



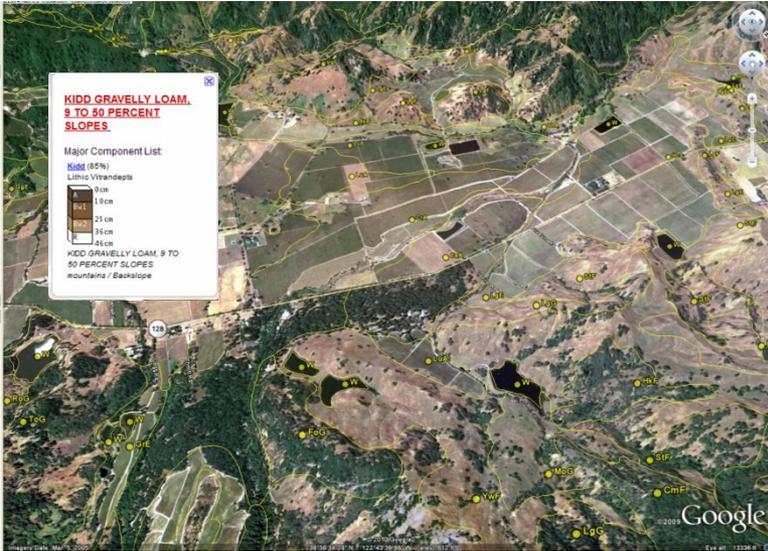
Online Soil Survey Information Products, Future Vision, Needs



Toby O'Geen, Dylan Beaudette, Mike Walkinshaw
In collaboration with USDA-NRCS

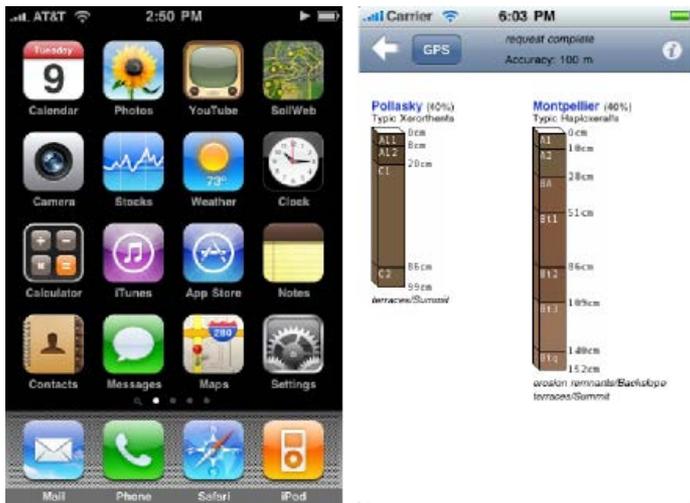
Existing Technology for Information Delivery

SoilWeb in Google Earth



Soil Data Viewer

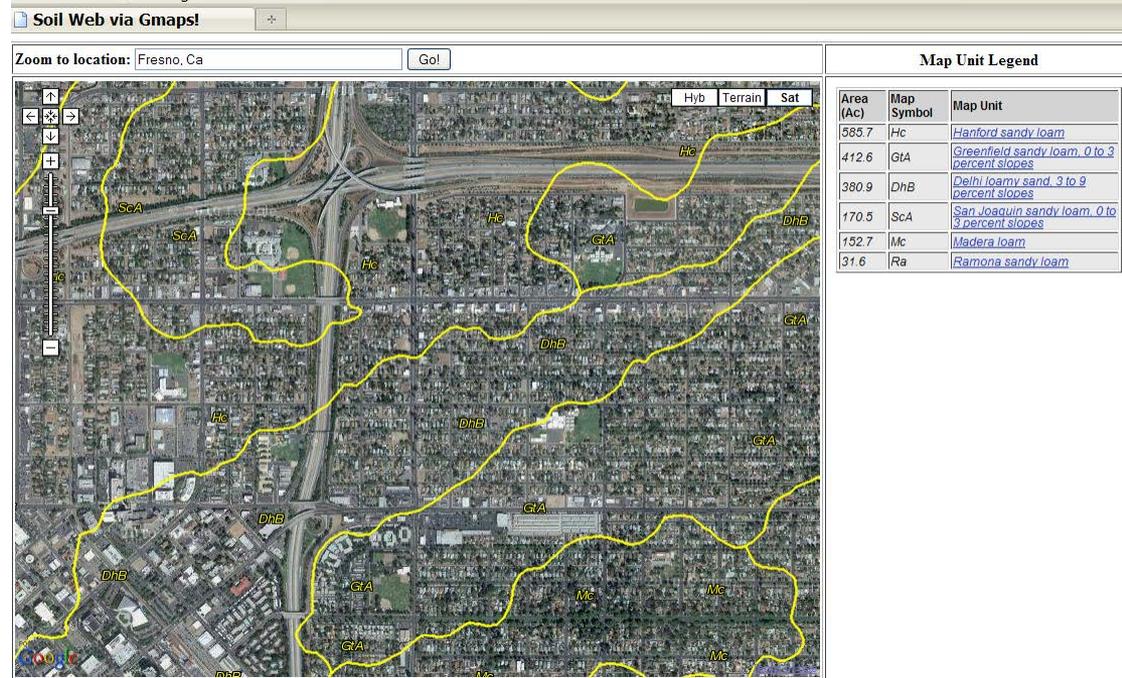
SoilWeb Native Phone Apps



Web Soil Survey

How can we make soil survey more relevant to the public?

Products that are: User friendly, easily accessible, fast, relevant to user needs, and understandable that utilize popular technology.



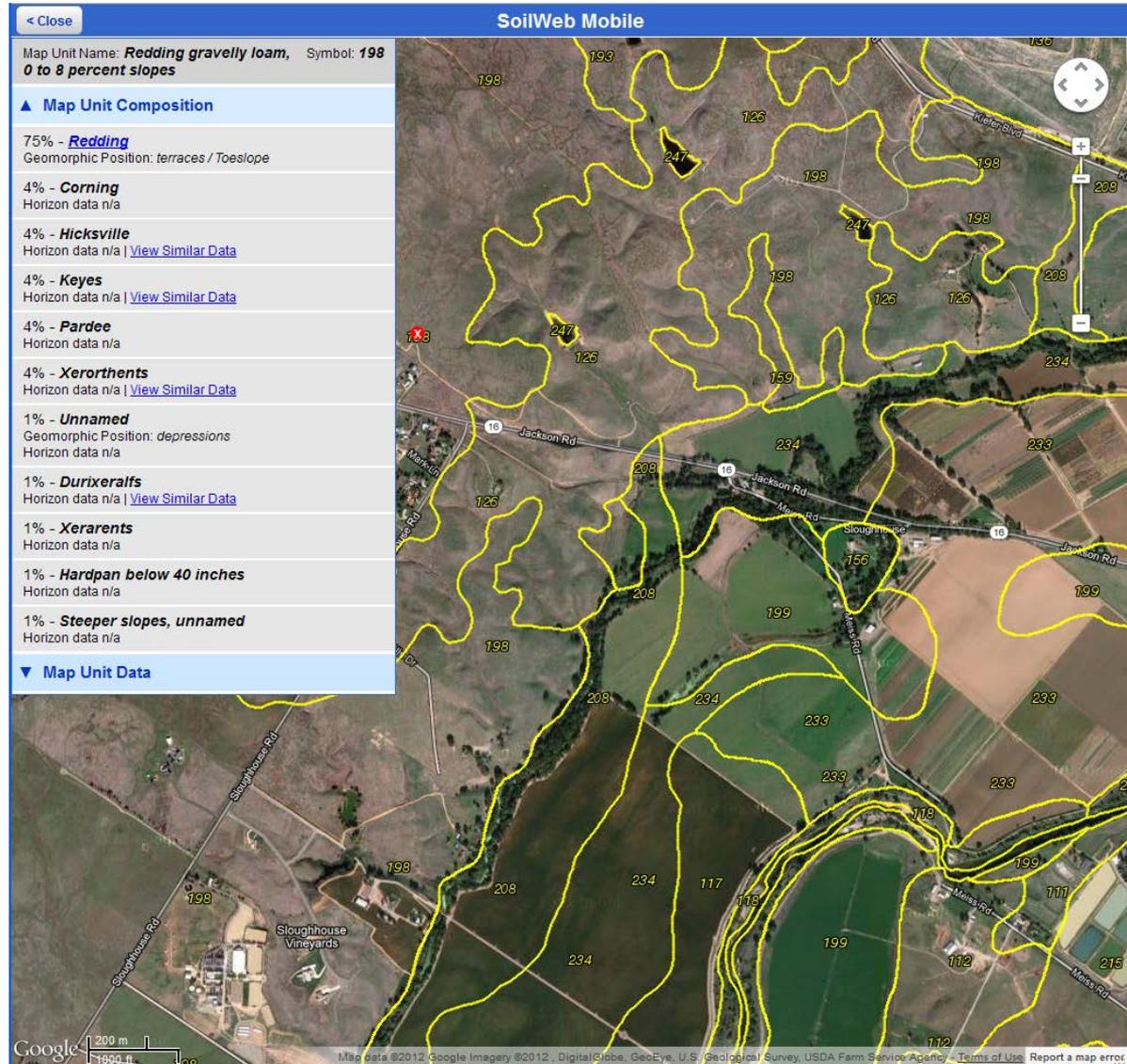
Having a variety of tools is important.

Step 1. Keep Evolving

SoilWeb App: Works Across Multiple Platforms



All Smartphones



Tablets

Desktops

A Collaboration Between UCD & NRCS

Zoom To: Arches National Park

< Close SoilWeb Mobile

Zoom To Location

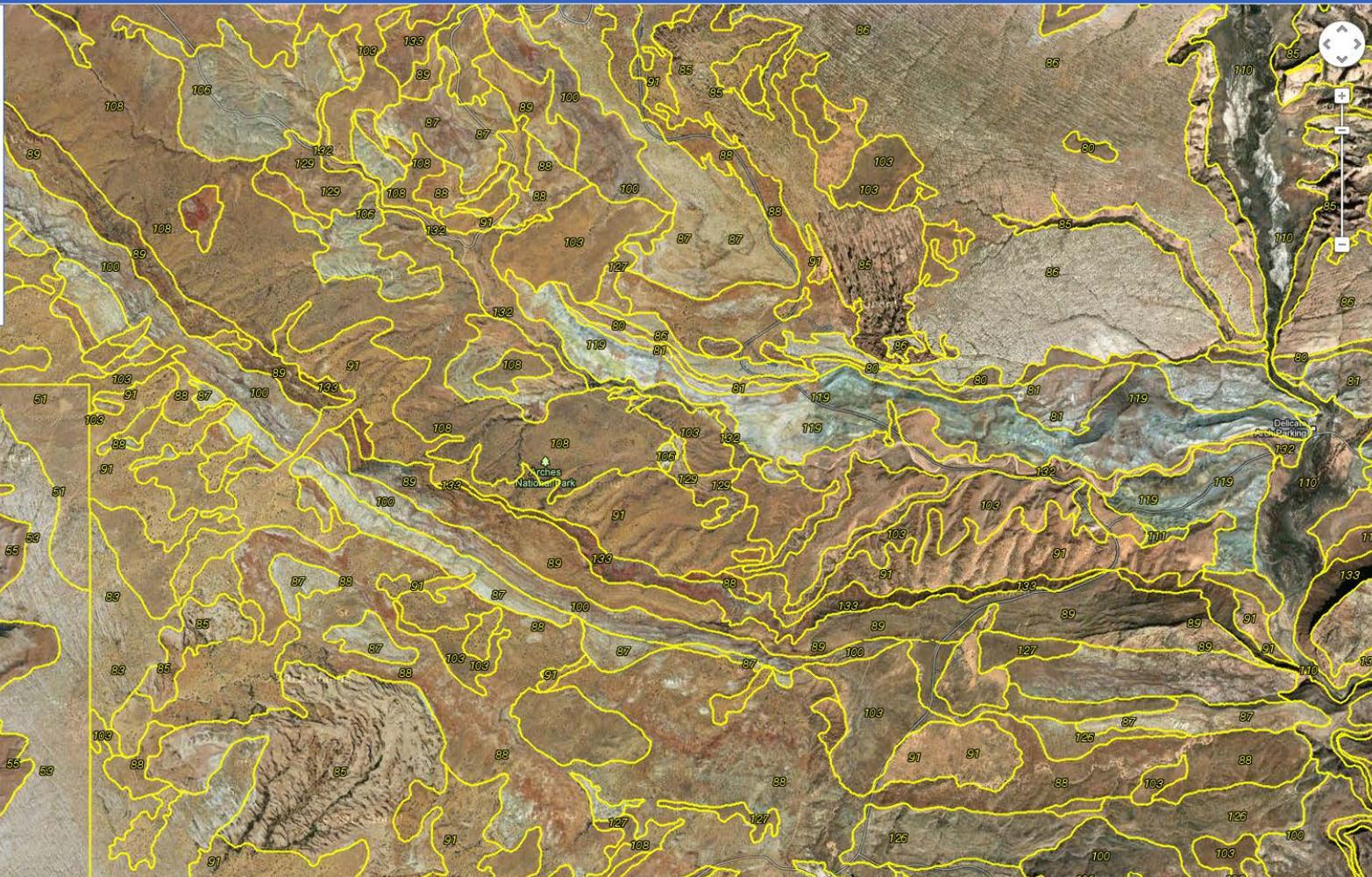
- OR -

Enter a location:

Locations may be entered as:

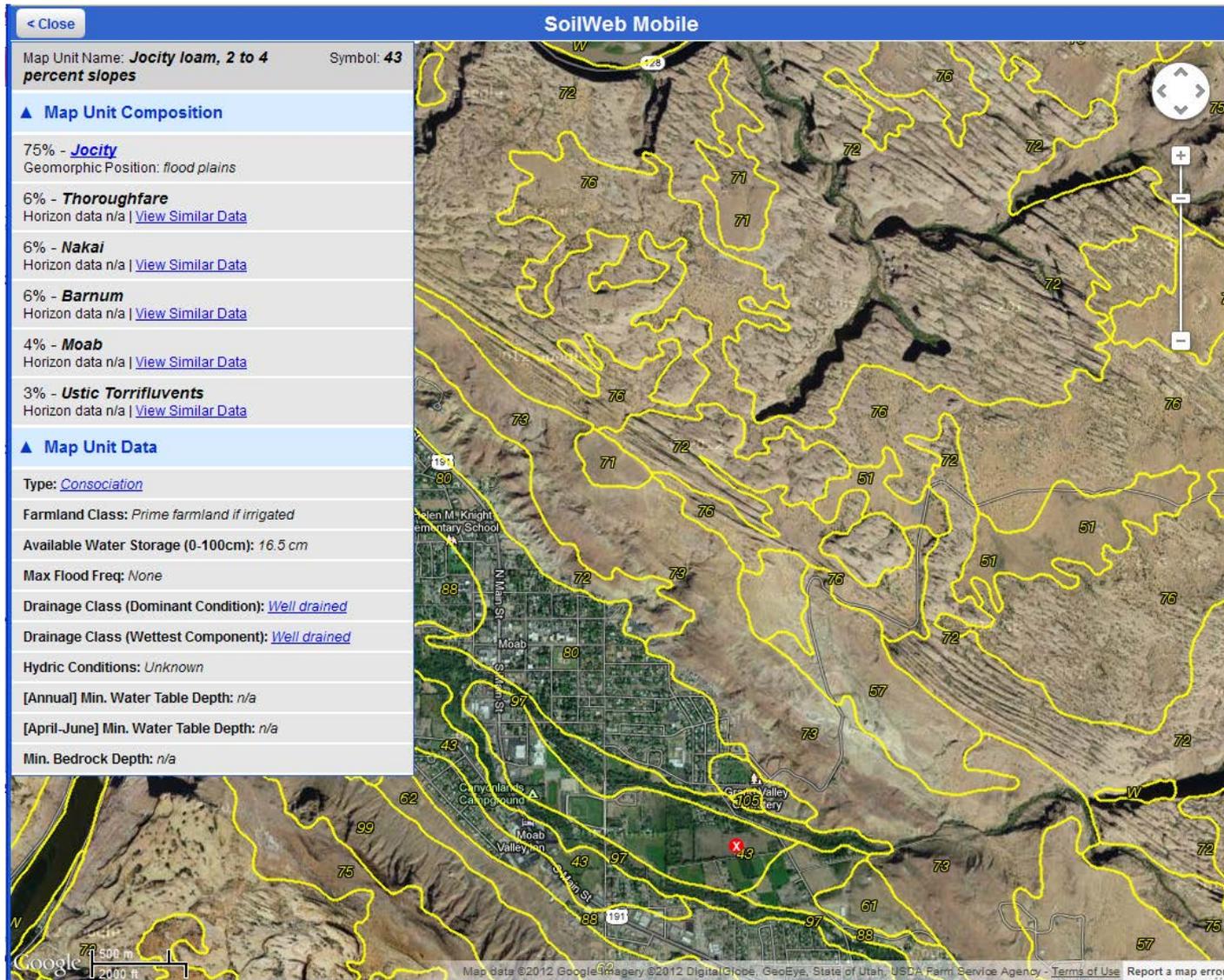
- Complete address
- City, state
- Zip code
- Landmark (Example: Mt. Diablo, CA)
- Latitude / longitude coordinate pair

Examples:
38.55, -121.74
38.55 N, 121.74 W
38 33', -121 44' 24"



The map displays a topographic view of the Arches National Park region. Yellow contour lines indicate elevation, with values ranging from 40 to 133. The terrain is rugged and mountainous. A central river valley is visible, with a blue-shaded area representing water. The map is overlaid with a grid of soil data points, represented by small numbers (e.g., 55, 89, 91, 100, 103, 106, 109, 119, 122, 123, 127, 133) scattered across the landscape. A small green triangle icon marks the location of Arches National Park. In the top right corner, there is a compass rose and a vertical scale bar.

Seamless Transitions Between Spatial Queries and Data Delivery



Seamless Transitions Between Spatial Queries and Data Delivery

SoilWeb Mobile

Map Unit Name: **Moenkopie-Rock outcrop complex, 1 to 15 percent slopes** Symbol: 57

▲ Map Unit Composition

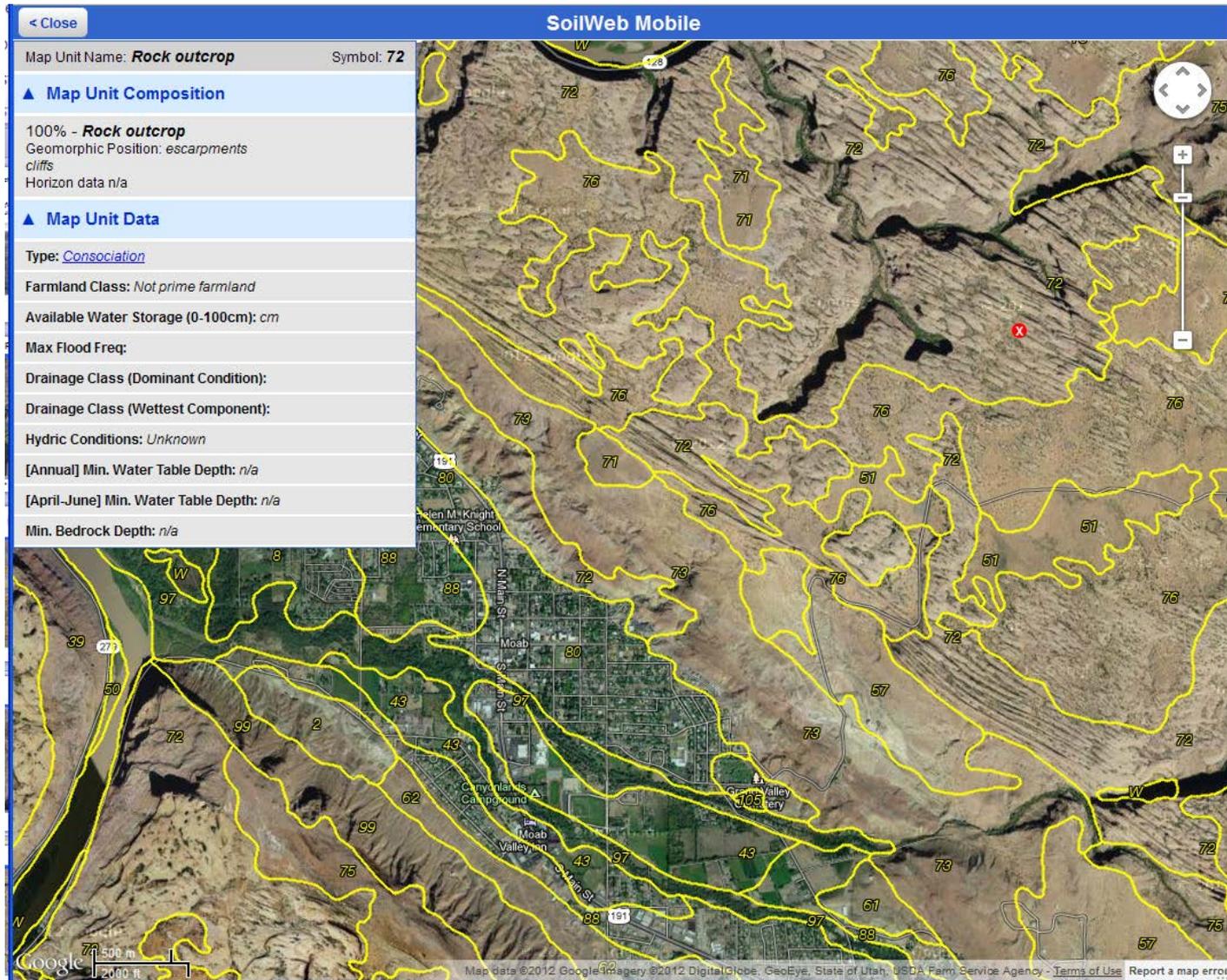
- 55% - **Moenkopie**
Geomorphic Position: structural benches
cuestas
- 30% - **Rock outcrop**
Geomorphic Position: ledges
cliffs
Horizon data n/a
- 8% - **Trail**
Horizon data n/a
- 3% - **Moab**
Horizon data n/a | [View Similar Data](#)
- 2% - **Arches**
Horizon data n/a

▲ Map Unit Data

- Type: **Complex**
- Farmland Class: *Not prime farmland*
- Available Water Storage (0-100cm): 2 cm
- Max Flood Freq: *None*
- Drainage Class (Dominant Condition): **Well drained**
- Drainage Class (Wettest Component): **Well drained**
- Hydric Conditions: *Unknown*
- [Annual] Min. Water Table Depth: *n/a*
- [April-June] Min. Water Table Depth: *n/a*
- Min. Bedrock Depth: 20cm

Map data ©2012 Google Imagery ©2012 DigitalGlobe, GeoEye, State of Utah, USDA Farm Service Agency - [Terms of Use](#) Report a map error

Seamless Transitions Between Spatial Queries and Data Delivery

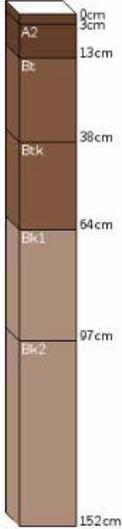


Direct Access to Soils Data

[< Close](#) **SoilWeb Mobile**

Map Unit Name: **Cahona fine sandy loam, 2 to 8 percent slopes** Symbol: 19
Component Name: **Cahona**

▲ Soil Profile



Horizon	Depth (cm)
A2	0-3
Bt	13
Btk	38
Bk1	64
Bk2	97
Total	152

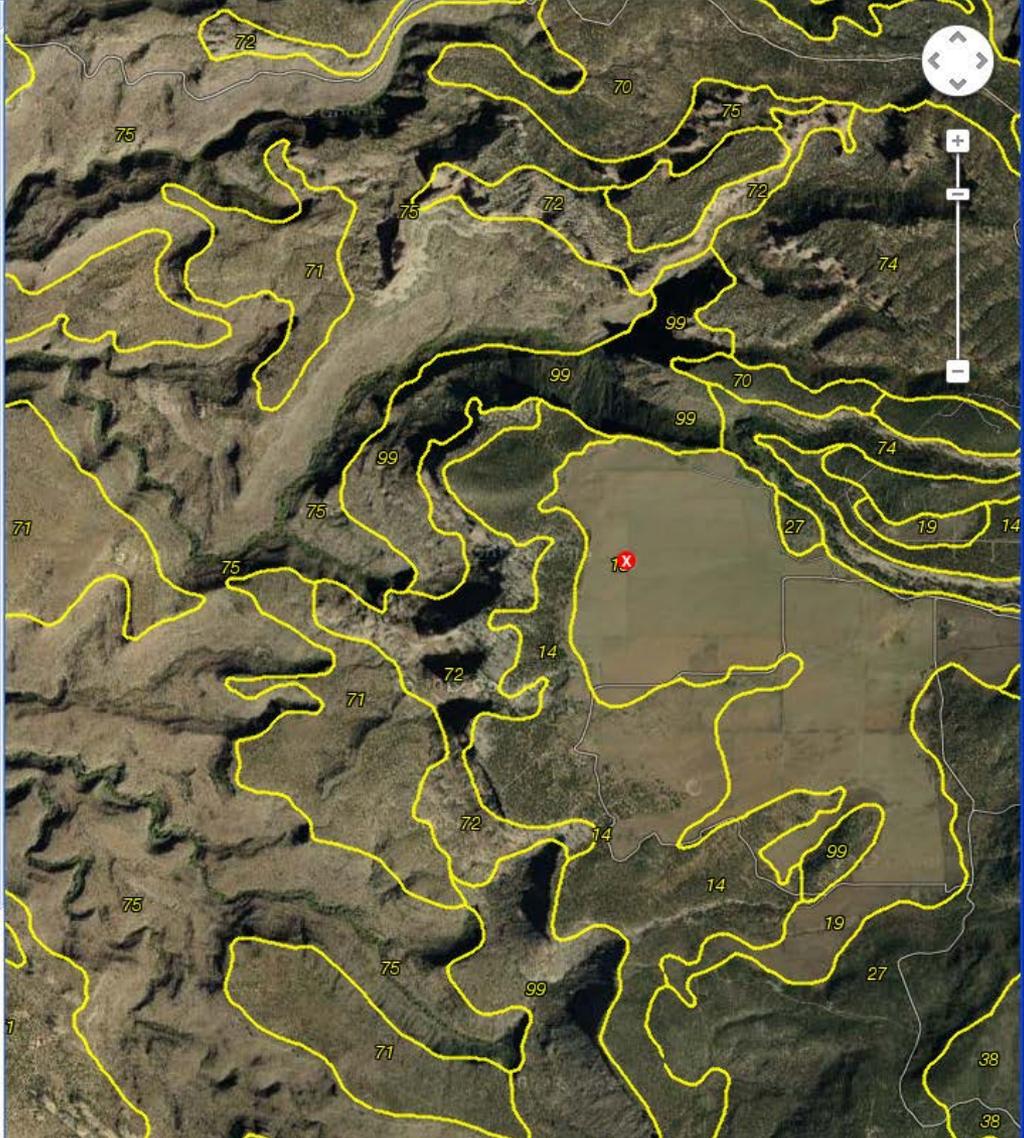
Typical Profile

▲ Soil Taxonomy

Order: [Aridisols](#)
Suborder: [Argids](#) [\[Map of Suborders\]](#)
Greatgroup: [Haplargids](#)
Subgroup: [Ustollic Haplargids](#)
Family: [Fine-silty, mixed, mesic Ustollic Haplargids](#)
Soil Series: [Cahona](#) [\[Link to OSD\]](#) [\[Link to SM Tool\]](#)
Data: [\[Lab Data\]](#) [\[Nitrate Groundwater Pollution Hazard Index\]](#)
Raw Data: [Component](#) [All Horizons](#)

▲ Land Classification

[Storie Index](#): Not Rated



Map data ©2012 Google Imagery ©2012 DigitalGlobe, GeoEye, State of Utah, USDA Farm Service Agency - Terms of Use [Report a map error](#)

Step 2. Be Relevant to Stakeholder Needs

Decision Support Tools: Rangeland Drought Tolerance

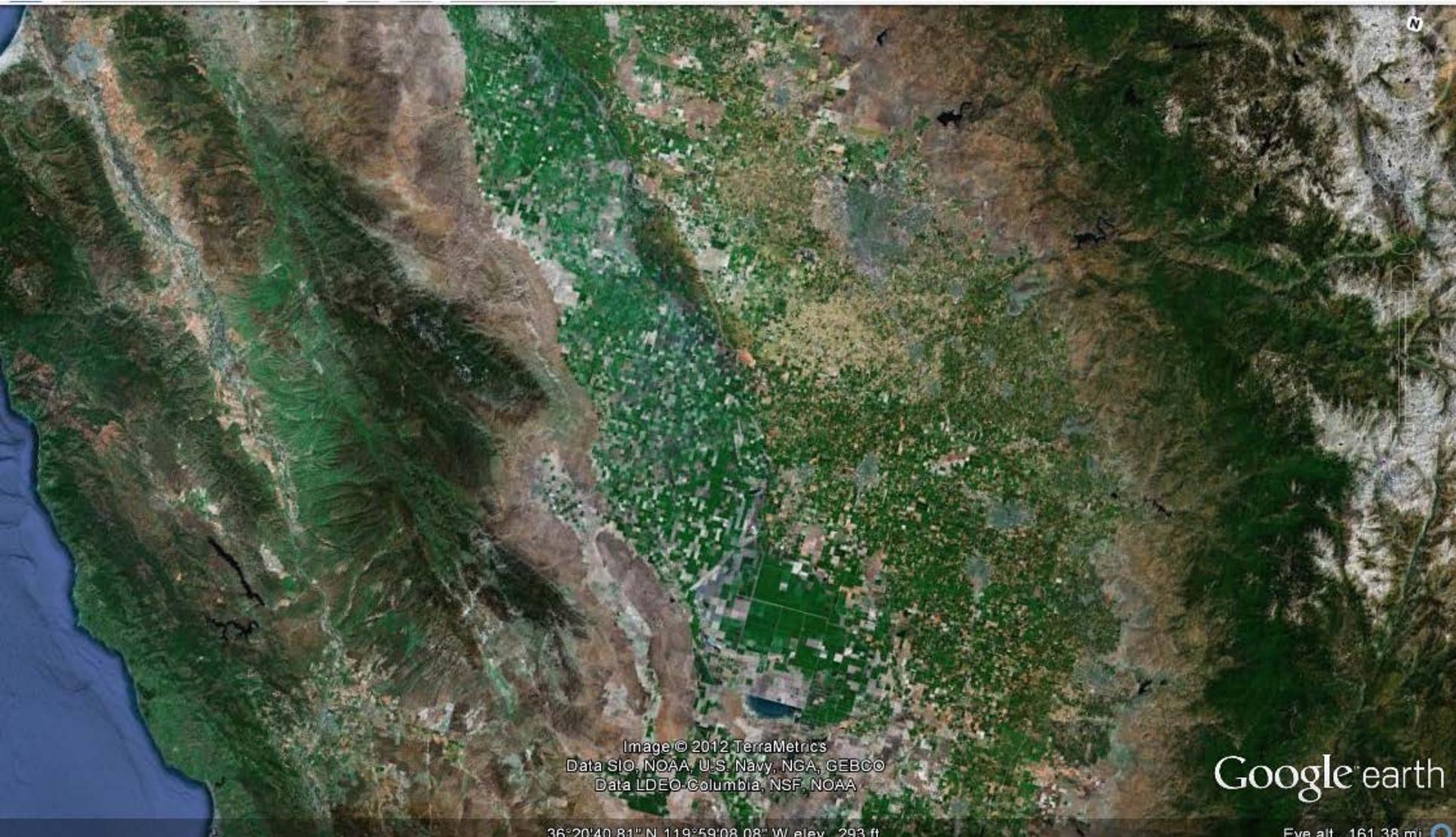


Image © 2012 TerraMetrics
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Data LDEO-Columbia, NSF, NOAA

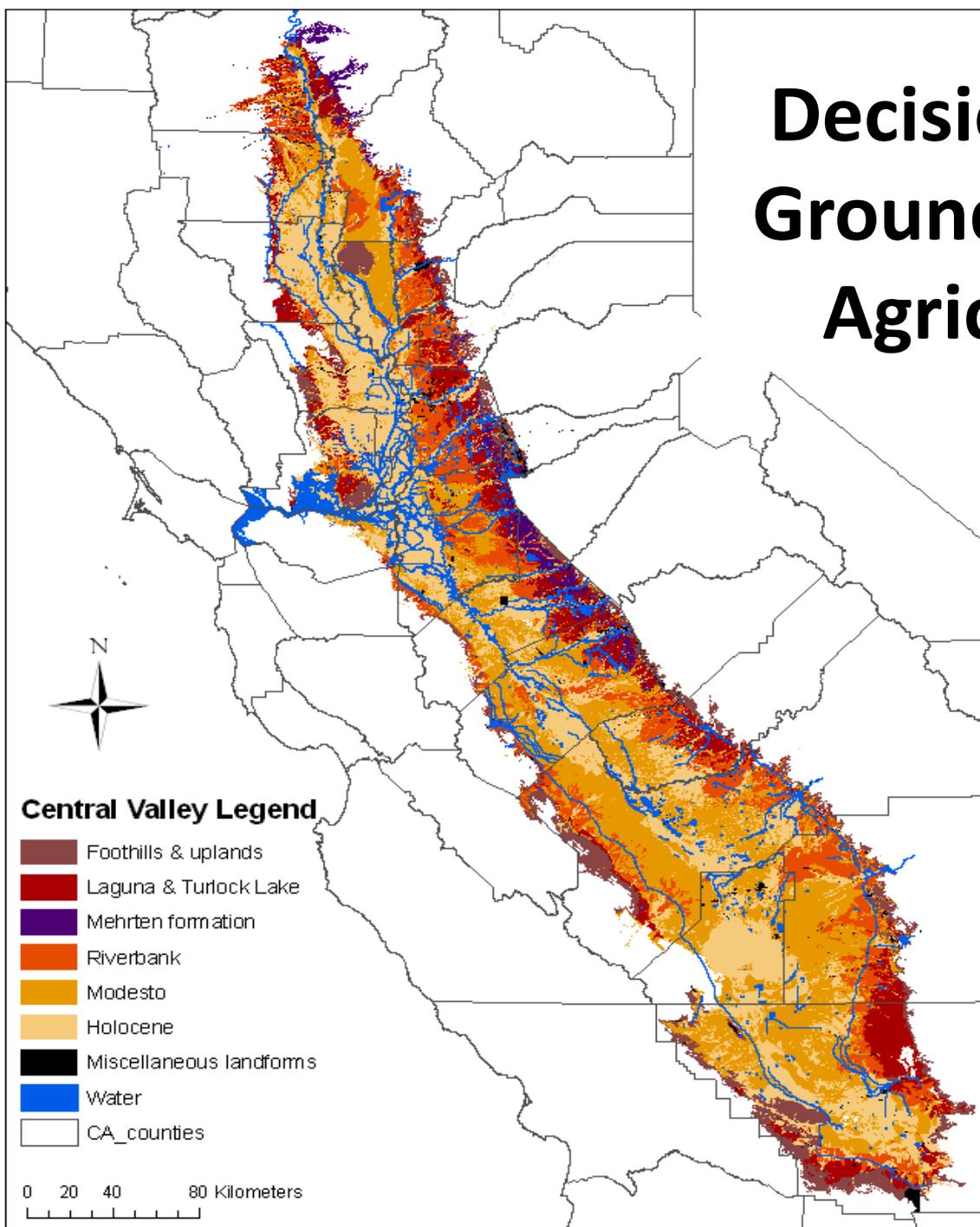
Google earth

36°20'40.81" N 119°59'08.08" W elev. 293 ft

Eve alt. 161.38 mi

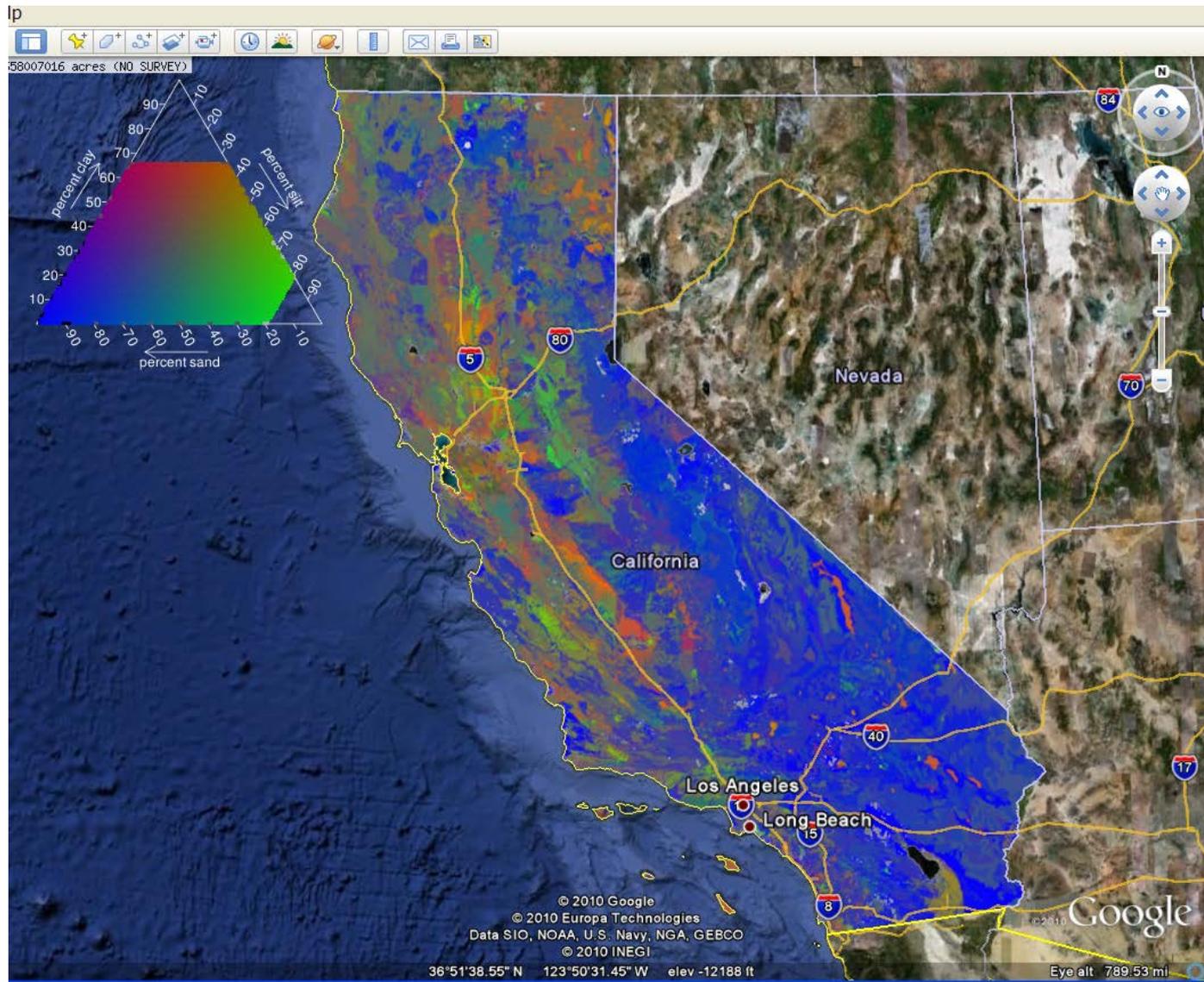
Decision Support Tools: Groundwater Banking in Agricultural Systems

What soils,
cropping systems and
landscapes



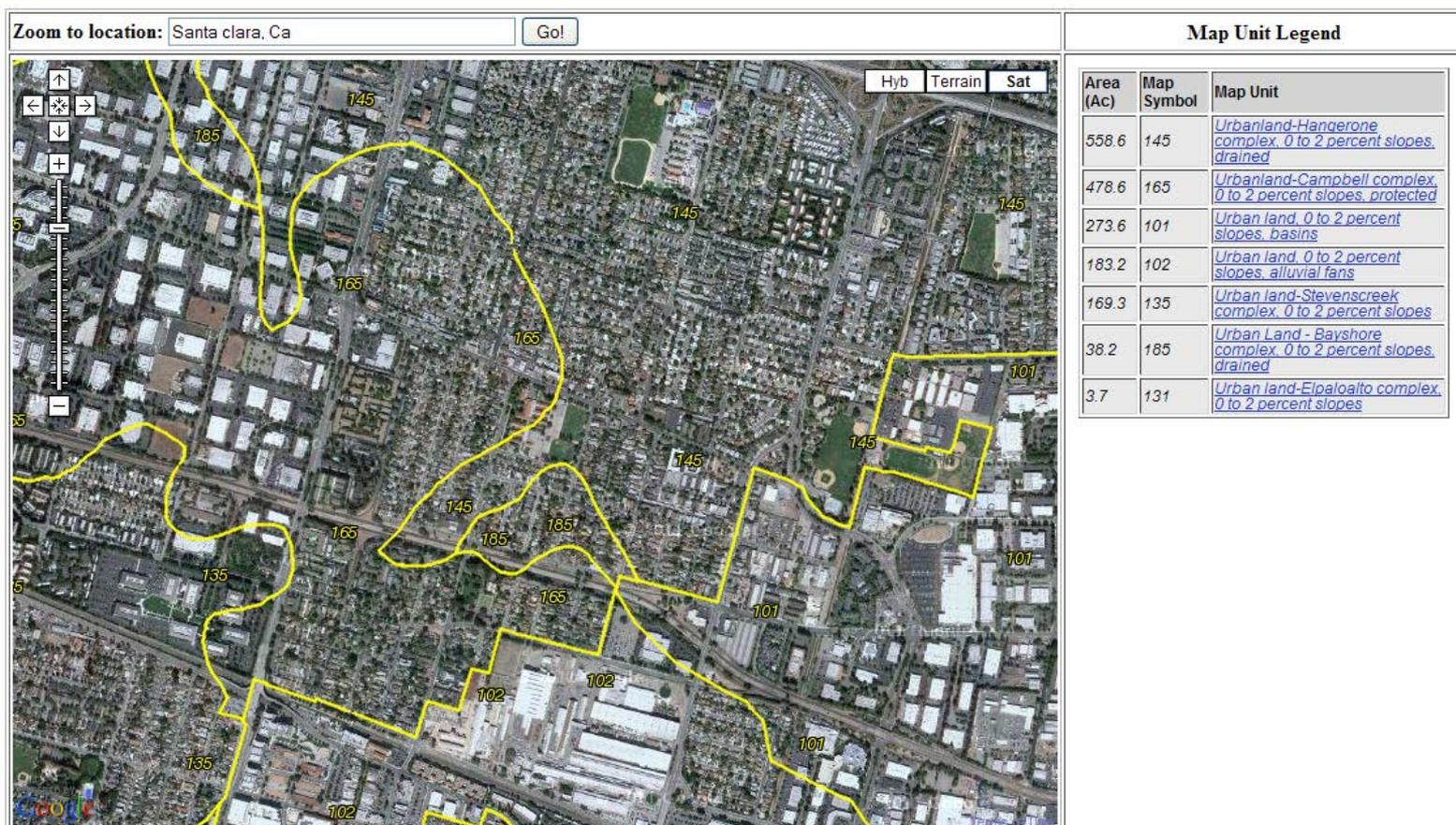
Step 3. Appeal to the Public's Curiosity

Maps of Soil Properties



Step 4. Appeal to a Wide Audience

How can we better serve this clientele group?

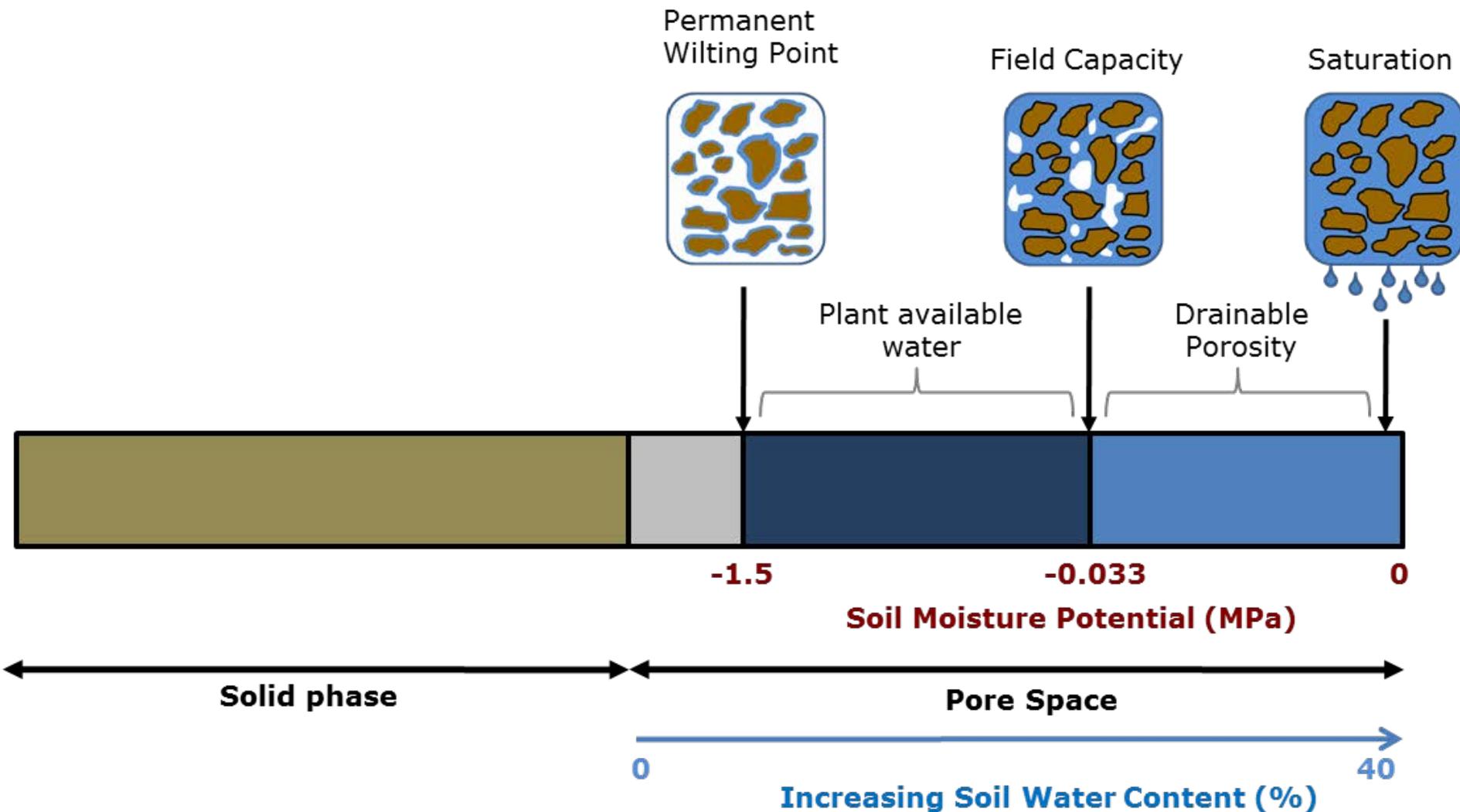


Is my soil contaminated?

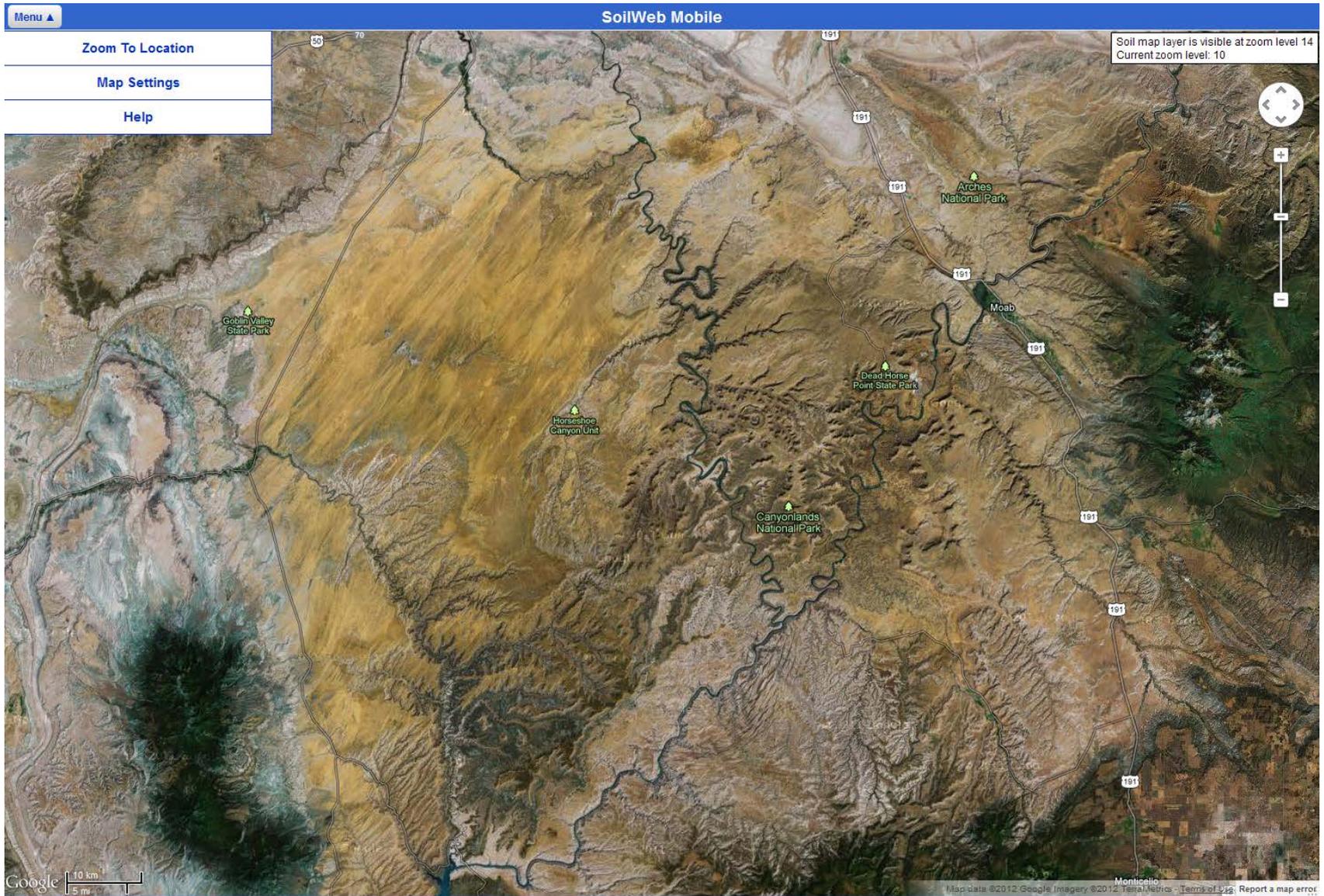
What can I do to my soil to make plants grow better?

How can I irrigate wisely?

Step 5. Bring More Ingenuity to the Process of Soil Survey Education



Step 6 Remember Step 1, Information Delivery Mechanisms Should Continuously Evolve



Crowd Sourcing: Develop Creative Data Exchange Programs

Create a social network data exchange site through GPS enabled smartphones and Google mapping products allowing users to send spatially explicit information (weeds, erosion, perc tests, yields, fertilizer rates, soil obs. etc.) that can be summarized and stratified by soil landscapes.

Could some version of this be applied to dynamic soil property inventories, Global Soil Map Project, or urban soil surveys?