



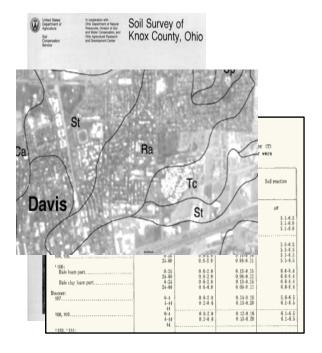
Online Soil Survey Applications to Investigate the Soil Resource Toby O'Geen and Dylan Beaudette Dept. of Land, Air and Water Resources, UC Davis



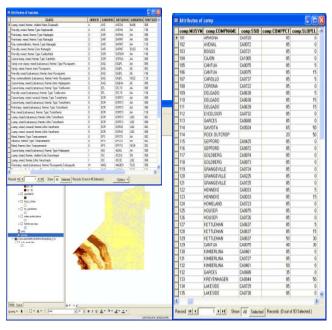


Soil Survey Information

Printed Surveys



SSURGO in GIS



NRCS-Web Soil Survey

Develop new soil survey products that are:

User friendly
Linked with other technologies
Self explanatory
Flexible
Error proof



Find the CA Soil Resource Lab on the Web

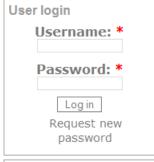
California Soll Resource Lab

Home Links Online Soil Survey People Projects Software Site Map

Navigation

- blogs
- books
- · Recent posts
- search
- News aggregator







UC Davis Soil Resource Laboratory

Submitted by toby on Wed, 2005-06-01 22:53.

Welcome to the UC Davis Soil Resource Laboratory. Our research covers many aspects of soil science including:

- · Soil genesis and morphology
- · Water quality and constructed wetlands
- · Colaboration with NRCS and NPS staff
- · Soil-landform relationships and modeling
- Watershed-scale soil survey studies
- · Soil science educational material
- · Soil survey related outreach, including one of the first online soil surveys

For more information about the people in our lab, please click on the "People" link at the top of the page. The content on this website is frequently updated. Please utilize our RSS feeds to stay informed of progress. Here is a list of RSS aggregator software packages.

We are currently re-organizing some content. If you are looking for our Online Soil Survey links, they have been moved $\underline{\text{here}}$.



SSURGO Map Units

http://casoilresource.lawr.ucdavis.edu/soilsurvey Google Maps Interface

California Soil Resource Lab

Home Links Online Soil Survey People Projects Software Site Map

SoilWeb: An Online Soil Survey Browser

- Accessing Soil Survey Data via Web-Services
- Dynamic Export of Soil Survey Data to KML through Soil-Web
- Initial SoilWeb Concept on Paper
- Major updates to CA, AZ, NV online soil survey system
- Migrating to Ka-Map!
 Online Soil Survey
 for AZ, CA and NV
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- Updated SoilWeb for the iPhone + Alpha Android Version
- Updated SoilWeb Usage Statistics
- Updates to SoilWeb

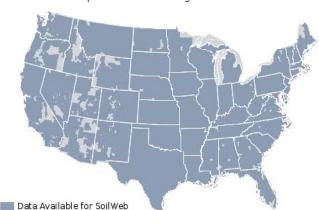
Navigation

blogs

SoilWeb: An Online Soil Survey Browser

Submitted by dylan on Fri, 2010-02-26 16:13.

Our online soil survey can be used to access NRCS-NCSS 1:24,000 scale detailed soil survey data (SSURGO) in many parts of the lower 48 states. Where this data is not yet available, 1:250,000 scale generalized soils data (STATSGO) can be accessed instead (AZ, CA, NV only). An interactive map interface allows for panning and zooming, with highways, streets, and aerial photos to assist navigation (Figure 1). Soil polygons become visible near a scale of 1:30,000. Alternatively, a GPS point, CA Zip code, or a street address can be used to zoom in on a specific location. General usage notes and information on how our online soil survey work can be found here. Statistics on who is using our online soil survey can be found here. Technical details on SoilWeb can be found in this publication. Please note that we are currently transitioning to a new server, and planning to have our local copy of the SSURGO, STATSGO, and OSD databases updated in the coming months.





SSURGO Map Units



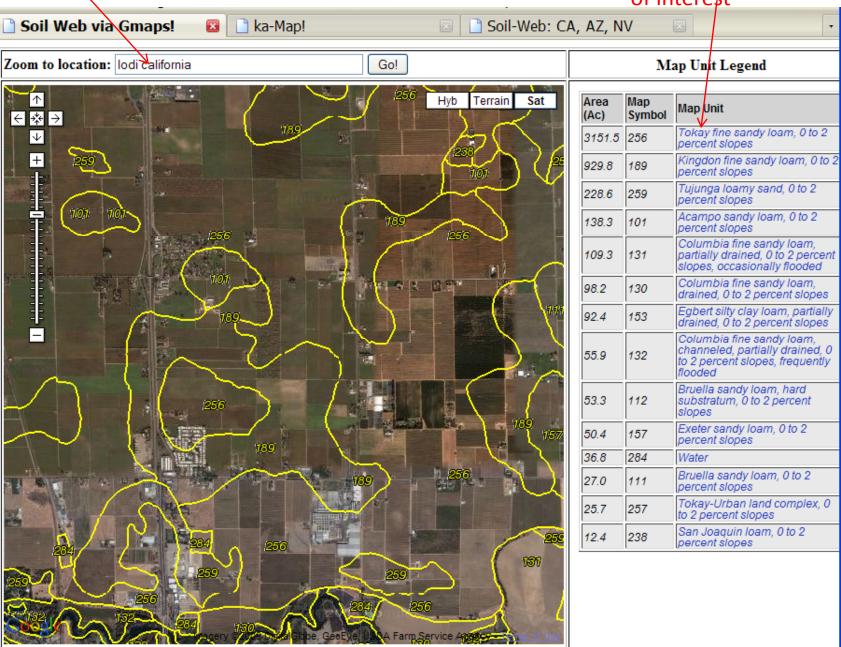
STATSGO Map Units

Select an Interface to SoilWeb

- An iPhone App for real-time, location-based soil queries! [details] [SSSA News Brief] [ANR News Article] [UCD Aggie Article]
- · Similar App for AndroidOS smartphones
- Google Maps interface
 - ■Google Earth Interface
 - A Text-only interface to SSURGO

Enter location here Google Maps Interface in view field. Click on MU

List of map units that occur of interest



Map unit summary page-click on soil component of interest



Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	% of Map Unit	Component Type	Horizon Data
Soil Type 1 Tokay	85	Major Soil Type	YES
Soil Type 2 Devries	4	Inclusion	Similar Data [1] *
Soil Type 3 Tujunga	4	Inclusion	Similar Data [1] *
Soil Type 4 Acampo	4	Inclusion	Similar Data [1] *
Soil Type 5 Kingdon	3	Inclusion	Similar Data [1] *

Note: links to horizon data marked with an * are approximate.

Map Unit Data What is a Map Unit?

Cartographic information about this map unit.

3						
Map Unit Name: Tokay fine sandy loam, 0 to 2 percent slopes						
Map Unit Type: Consociation						
Map Unit Symbol:	Map Unit Symbol: 256					
Map Unit Acres:	16 acres (30309ac. total in survey area)					
Raw Map Unit Data						
Raw Component Data (All Components)						

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	Prime farmland if irrigated					
Available Water Storage (0-100cm):	13.48 cm					
Max Flood Freq:	None					
Drainage Class (Dominant Condition):	Well drained					
Drainage Class (Wettest Component):	Well drained					
Hydric Conditions:	Partially hydric					
Min Water Table Depth:	n/a					
Min Bedrock Depth:	n/a					
Raw Aggregated Map Unit Data						

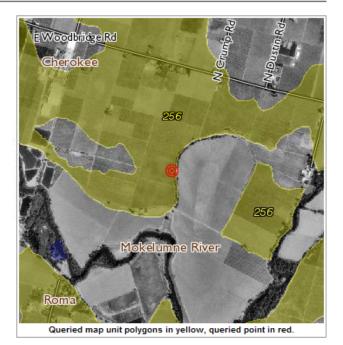
Map Unit Notes

Miscellaneous notes recorded by NRCS staff about this map unit.

Adjacent Soil Polygons

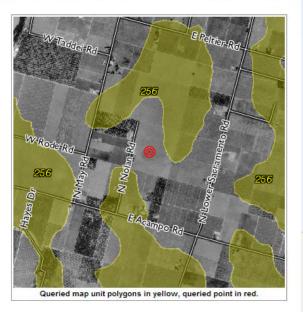
Links to the soil polygons touching the currently selected polygon.

- 1 Tokay fine sandy loam, 0 to 2 percent slopes
- 2 Egbert silty clay loam, partially drained, 0 to 2 percent slopes
- 3 Columbia fine sandy loam, partially drained, 0 to 2 percent slopes, occasionally flooded
- 4 Columbia fine sandy loam, drained, 0 to 2 percent slopes



California Soil Resource Lab





Geomorphology

76cm

114cm

76cm

114cm

Plants

Symbol	Scientin	C Name			Comi	non warne				P	rod.	
Organic Matter (%) Perce	nt Clay	Percent		Ksa	t (mm/hr)		pH (1:1 H	20)		Kf Fact	or
0 2 0cm	11.5	14 0cm	67.570	9 0cm	.00.8	9ст	7	7.3	0cm	0	3 0.4	⊕с т
38cm	L	38cm	╽	38cm		38cm			38cm		L,	38cm

76cm

114cm

76cm

114cm

Range

76cm

114cm 152cm

76cm

114cm

University of Idaho College of Agricultural and Life Sciences

Soil & Land Resources Division

Soil Orders

Soil Links Maps

The Twelve Soil Orders

Histosols Spodosols Andisols Oxisols Vertisols Aridisols Ultisols Mollisols Alfisols Inceptisols Entisols

Inceptisols

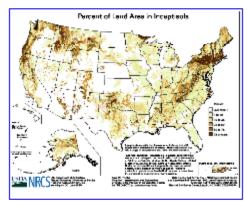
Inceptisols are soils that exhibit minimal horizon development. They are more developed than Entisols, but still lack the features that are characteristic of other soil orders.

Soil Taxonomy

Inceptisols are widely distributed and occur under a wide range of ecological settings. They are often found on fairly steep slopes, young geomorphic surfaces, and on resistant parent materials. Land use varies considerably with Inceptisols. A sizable percentage of Inceptisols are found in mountainous areas and are used for forestry, recreation, and watershed.

Inceptisols occupy an estimated 15% of the global ice-free land area - only the Entisols are more extensive. In the US, they occupy ~9.7% of the land area. Inceptisols support ~20% of the world's population, also the largest percentage of any of the soil orders.

Inceptisols are divided into 7 suborders: Aquepts, Anthrepts, Gelepts, Cryepts, Ustepts, Xerepts, and Udepts. Click here for more information about these suborders. Click here to view a map of their distribution in the US.



Click on map to view larger image



Click on map to view larger image

Examples:



Dystrudept landscape Appalachian Mountains, NC



2. Typic Dystrudept West Virginia



3. Lithic Eutrudept northern Michigan



Dystrocryept landscape central Idaho



5. Xeric Dystrocryept central Idaho



Eutrocryept glacial till landscape central Idaho



7. Humic Eutrocryept central Idaho

TOKAY SERIES

Link to OSD

The Tokay series consists of very deep, well drained soils formed in alluvium derived mainly from granitic rock sources. Tokay soils are on low fan terraces. Slopes are 0 to 2 percent. Mean annual precipitation is about 15 inches and the mean annual temperature is about 60 degrees F.

TAXONOMIC CLASS: Coarse-loamy, mixed, superactive, thermic Typic Haploxerolls

TYPICAL PEDON: Tokay fine sandy loam on a less than 1 percent west facing slope at an elevation of 22 feet in a vineyard. (When described, March 25, 1984, the soil was moist below a depth of 4 inches. Colors are for dry soil unless otherwise stated).

Ap1-0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and interstitial pores; slightly acid (pH 6.1); abrupt wavy boundary. (4 to 10 inches thick)

Ap2--4 to 12 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine angular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine, few fine, medium and coarse roots; many very fine and few fine tubular and interstitial pores; slightly acid (pH 6.1); clear wavy boundary. (4 to 8 inches thick)

A--12 to 19 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak coarse angular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and medium, few fine and coarse roots; many very fine and few fine tubular and interstitial pores; slightly acid (pH 6.1); clear wavy boundary. (6 to 10 inches thick)

BA--19 to 26 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; massive; very hard, friable, slightly sticky and slightly plastic; common very fine, fine, medium and coarse roots; many very fine and few fine tubular and interstitial pores; slightly acid (pH 6.2); clear wavy boundary. (0 to 10 inches thick)

Bt1--26 to 38 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; massive; very hard, friable, slightly sticky and slightly plastic; common very fine, fine and medium roots; many very fine tubular and interstitial pores; few thin clay films bridging between mineral grains; neutral (pH 6.7); gradual wavy boundary. (8 to 16 inches thick)

Bt2--38 to 45 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; very hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine tubular and interstitial pores; few thin clay films bridging between mineral grains; neutral (pH 7.0); clear wavy boundary. (8 to 10 inches thick)

C--45 to 60 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; very hard, friable, nonsticky and nonplastic; common very fine tubular and interstitial pores; slightly alkaline (pH 7.5)

TYPE LOCATION: San Joaquin County, California; about 3 miles west of Lodi; 1,700 feet east of Western Pacific Railroad tracks, 1,200 feet north of Sargent Road and 20 feet west of farm road; 1,275 feet north and 2,600 feet east of the southwest corner of sec. 6, T. 3 N., R. 6 E., MDBM. Lodi North quadrangle.

RANGE IN CHARACTERISTICS: The combined thickness of the A and Bt horizons is 30 to 60 inches. Organic matter is 1 to 3 percent in the surface. The moisture control section is dry between June and October unless irrigated and moist between mid-November and mid-April.

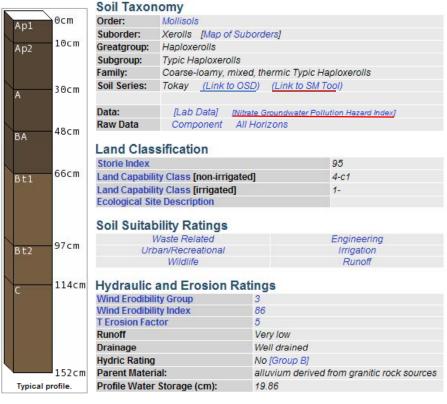
The A horizon is 7.5YR 5/2; 10YR 5/3, 5/2; 2.5Y 5/2. Moist color is 7.5YR 3/2; 10YR 3/3, 3/2; 2.5Y 3/2. Clay content is 10 to 15 percent. It is predominantly slightly acid to slightly alkaline but some pedons are strongly acid or moderately acid as a result of long term applications of sulfur for disease control.

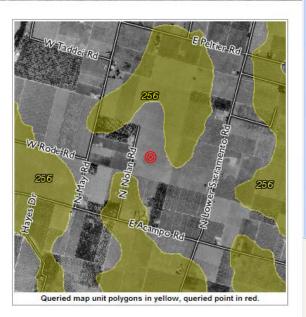
The Bt horizon is 7.5YR 6/4; 10YR 6/4, 7/3, 6/3, 5/3. Moist color is 7.5YR 4/4, 3/4; 10YR 4/4, 4/3. Clay content is 10 to 18 percent. Reaction is slightly acid to moderately alkaline. It is fine sandy loam or sandy loam.

The C horizon is 10YR 7/4, 6/4, 6/3, 7/2, 6/2, 5/4. Moist color is 10YR 5/4, 4/4, 4/3, 4/2, 3/4. Clay content is 5 to 15 percent. Reaction is slightly acid to moderately alkaline. It is fine sandy loam, sandy loam, or coarse sandy loam.

COMPETING SERIES: These are the Acampo, Pfeiffer, San Andreas, Tagus, Veritas and Walong soils. Acampo soils have a Bq horizon within 40 inches. San Andreas and Walong soils have a paralithic

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Geomorphology

Landform	fan skirts [Footslope]
Landscape	valleys

Sciontific Namo

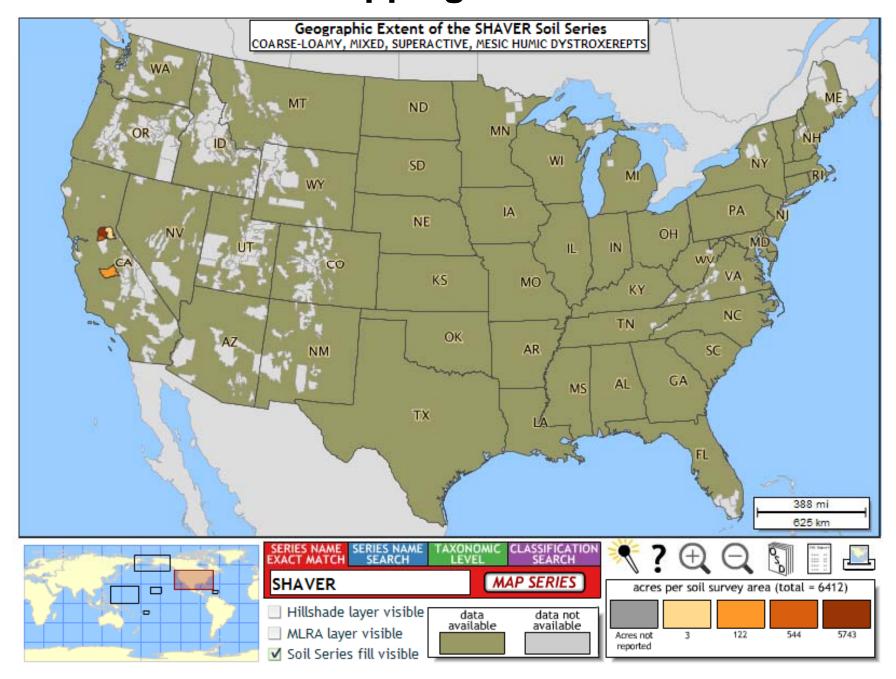
Plants

	Symbol		Scienti	iic Name				Collii	non Name			Pro	d.		
ı	Organic Matter (96)	Perd	pent Clay	Peros	ent S	Band	Ksa	t (mm/hr)	pН	(1:1 H ₂ O)	K	f Fac	tor	
	0 2 0 0cm	1	11.5	14 0cm	67.5	70,	9] 0cm	.00.8	0cm	7	7.3 0cm	0.3	Θ.	4 0cm	
	38c	:m		38cm			38cm		38cm		38cm			38cm	
	760	m		76cm	'		76cm		76cm		76cm	-		76cm	
	114	ŀcm	$\ \ _{lack}$	114cm	-		114cm		114cm		114cm			114cm	
	152	cm!		152cm			152cm		152cm		152cm			152cm	

Common Name

Range

Soil Mapping Extent Tool





Crop Alfalfa Hay Soil Irrigation micro-irrigation system w/fertigation Deep Rip None Search

Nitrate Groundwater Pollution Hazard Index

For questions, comments or repairing bugs please contact Admin Copyright 2004 University of California, Riverside UC Center for Water Resources



Home Find Your Index Number Admin

Your Hazard Index (HI) is 4.

Please see table below to assess your relative risk of contaminating groundwater.

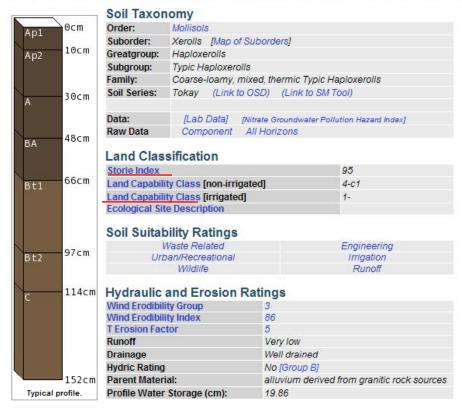
An HI of 1 to 20 is of relatively minor concern. The grower should use sound management practices but extraordinary procedures are not required. However, an HI greater than 20 should receive careful attention.

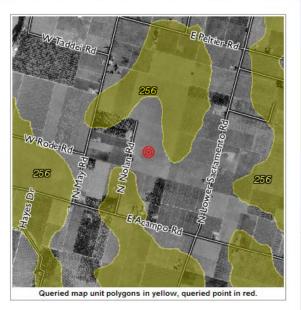
As can be seen in the table on the right, agricultural fields with soils rated 4 or 5 often have Hl's of greater than 20 and should be managed to reduce the risk of groundwater contamination. Soils rated 1 or 2 generally have Hl's that range between 1 and 20 and can be cultivated with more latitude in the choice of crop and irrigation system.

To view other crops with your rating (1) click here.

	Soil					
Crop	1	2	3	4	5	Irrigation
1	1	2	3	4	5	1
1	2	4	6	8	10	2
1	3	6	9	12	15	3
1	4	8	12	16	20	4
2	2	4	6	8	10	1
2	4	8	12	16	20	2
2	6	12	18	24	30	3
2	8	16	24	32	40	4
3	3	6	9	12	15	1
3	6	12	18	24	30	2
3	9	18	27	36	45	3
3	12	24	36	48	60	4
4	4	8	12	16	20	1
4	8	16	24	32	40	2
4	12	24	36	48	60	3
4	16	32	48	64	80	4

California Soil Resource Lab





Geomorphology

Landform	fan skirts	[Footslope]
andscape	valleys	

Plants

S	symbol		Scient	tific Name			Com	mon Name		Prod.
(Organic Ma	atter (%)	Per	roent Clay	Pero	ent Sand	Ks	at (mm/hr)	pH (1:1 H ₂ O)) Kf Factor
Γ	0	2 0cm	11.5	14 0cm	67.5	70,9 0cm	.00.	8 0cm	7 7.3 0c	:m 0.3 0.4
		38cm		38cm		38cm		38cm	38	38cm 38cm
		76cm		76cm		76cm		76cm	76	5cm 76cm
		114cm	_	114cm	_	114cm		114cm	11	.4cm 114cm
		152cm	L	152cm		152cm		152cm	15	2cm 152cm



Links to Soil Survey Handbook

Storie Index

The index rating for a soil component of a map unit is obtained by multiplying the percentage rating values given to its four factors, A, B, C, and X. If more than one condition is recognized for the X factor for a soil, the value for each condition acts as a multiplier. Therefore any of the general factors or X factors conditions may dominate or control the final rating. As an example, consider the map unit Centerville clay, 2 to 5 percent slopes. The factors are A—95 percent due to a stratified subsoil, B—60 percent for the clay surface texture, which is very sticky and difficult to cultivate when wet, C—95 percent for slope, and X—60 percent due to salinity and sodicity. The product of A, B, C, and X is 32 percent.

An index rating is shown for the named soil components of the map unit. To calculate a map unit index, take the percentage of each of the named components in the map unit as a weighted average. Miscellaneous areas are considered to be unsuited for agriculture, and are not assigned a rating or are assigned a rating of zero. Inclusions of other soils, not named in the map unit name, are ignored in the calculations.

Named components are assigned grades according to their suitability for general intensive agriculture as shown by their Storie Index ratings. The six grades and their range in index ratings are:

Grade 1-80 to 100

Grade 2-60 to 79

Grade 3-40 to 59

Grade 4-20 to 39

Grade 5-10 to 19

Grade 6-less than 10

In this area, soils in Grade 1 are well suited to intensively grown irrigated crops that are climatically adapted to the region.

Grade 2 soils are good agricultural soils, although they are not so desirable as soils in grade 1, primarily because of deep cemented layers such as duripans; a moderately coarse or coarse textured surface layer; moderately well drained or somewhat poorly drained profiles; low or moderate available water capacity; slight salinity and sodicity; or lower soil fertility.

Grade 3 soils are only fairly well suited to agriculture primarily because of moderately deep or deep cemented layers such as duripans, which restrict permeability in the subsoil; moderately well drained or somewhat poorly drained profiles; slight or moderate salinity or sodicity; clayey or stratified subsoils; or lower soil fertility.



Links to Soil Survey Handbook

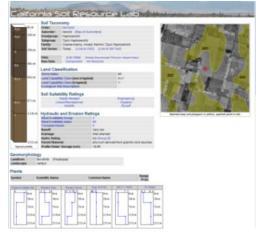
CAPABILITY CLASSES

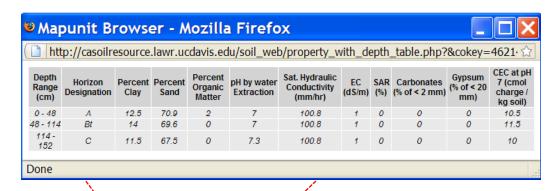
Land Suited to Cultivation and Other Uses

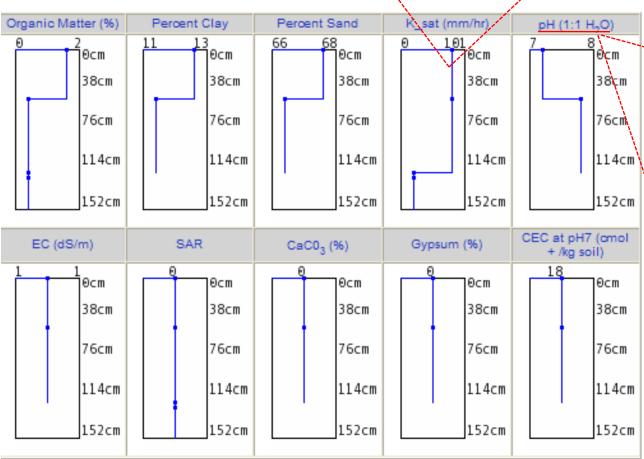
Class I -- Soils in class I have few limitations that restrict their use.

Soils in this class are suited to a wide range of plants and may be used safely for cultivated crops, pasture, range and erosion hazard (wind or water) is low. They are deep, generally well drained, and easily worked. They hole plant nutrients or highly responsive to inputs of fertilizer.

The soils in class I are not subject to damaging overflow. They are productive and suited to intensive cropping. many of the common field crops.







Reaction, Soil (pH) (618.47)

(a) Definition

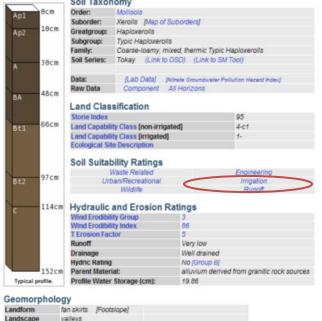
Soil reaction is a numerical expression of the relative acidity or alk:

(b) Classes

The descriptive terms for reaction and their respective ranges in p

Descriptive Term	pH Range
Ultra acid	1.8 - 3.4
Extremely acid	3.5 - 4.4
Very strong acid	4.5 - 5.0

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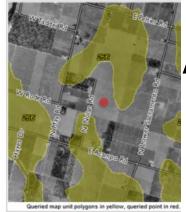
Common Name

Plants

Symbol

Scientific Name

WMS - Embankments, Dikes, and Levees (CA)

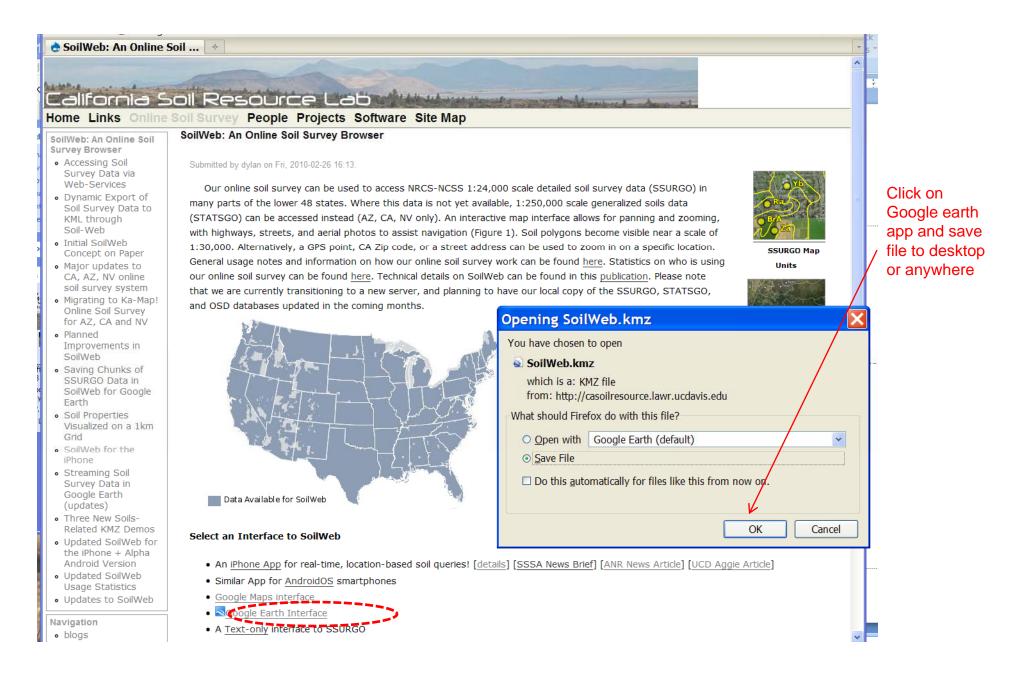


Interpretations: Waste Application, Engineering, Urban/Recreational, Irrigation

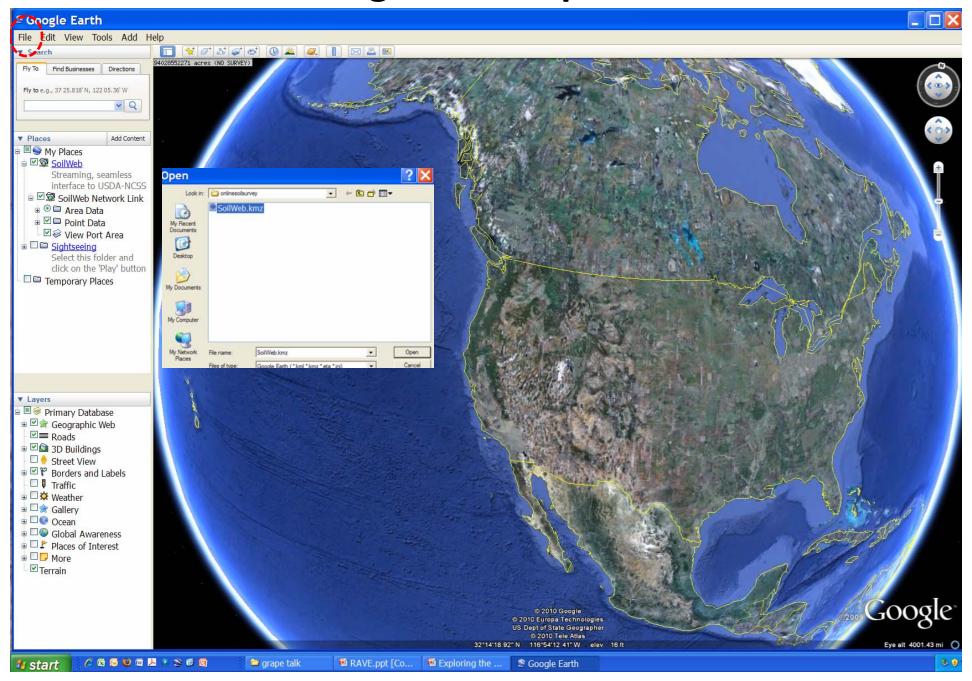
	Irrigation	
WMS - Excavated Ponds (Aquifer-fed)	Very limited 1. Depth to water	(Deep to Apparent Water Table)
WMS - Pond Reservoir Area (CA)	Limitations 1. Permeability > 2/hr (seepage)	(Perm (seepage) .6 to >2/hr, 30-150cm (12-60) - MO2)
WMS - Furrow Irrigation (CA)	Limitations 1. AWC from 2 - 8	(AWC 4-6 in 0-100cm - MO2)
WMS - Graded Border Irrigation (CA)	Limitations 1. AWC from 2 - 6	(AWC 4-6 in 0-100cm - MO2)
WMS - Sprinkler Irrigation (CA)	Limitations 1. AWC from 2 - 8	(AWC 4-6 in 0-100cm - MO2)
WMS - Drip or Trickle Irrigation (CA)	No limitations	
WMS - Basin or Paddy Irrigation (level border) (CA)	Limitations 1. Permeability >= 1.2/hr 2. AWC from 2 - 8	(Perm (seepage) >=1.2/hr 0-150cm - MO2) (AWC 4-6 in 0-100cm - MO2)

No limitations

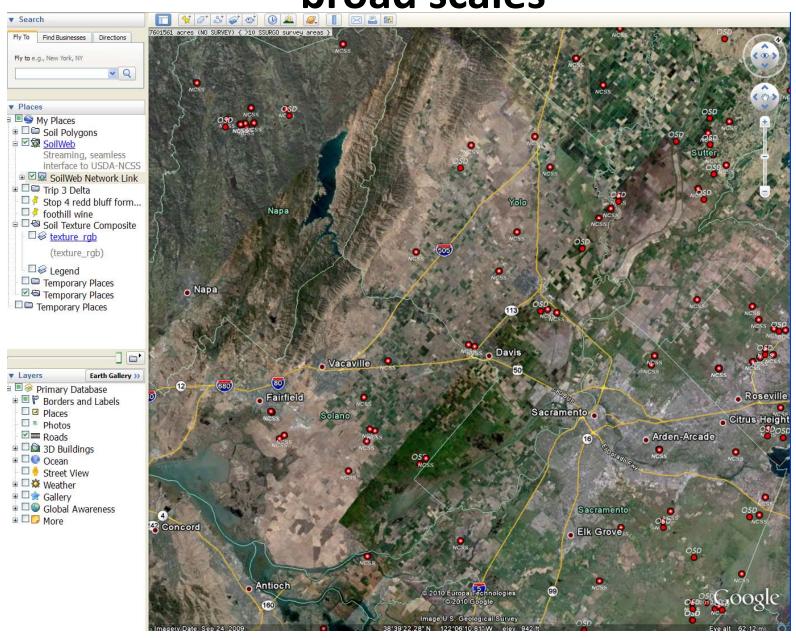
SoilWeb in Google Earth



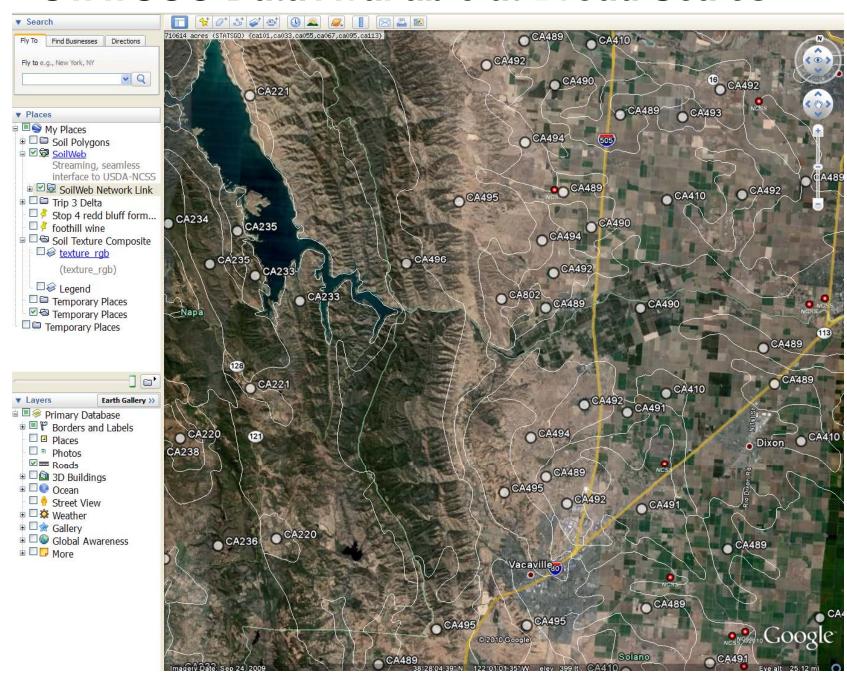
SoilWeb in Google Earth-open SoilWeb.kmz



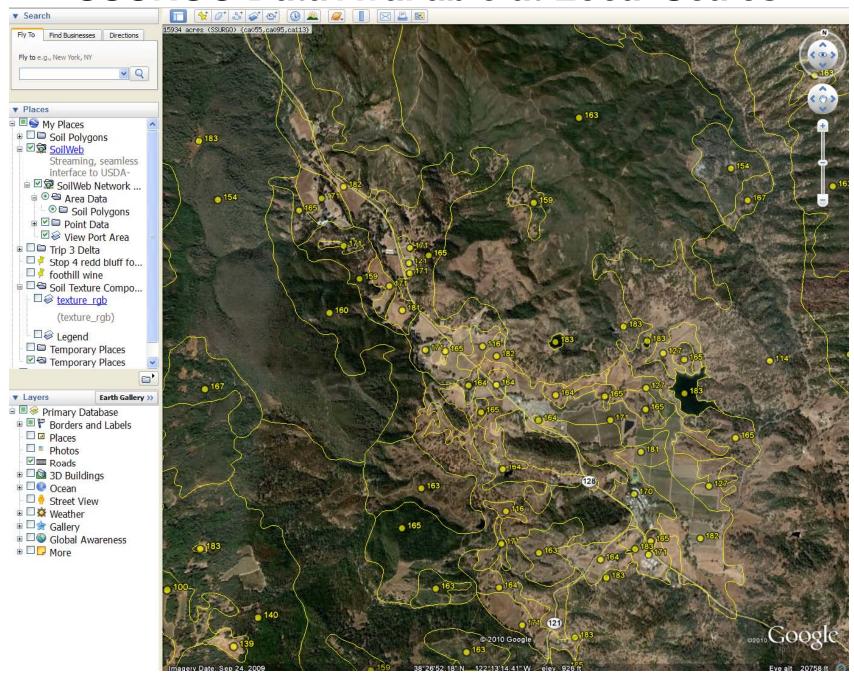
Official Series Descriptions available at broad scales



STATSGO Data Available at Broad Scales

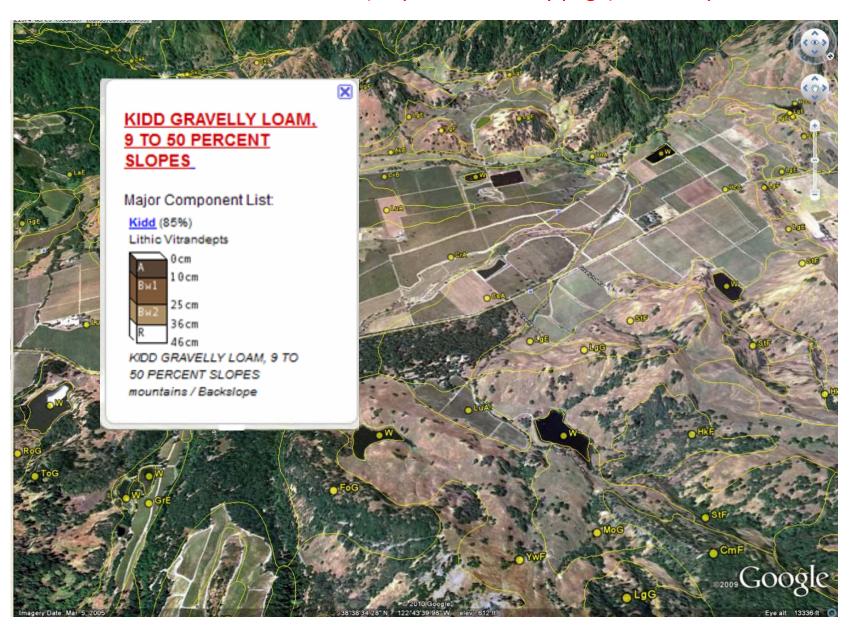


SSURGO Data Available at Local Scales



At local scales SSURGO data is available in yellow

Click on map unit symbol for dialogue box; click on map unit name to link with soil survey website described in slides above (map unit summary page); click on profile for OSD



Smartphone Soil App



SoilWeb: An Online Soil Survey Browser

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Submitted by dylan on Fri, 2010-02-26 16:13.

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SSURGO Map Units



STATSGO Map Units



Select an Interface to SoilWeb

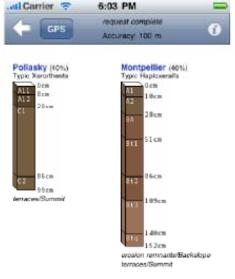
- An iPhone App for real-time, location-based soil queries! [details] [SSSA News Brief] [ANR News Article] [UCD Aggie Article
- Similar App for AndroidOS smartphones
- · Google Maps interface
- SGoogle Earth Interface
- · A Text-only interface to SSURGO

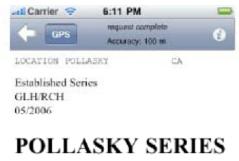


Available for free download at the android market place or iphone app. store

Smartphone Soil App







The Pollasky series consists of moderately deep, well drained, moderately coarse textured Regosols formed in the residuum from softly to moderately consolidated arkosic sediments. They occur on undulating to steep dissected terraces under annual grasses and forbs. They have brown, slightly acid sandy loam A horizons and pale brown to yellowish brown, slightly acid to neutral, sandy loam C horizons abruptly overlying consolidated granitic sediments. Pollasky soils occur in the same

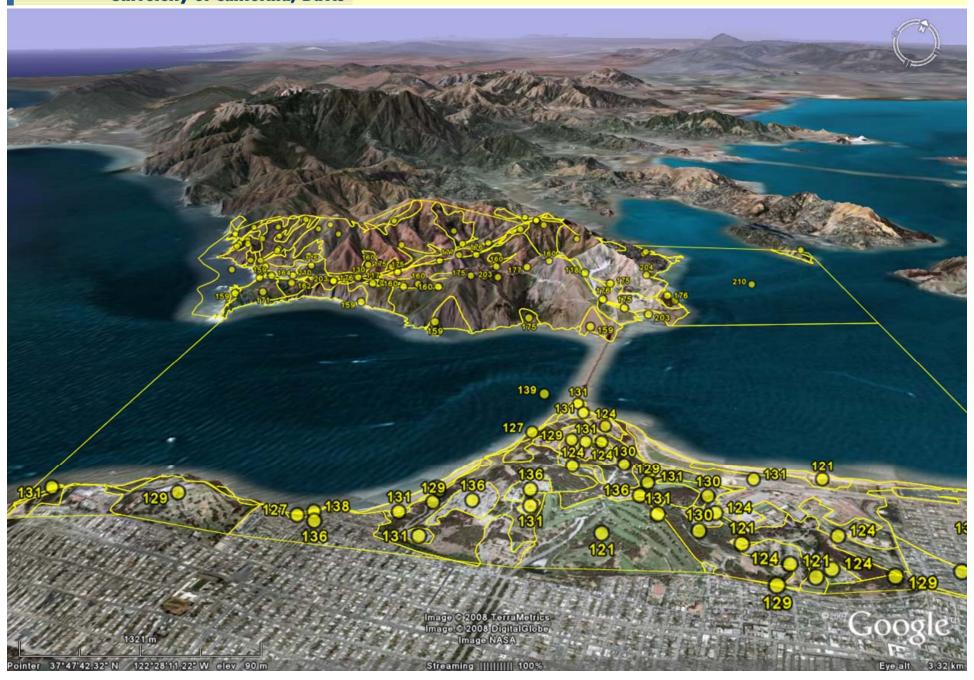


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State-Wide SSURGO Raster File

