and a dropdown arrow. On the right, there is a 'Soil Map' section with a legend and a map showing soil boundaries and labels like CrB, Bs, MhB, CeB, HeA, and CrA. Four red arrows point to the 'Disaster Recovery Planning', 'Land Management', 'Military Operations', and 'Recreational Development' rows in the table.

Suitabilities and Limitations Ratings	
Building Site Development	? ▾
Construction Materials	? ▾
Disaster Recovery Planning	? ▾
Land Classifications	? ▾
Land Management	? ▾
Military Operations	? ▾
Recreational Development	? ▾
Sanitary Facilities	? ▾
Vegetative Productivity	? ▾
Waste Management	? ▾
Water Management	? ▾

Web Soil Survey (WSS)

On-line access to the all soils data maintained by USDA

Disaster Recovery Planning ? ⬆	
	Catastrophic Mortality, Large Animal Disposal, Pit
	Catastrophic Mortality, Large Animal Disposal, Trench
	Clay Liner Material Source
	Composting Facility - Subsurface
	Composting Facility - Surface
	Composting Medium and Final Cover
	Rubble and Debris Disposal, Large-Scale Event

Land Management ? ⬆	
	Construction Limitation for Haul Roads and Log Landings (OH)
	Construction Limitations for Haul Roads and Log Landings
	Erosion Hazard (Off-Road, Off-Trail)
	Erosion Hazard (Off-Road, Off-Trail) (OH)
	Erosion Hazard (Road, Trail)
	Fencing, Post Depth 24 Inches or Less
	Fencing, Post Depth 36 Inches or Less
	Ground Penetrating Radar Penetration
	Harvest Equipment Operability
	Harvest Equipment Operability (OH)
	Mechanical Site Preparation (Deep)
	Mechanical Site Preparation (Surface)
	Mechanical Site Preparation (Surface) (OH)
	Pesticide Leaching Potential
	Pesticide Runoff Potential
	Potential for Damage by Fire
	Potential for Damage by Fire (OH)

Web Soil Survey (WSS)

On-line access to the all soils data maintained by USDA

Recreational Development	
Camp Areas	
Camp Areas (OH)	
Golf Fairways (OH)	
Off-Road Motorcycle Trails	
Off-Road Motorcycle Trails (OH)	
Paths and Trails	
Paths and Trails (OH)	
Picnic Areas	
Picnic Areas (OH)	
Playgrounds	
Playgrounds (OH)	

Military Operations	
Bivouac Areas	
Excavations for Crew-Served Weapon Fighting Positions	
Excavations for Individual Fighting Positions	
Excavations for Vehicle Fighting Positions	
Helicopter Landing Zones	
Vehicle Trafficability, Type 1, 1 Pass, Wet Season	
Vehicle Trafficability, Type 1, 50 Passes, Wet Season	
Vehicle Trafficability, Type 1, Dry Season	
Vehicle Trafficability, Type 2, 1 Pass, Wet Season	
Vehicle Trafficability, Type 2, 50 Passes, Wet Season	
Vehicle Trafficability, Type 2, Dry Season	
Vehicle Trafficability, Type 3, 1 Pass, Wet Season	
Vehicle Trafficability, Type 3, 50 Passes, Wet Season	
Vehicle Trafficability, Type 3, Dry Season	
Vehicle Trafficability, Type 4, 1 Pass, Wet Season	
Vehicle Trafficability, Type 4, 50 Passes, Wet Season	
Vehicle Trafficability, Type 4, Dry Season	
Vehicle Trafficability, Type 5, 1 Pass, Wet Season	
Vehicle Trafficability, Type 5, 50 Passes, Wet Season	
Vehicle Trafficability, Type 5, Dry Season	
Vehicle Trafficability, Type 6, 1 Pass, Wet Season	
Vehicle Trafficability, Type 6, 50 Passes, Wet Season	
Vehicle Trafficability, Type 6, Dry Season	
Vehicle Trafficability, Type 7, 1 Pass, Wet Season	
Vehicle Trafficability, Type 7, 50 Passes, Wet Season	
Vehicle Trafficability, Type 7, Dry Season	

Web Soil Survey (WSS)

On-line access to the all soils data maintained by USDA

Example: Large Animal Disposal, Pit

Report — AWM - Large Animal Disposal, Pit

Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. The table shows only the five most limiting features for any given soil. The soil may have additional limitations.

Logan County, Ohio

Map symbol and soil name	Pct. of map unit	Large Animal Disposal, Pit	
		Rating class and limiting features	Value
Ag—Algiers silt loam			
Algiers	90	Very limited	
		Flooding	1.00
		Wetness	1.00
		Dusty	0.08
		Unstable excavation walls	0.01
Bs—Brookston silty clay loam, fine texture, 0 to 2 percent slopes			
Brookston	90	Very limited	
		Ponding	1.00
		Wetness	1.00
		Water gathering surface	0.33
		Dusty	0.05
		Unstable excavation walls	0.01
Ca—Carlisle muck. Central Ohio clayey till plain. drained. 0			

Web Soil Survey (WSS)

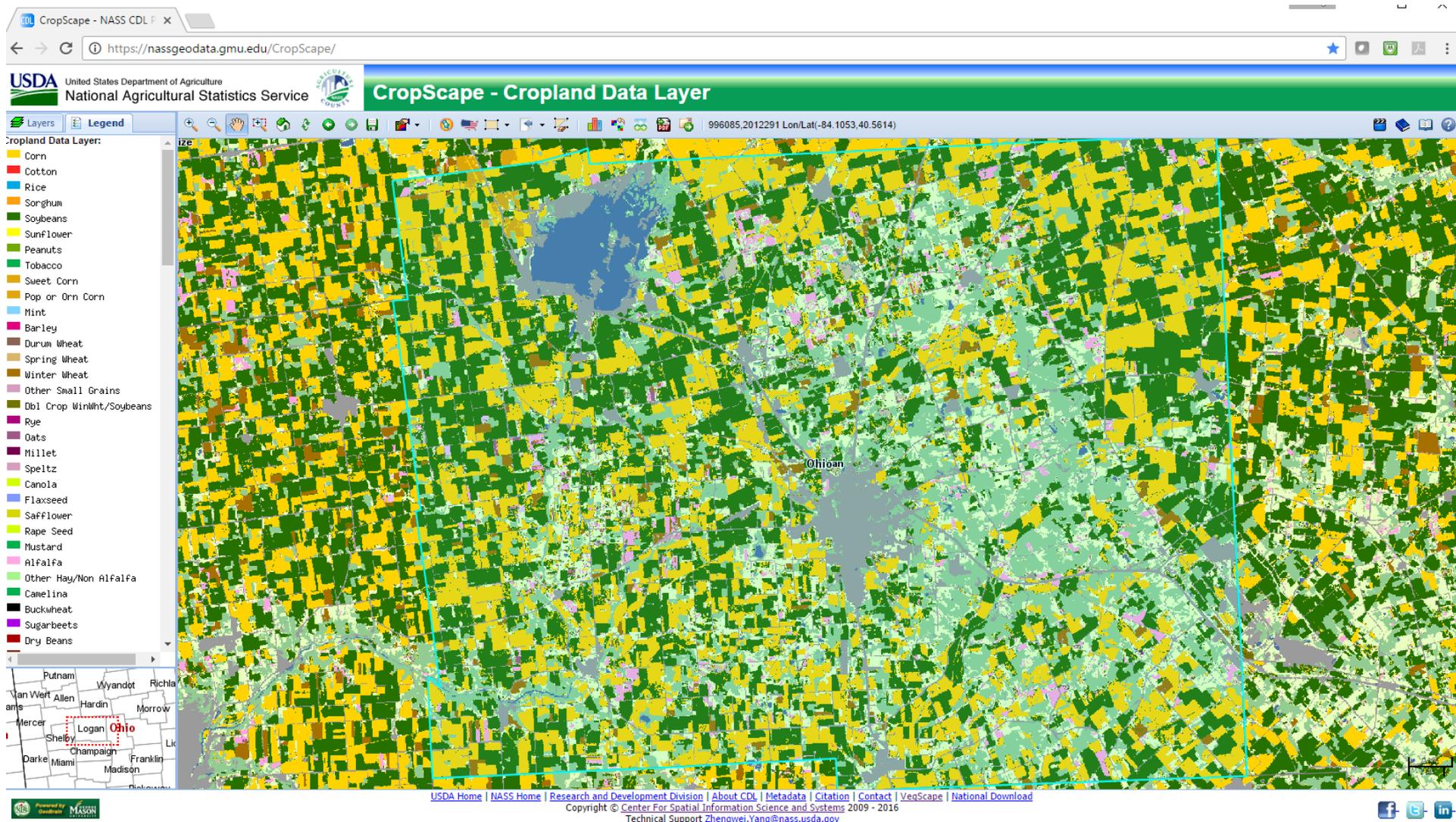
On-line access to the all soils data maintained by USDA

Web Soil Survey: A Work in Progress

- New, state-specific interpretations can be added to Web Soil Survey
- Send us your ideas, and we can work with the national center in Lincoln, NE to have new interpretations developed and added
- If it relates to soil, an interpretation can be developed

CropScape

- Annual Land Cover / Land Use estimate produced by USDA-NASS
- 200+ land cover categories at a 30-meter (~100-ft) scale
- Collected during growing season
- Retrospective, but provides excellent detailed estimates for 1997-2016

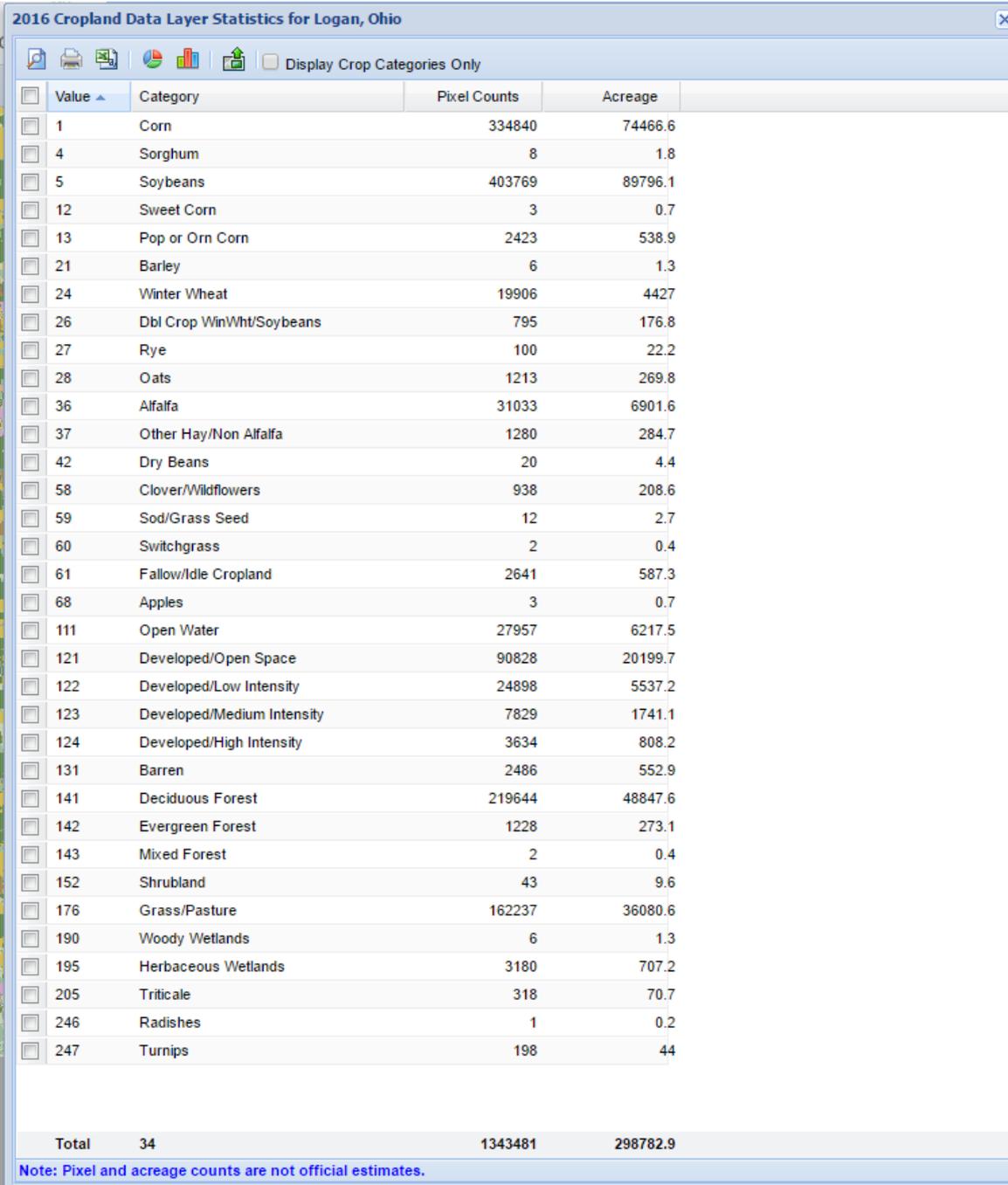


CropScape

- Tabular outputs can be created directly on website
- Can be downloaded in spreadsheet format (.csv)
- Geospatial layer can be downloaded directly as a raster file for use in GIS

Pro Tip: *Just Google "CropScape"*

<https://nassgeodata.gmu.edu/CropScape/>



Value	Category	Pixel Counts	Acreage
1	Corn	334840	74466.6
4	Sorghum	8	1.8
5	Soybeans	403769	89796.1
12	Sweet Corn	3	0.7
13	Pop or Orn Corn	2423	538.9
21	Barley	6	1.3
24	Winter Wheat	19906	4427
26	Dbl Crop WinWht/Soybeans	795	176.8
27	Rye	100	22.2
28	Oats	1213	269.8
36	Alfalfa	31033	6901.6
37	Other Hay/Non Alfalfa	1280	284.7
42	Dry Beans	20	4.4
58	Clover/Wildflowers	938	208.6
59	Sod/Grass Seed	12	2.7
60	Switchgrass	2	0.4
61	Fallow/Idle Cropland	2641	587.3
68	Apples	3	0.7
111	Open Water	27957	6217.5
121	Developed/Open Space	90828	20199.7
122	Developed/Low Intensity	24898	5537.2
123	Developed/Medium Intensity	7829	1741.1
124	Developed/High Intensity	3634	808.2
131	Barren	2486	552.9
141	Deciduous Forest	219644	48847.6
142	Evergreen Forest	1228	273.1
143	Mixed Forest	2	0.4
152	Shrubland	43	9.6
176	Grass/Pasture	162237	36080.6
190	Woody Wetlands	6	1.3
195	Herbaceous Wetlands	3180	707.2
205	Triticale	318	70.7
246	Radishes	1	0.2
247	Turnips	198	44
Total	34	1343481	298782.9

Note: Pixel and acreage counts are not official estimates.

Suggestions for the EMA Director

▪ Engage your SWCD

- What are their capabilities; and how do they relate to EMA needs?
- Can you get SWCD staff involved in training opportunities?
- What agreements will be needed to allow SWCD staff to work with EMA
- Educate county commission on potential value of SWCD to your mission

▪ Where can SWCD provide GIS (and other) support ?

- Mitigation planning
- EOP development
- Participation in training and exercises
- Staffing the EOC
- Damage assessment & GPS collection (especially agriculture areas & facilities)
- Support during recovery

Possible funding to help your SWCD support the EMA

- **Laptops**: Some districts only have desktops or USDA-owned laptops
- **Portable Hard Drives**: Bulk data storage; access if networks are down
- **Printer Supplies**: Toner and large-format paper

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DULL
STATION

POPULATION 22
6 DOGS & 10 CATS

