

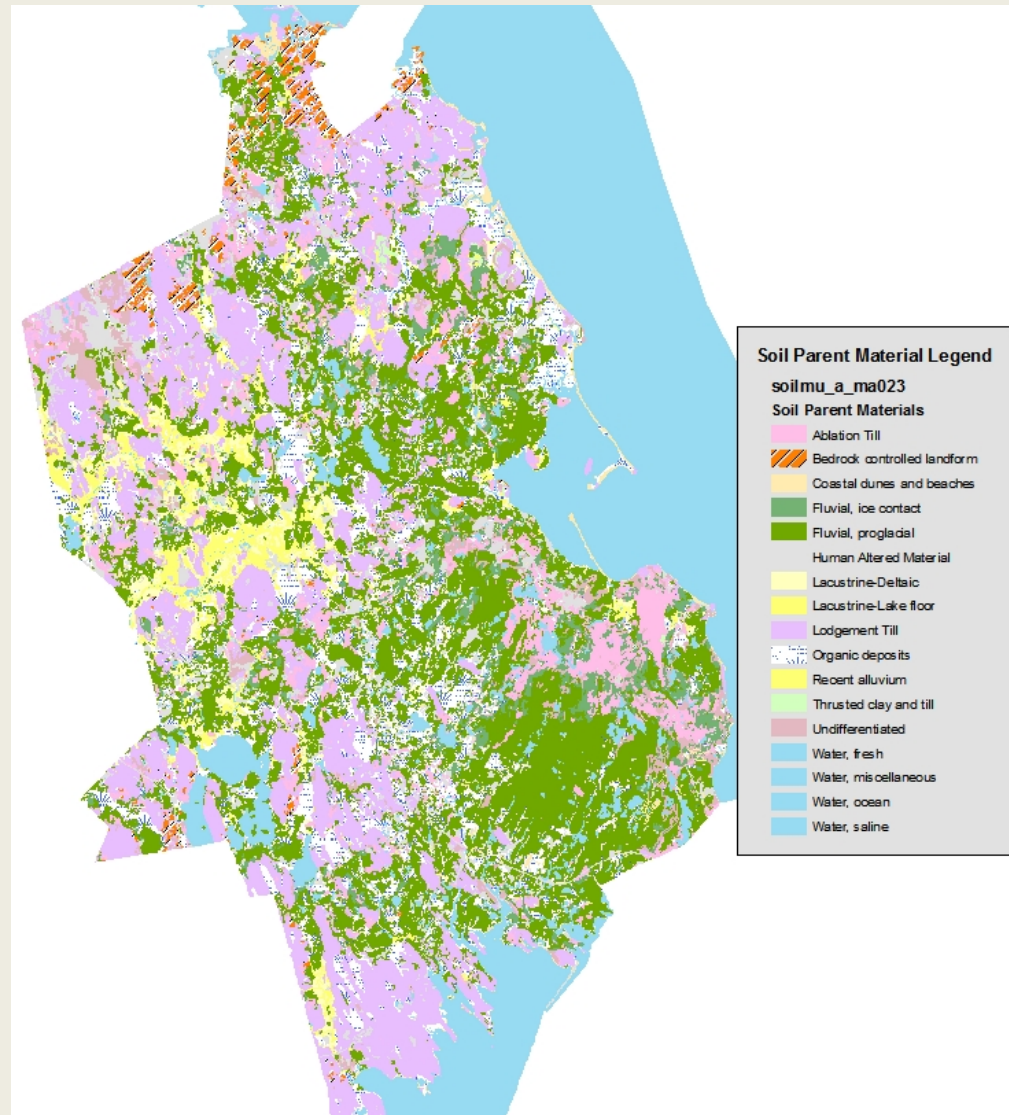
# Plymouth County Soil Survey Update (Extensive Revision 1990-2010)

# It's Done!

This soil map is advance information, subject to change upon the completion, correlation, and publication of the Plymouth Co., Mass. Soil Survey. This soil map is not SSURO certified and has not been authorized for National release by the USDA-NRCS. Soil delineations were made on unrectified color infrared aerial photos at a 1:12,000 scale, minimum delineations are 2-3 acres in size. For more info contact the Plymouth Co. Soil Survey at 508-295-5151. x 2

# Plymouth County Soil Survey

- Size: 425,000 acres
- MLRA's: 149B & 144A
- Scale: 1:12,000
- Minimum Size Delineation. 1/2 acre
- 34,354 soil polygons
- 8,656 Special spot features



# What's the Difference

## 1969 Plymouth

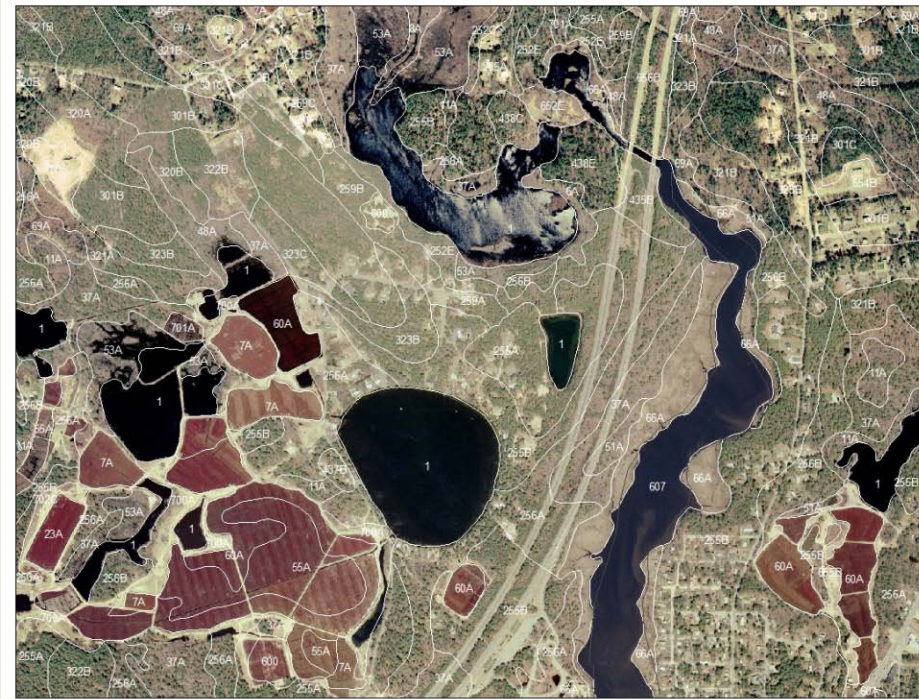
- Scale 1:15,840 (MSD~2.5)
- Gloucester Soil acreage = 35,550
- Field work 1950-1963
- Pre-taxonomy, soils described to shallow depths (30" in some)
- Sb = Sanded muck / bog
- Urban areas unclassified
- 28 series recognized
- 106 mapunits
- No coastal/tidal marsh soils

## 2010 Plymouth

- Scale 1:12,000 (MSD~0.5)
- Gloucester Soil Acres = 2,875
- Field work 1989-2009
- Soil Series names on cranberry beds
- Urban areas classified as high as possible to series
- 6 New Soil Series, 9 Dropped, 52 series in all. Classified to 65 inches.
- Georeferenced sites
- 231 mapunits
- Tidal series, dune soils, and beach units established.

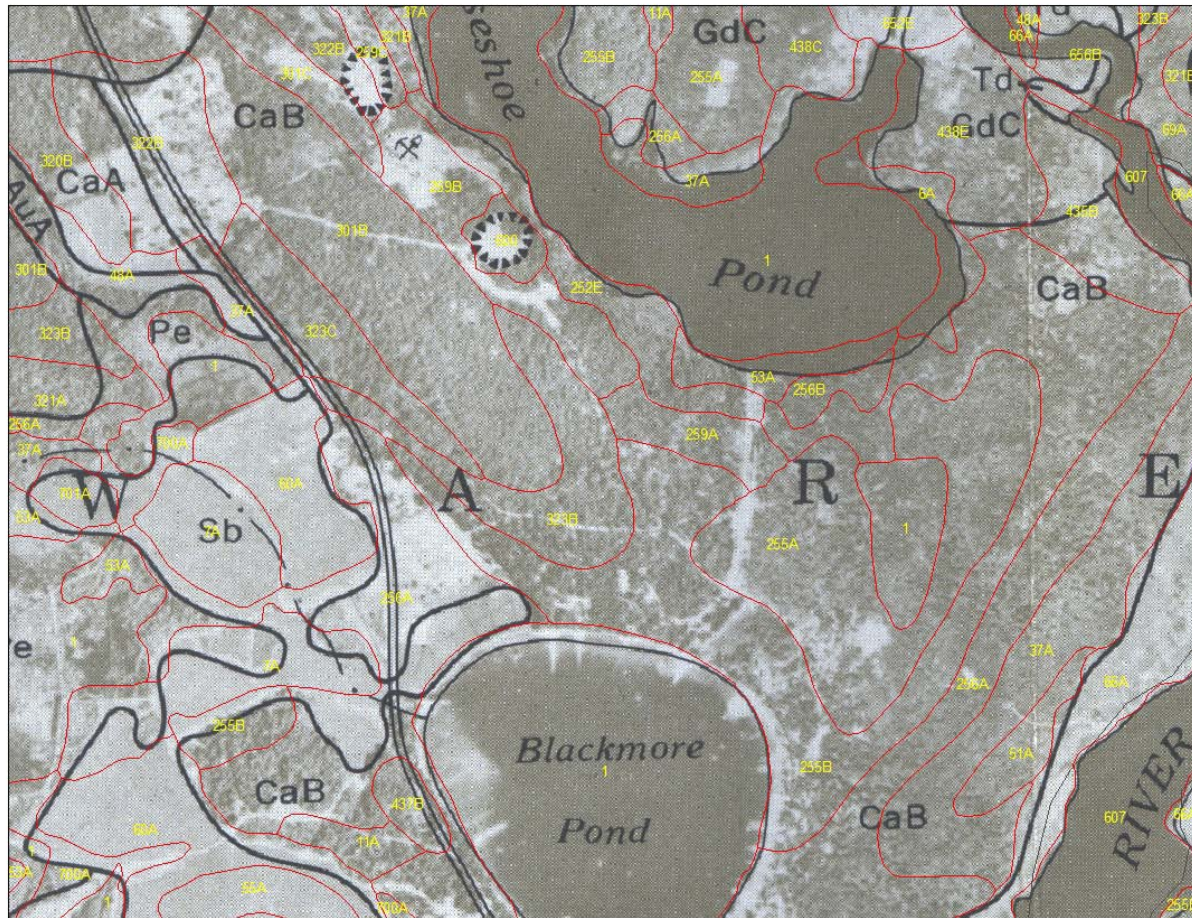


## 2010 Survey





# 1969 with 2010 in Red

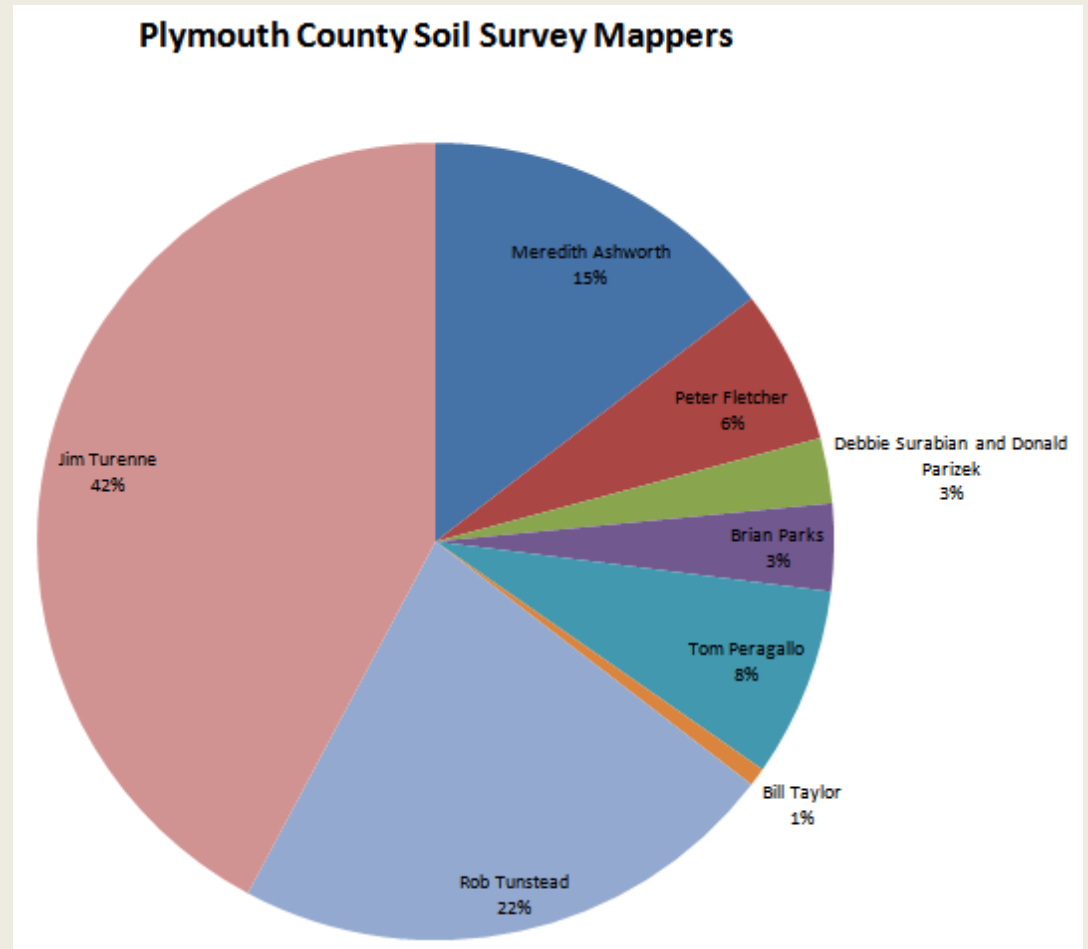


# The Plymouth Mappers

Pete Fletcher\* 1989 to 1992+  
Jim Turenne 1990 to 2003  
Meredith Ashworth 1994 to 1999  
Rob Tunstead 2000 to 2010  
Brian Parks 1997 to 2009  
Tom Peragallo 1991 to 2008  
William Taylor 1990 to 1995  
Donald and Debbie 2008 to 2010

Other Mappers: Terry Schnider,  
Brian Lesinski, Phil Angel,  
volunteers and interns.

**Thanks to All!**



\*Pete's acres mainly on the dunes and beaches!

# The Website

Started 1996, one of the first soil survey WebPages. Provided update data, farmland lists, series info, data, soil description database, geophysical info

Over 2 million hits since inception – now **nesoil.com**

## Plymouth County Massachusetts Soil Survey Update

**NEW!** [1969 Plymouth County Soil Survey Maps Now Available Online!](#) **NEW!**

The USDA - [Natural Resources Conservation Service](#) is in the process of updating the soil survey of [Plymouth County, Massachusetts](#). The mapping is being made using high resolution color infrared aerial photography, remote sensing technology including [Ground-Penetrating-Radar](#), [Global Positioning Systems](#), and [Geographic Information Systems](#) to produce detailed and accurate soil maps.

This Site was Updated on: Wednesday, April 18, 2001 07:53:57 PM

Note: If you have annoying banner ads, please click [HERE](#)

Table of Contents



Choose a destination and Click GO

Soil Series Descriptions



Select a Soil Series and Click GO



Soil and Other Links

Please take the Plymouth County Survey: [SURVEY and GUESTBOOK](#)



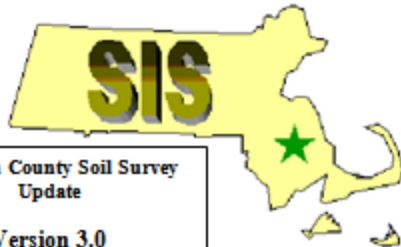
Click  
for  
gue

# SIS (Soil Information System)

Developed in 1998 with RC&D one of first GIS projects to provide soil interpretive data using the updated mapping. Hundreds of copies of the CD sent out.

## Soil Information System (SIS-C & D)

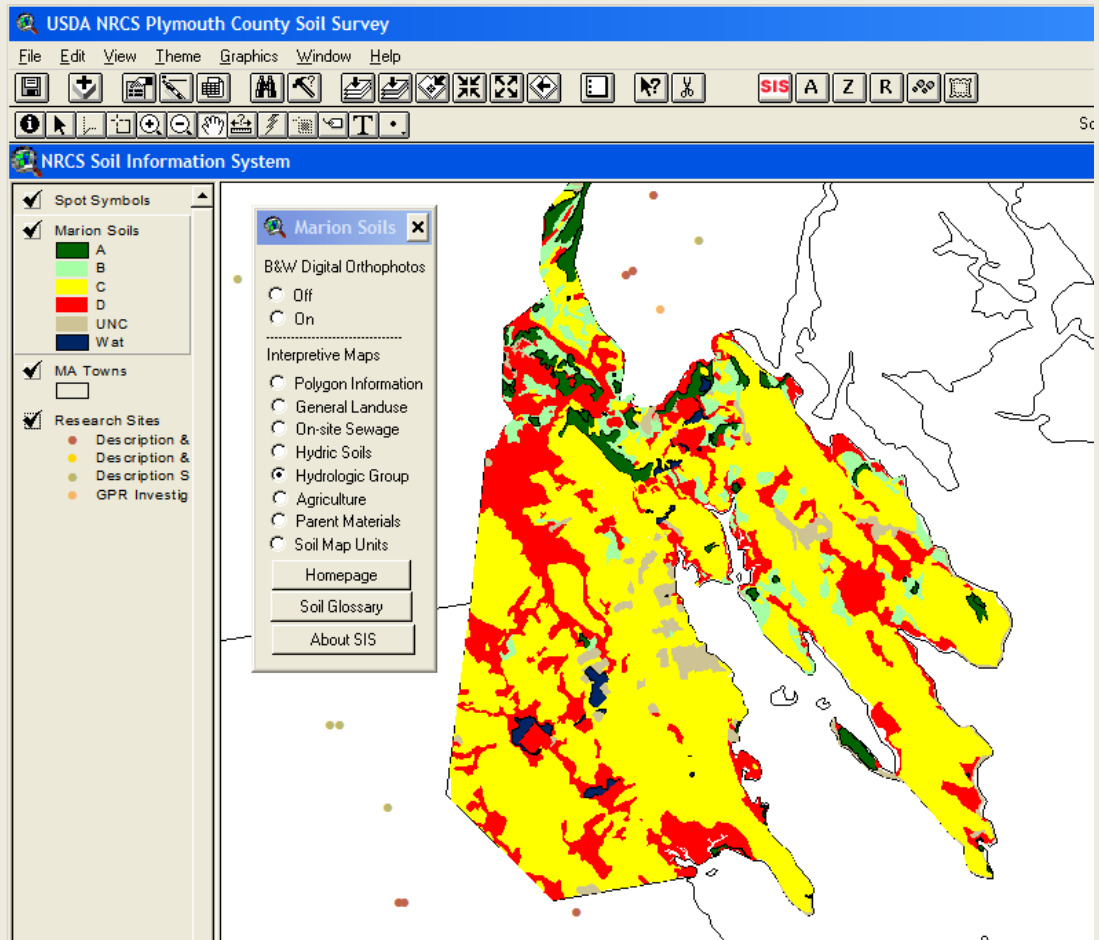
Wednesday, December 29, 1999



Plymouth County Soil Survey  
Update

Version 3.0

Pilgrim Resource Conservation and Development Area Council (RC&D)  
Massachusetts USDA-NCRS Soil Team  
The GIT Lab, University of Massachusetts/Boston





# GPS and GIS in Field

## Using Global Positioning Systems To Increase Accuracy in Soil Survey Field Mapping

*By Jim Turenne (This article was written and posted in 1996 some information may be outdated).*

[Using GPS, GPR, and GIS to inventory peat deposits](#)

[Instructions on how to download GPS data and create contour maps](#)

### Introduction

A soil survey update is underway in [Plymouth County Massachusetts](#). The updated soil survey report is employing state of the art technology such as [ground penetrating radar](#), high resolution CIR photography, and global positioning systems (GPS) to produce highly detailed and accurate soil maps. The updated soil mapping is at a scale of 1:12,000, which allow minimum delineations down to 1 - 2, acres.



Soil Survey is the Rockwell International Precision Lightweight unit, which is approximately 10x4x2 inches and weighs 3 pounds with batteries. The small unit is housed in a durable plastic case is sealed for all-weather use. The unit has a built-in antenna and other accessories. The PLGR unit provides accuracy to within 4 feet. The unit allows for increased accuracy with out the need for post-processing.

### Field Soil Mapping

In 1994, a soil survey was conducted to determine the potential use of the PLGR's for the field. The unit was used by locating known areas and comparing the coordinates to a map. The data was downloaded onto a PC and Digital Ortho-photography was overlain on the imagery. The GPS unit accurately plotted the correct location for the field mapping.



# The (Original) Soil Tunnel (aka Wormhole)

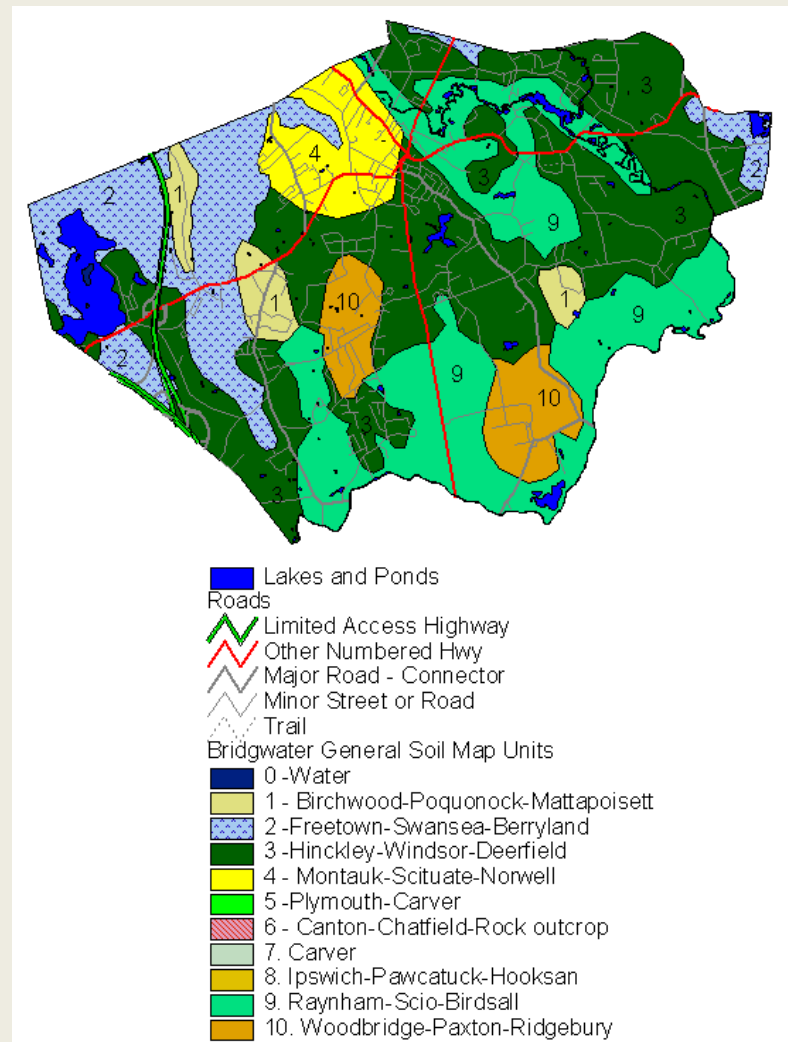
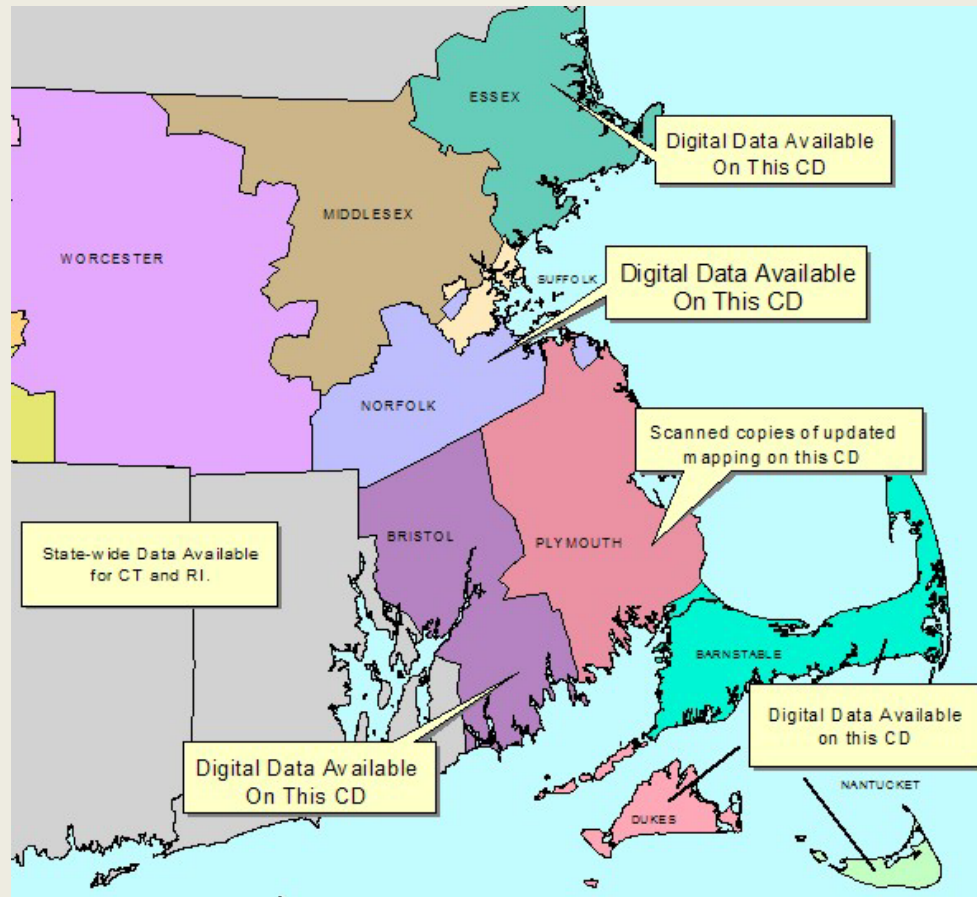


Developed by two volunteers from U.K (Nicky Shirt and Michael Bonner. Educational display taken to schools to teach about soils, curriculum written and interns trained. Featured at the National Mall in Washington DC.



# Digital Products

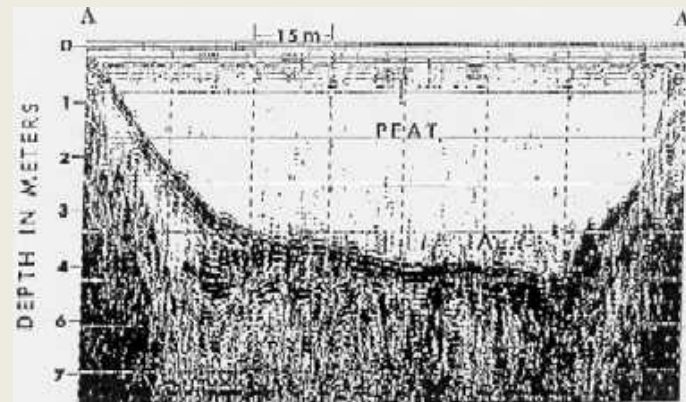
Soil CD with digital maps and attribute info,  
General soil maps for towns, catena charts,  
scanned atlas sheets, soil interp data.





# Plymouth County Soil Scientist Technical Assistance

- Ground Penetrating Radar Investigations
- Water Table Monitoring Well Program
- Title 5 Workshops
- Farm Bill Technical Assistance 9 County Area
- Rapid Carbon Assessment (RaCA)
- ERT Technical Assistance
- Hydric Soil Workshops
- New England Hydric Soils Technical Committee (NEHSTC)
- Basic Soil Services



# New Technologies

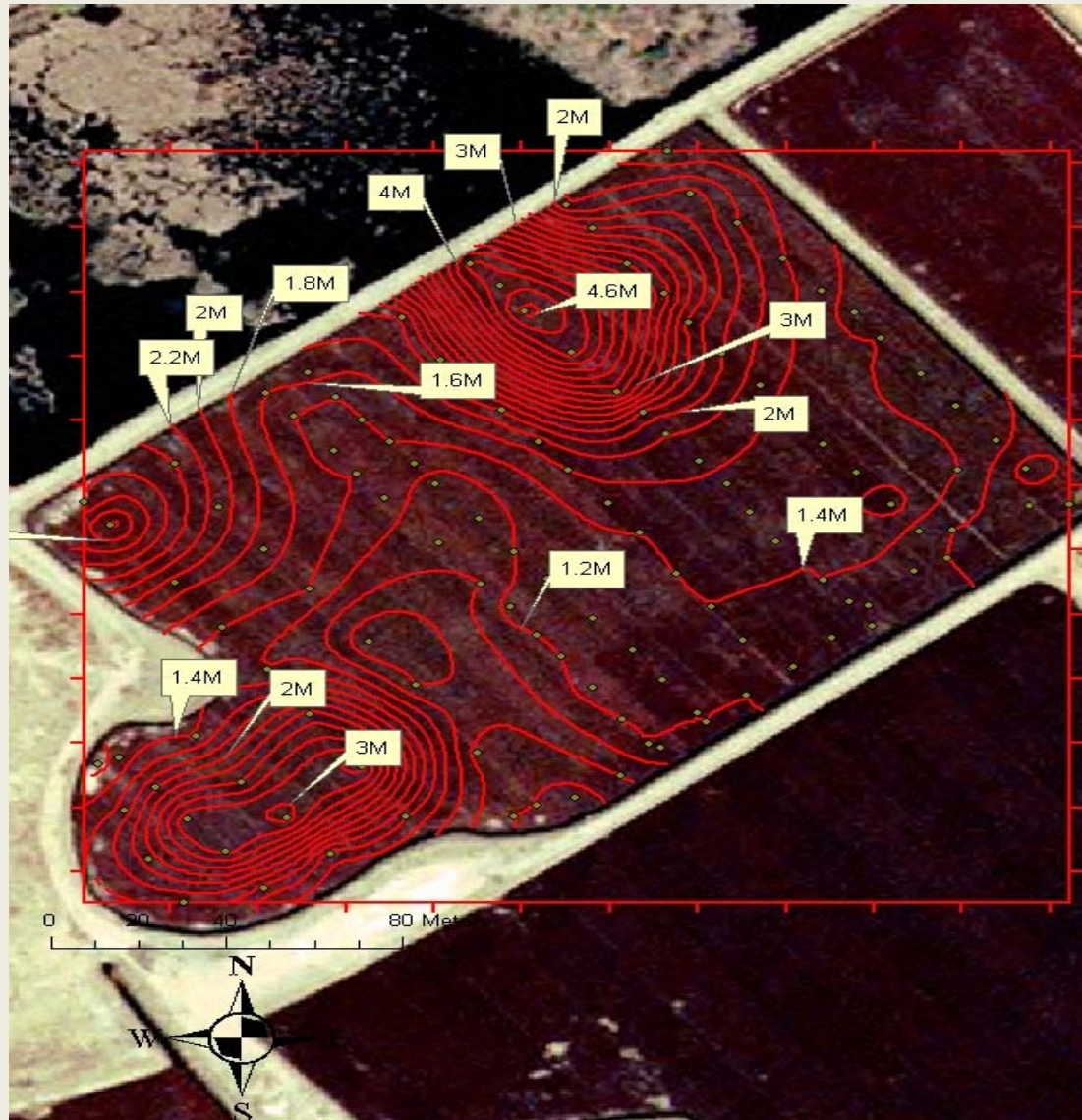
## GPR with integrated GPS Capability





# GPR - 2D - Peat Thickness

(<http://nesoil.com/gpr/gprgis.htm>)



Procedure developed to utilize GPS and GIS to provide detailed maps of peat thickness in bogs.



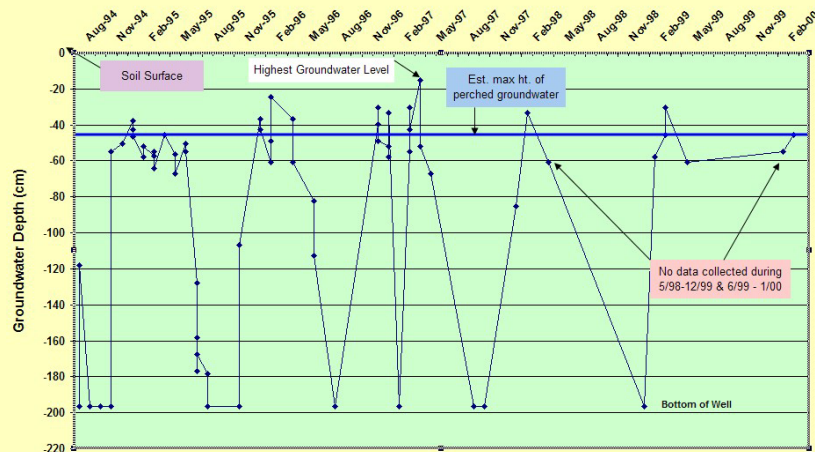
# Southeastern Massachusetts Index Monitoring Well Network

<http://nesoil.com/obswell/index.htm>

- Network of over 38 well sites setup in SE Mass.
- Town request (Board of Health Officers) / Watershed Groups
- Assist w/ new Soil Series definition and NASIS data population
- Data confirms and assists with revisions of established Soil Series definitions
- Info used in Hydric Soil Identification (National & Regional Keys)

Soil Type: Scituate Series

Groundwater Monitoring Well BI  
Brant Island, Mattapoisette  
Sampling Days



# Title 5 - Soil Evaluator Workshops



Began in 1994 and continued through current. Sessions educated professionals on soil evaluation for septic system siting. Money went to District to hire contract mappers to accelerate the survey.



# Rapid Carbon Assessment (RaCA)



Current National Initiative to determine soil organic carbon content. Assessment uses a spectrometer to analyze the soil samples collected.



# Environmental Review Team (ERT)

- Purpose – Provide local officials, boards, and commissions with accurate natural resource information and interpretations to make wise land use decisions
- Project Areas:
  - Quivet Neck, Dennis
  - Viall Farm, Rehoboth
  - Cole Property, Carver



Tidal flats at Quivet Neck, Dennis

# Hydric Soil Workshops



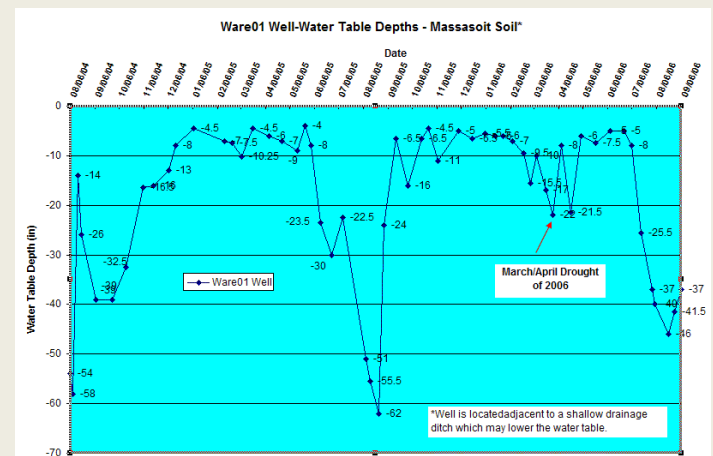
The Workshop from hell – Barnstable MA.

# New England Hydric Soils Technical Committee (NEHSTC)



**TA6. Mesic Spodic.** For testing in MLRAs 144A and 145 of LRR R and MLRA 149B of LRR S. A layer 5 cm (2 inches) or more thick, starting within 15 cm (6 inches) of the mineral soil surface, that has value of 3 or less and chroma of 2 or less and is underlain by either:

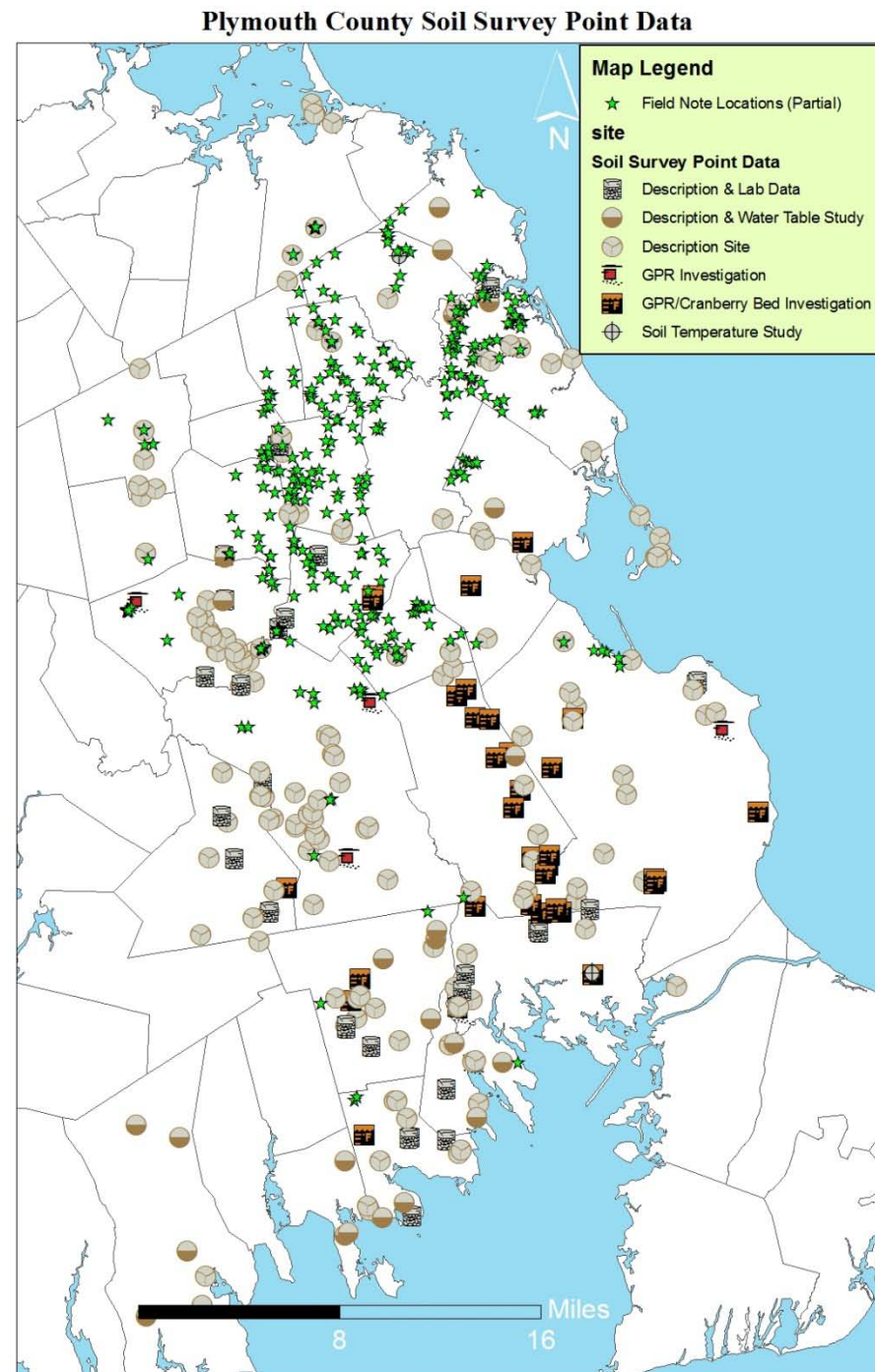
- a. A layer(s) 8 cm (3 inches) or more thick occurring within 30 cm (12 inches) of the mineral soil surface, having value and chroma of 3 or less, and showing evidence of spodic development; or
- b. A layer(s) 5 cm (2 inches) or more thick occurring within 30 cm (12 inches) of the mineral soil surface, having value of 4 or more and chroma of 2 or less, and directly underlain by a layer(s) 8 cm (3 inches) or more thick having value and chroma of 3 or less and showing evidence of spodic development.





# Geo-referenced Site and Field Notes

All data collected during the survey has been geo-located and the point data made available to users via WWW (Google Earth). Data includes pedon descriptions, lab sampling data, water table and climate sites, GPR investigations, field notes.



# Web Soil Survey

(<http://websoilsurvey.nrcs.usda.gov>)

The screenshot shows the Web Soil Survey homepage in a Windows Internet Explorer browser window. The browser's address bar displays the URL <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. The page features a header with the USDA logo and the text "United States Department of Agriculture Natural Resources Conservation Service". Below the header is a navigation bar with links: Home, About Soils, Help, and Contact Us. The main content area includes a search bar with the text "Enter Keywords" and a "Go" button. To the left of the search bar is a "Browse by Subject" section with a list of links: Soils Home, National Cooperative Soil Survey (NCSS), Archived Soil Surveys, Status Maps, Official Soil Series Descriptions (OSD), Soil Series Extent Mapping Tool, Soil Data Mart, Geospatial Data Gateway, eFOTG, National Soil Characterization Data, and Soil Geochemistry Spatial Database. The central part of the page has a large green button labeled "START WSS" and a section titled "Welcome to Web Soil Survey (WSS)" with a photograph of people working in a field. Below this is a section titled "Three Basic Steps" with a numbered list: 1. Define, 2. Use the Area of Interest (AOI) tab to define your area of interest. To the right of the main content area is a sidebar with sections: "I Want To..." (with links like "Start Web Soil Survey (WSS)", "Know the requirements for running Web Soil Survey", "Know whether Web Soil Survey works in my web browser", "Know the Web Soil Survey hours of operation", and "Find what areas of the U.S. have soil data"), "Announcements/Events" (with a link "Web Soil Survey Release History"), and "I Want Help With..." (with links "How to use Web Soil Survey" and "How to use Web Soil Survey Online Help"). The browser's status bar at the bottom shows the Windows start button, taskbar with open applications (Inbox - Microsoft Out..., Web Soil Survey - Ho..., Microsoft Office P...), and system tray with the time 10:32 AM.

Web Soil Survey - Home - Windows Internet Explorer

File Edit View Favorites Tools Help

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm> Live Search

Web Soil Survey - Home

USDA United States Department of Agriculture Natural Resources Conservation Service

Web Soil Survey

Home About Soils Help Contact Us

You are here: Web Soil Survey Home

**Search**

Enter Keywords

All NRCS Sites

**Browse by Subject**

- Soils Home
- National Cooperative Soil Survey (NCSS)
- Archived Soil Surveys
- Status Maps
- Official Soil Series Descriptions (OSD)
- Soil Series Extent Mapping Tool
- Soil Data Mart
- Geospatial Data Gateway
- eFOTG
- National Soil Characterization Data
- Soil Geochemistry Spatial Database

**The simple yet powerful way to access and use soil data.**

**START WSS**

**Welcome to Web Soil Survey (WSS)**

Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information.

**Three Basic Steps**

- 1 Define.

**Area of Interest (AOI)**

Use the Area of Interest tab to define your area of interest.

**I Want To...**

- Start Web Soil Survey (WSS)
- Know the requirements for running Web Soil Survey
- Know whether Web Soil Survey works in my web browser
- Know the Web Soil Survey hours of operation
- Find what areas of the U.S. have soil data

**Announcements/Events**

- Web Soil Survey Release History

**I Want Help With...**

- How to use Web Soil Survey
- How to use Web Soil Survey Online Help

Local intranet 100%

start Inbox - Microsoft Out... Web Soil Survey - Ho... Microsoft Office P... 10:32 AM

Also: <http://www.mass.gov/mgis/massgis.htm>

# Soil Data Mart

## (<http://soildatamart.nrcs.usda.gov/>)

The screenshot shows a Windows Internet Explorer browser window titled "Soil Data Mart - Home." The address bar displays the URL <http://soildatamart.nrcs.usda.gov/>. The page header features the NRCS logo and text: "United States Department of Agriculture", "NRCS Natural Resources Conservation Service", and "MA023 - Plymouth County, Massachusetts". A navigation bar includes links: "Home", "Select State", "State Contacts", "Template Databases", "SSURGO Metadata", "Status Map", "US General Soil Map", "Logon/Register", and "Help".


A red notice box states: "NOTICE - if you wish to download SSURGO data for the Pacific Island Area (Guam, Palau, American Samoa, etc.), please go to the following website: <http://www2.ngdc.wvu.edu/sdm/>".

Welcome to the Soil Data Mart! The Soil Data Mart allows you to:

- Determine where soil tabular and spatial data is available.
- Download data for one soil survey area at a time. (Download requests for more than one survey area at a time can be submitted through the [Geospatial Data Gateway](#). Going through the Geospatial Data Gateway also provides the option to obtain data on CD or DVD.)
- Download a template Microsoft Access® database for working with downloaded data.
- Generate a variety of reports for one soil survey area at a time.
- Find out who to contact for information about soil data for a particular state.
- "Subscribe" or "unsubscribe" to a soil survey area. A person who is subscribed will automatically be notified whenever data for that soil survey area is updated. You must register and login before doing this.

An alternative presentation of the soil survey area data contained in the Soil Data Mart, including on screen or printed soil maps, is available through [Web Soil Survey](#).

The [Soil Data Access](#) website provides additional options for requesting soil tabular and spatial data. This website and suite of web services is geared towards intermediate and advanced end-users.

 Before you start, see [Soil Data Mart - Purpose and Procedures \(2579K\)](#).

Please either select from the list of options across the top of the page, or to request a download or generate reports, begin by selecting a state or territory.

The Soil Data Mart may be unavailable on Tuesdays and Thursdays from 6:30 to 8:30 p.m. Mountain time due to maintenance activities.

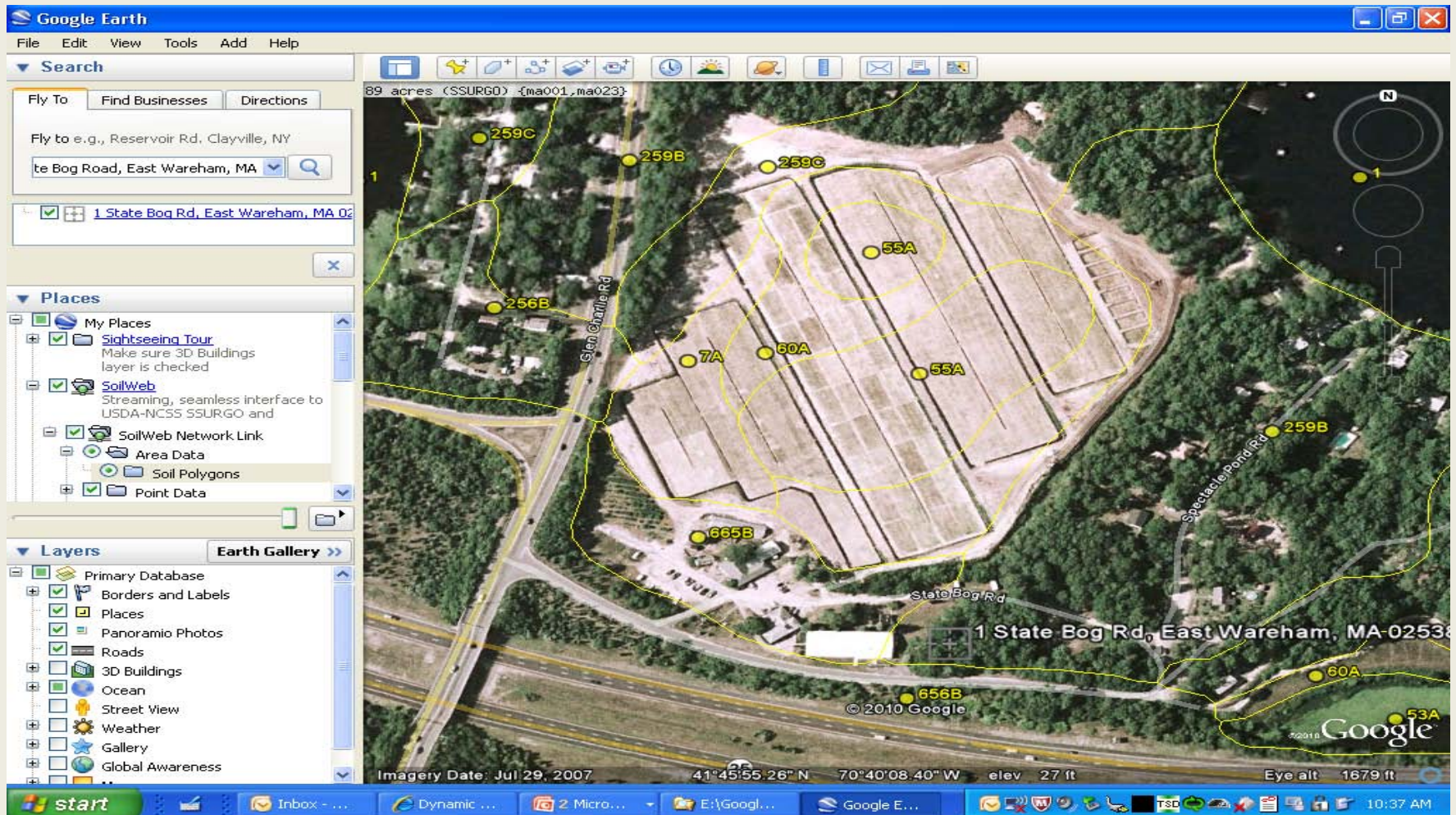
The Soil Data Mart has been tested under Mozilla Firefox® 1.0 and later, Microsoft Internet Explorer® 5.0 and later, and Netscape Navigator® 4.7 and later for Microsoft Windows®. There are differences in site navigation and mechanics under different versions of these browsers. Some differences are more significant than others. There are some major differences under Netscape Navigator® 4.7 and 4.8. For details on site navigation and mechanics under different versions of these browsers, please see [Navigating and Using the Soil Data Mart](#) on the [Soil Data Mart Help page](#).

The Windows taskbar at the bottom shows the Start button, taskbar buttons for "Inbox - Microsoft Out...", "Soil Data Mart - Home...", and "2 Microsoft Office P...", and a system tray with various icons and the time "10:33 AM".



# Google Earth Soils Information

(<http://casoilresource.lawr.ucdavis.edu/drupal/node/429>) Also available on Smart-Phones



# Google

Google Earth

File Edit View Tools Add Help

Search

Fly To Find Businesses Directions

Fly to e.g., Reservoir Rd. Clayville, NY

te Bog Road, East Wareham, MA

1 State Bog Rd, East Wareham, MA 02541

Places

My Places

Sightseeing Tour

Make sure 3D Buildings layer is checked

SoilWeb

Streaming, seamless interface to USDA-NCSS SSURGO and

SoilWeb Network Link

Area Data

Soil Polygons

Point Data

Layers

Earth Gallery

Primary Database

Borders and Labels

Places

Panoramio Photos

Roads

3D Buildings

Ocean

Street View

Weather

Gallery

Global Awareness

89 acres (SSURGO) {ma001,ma023}

**Deerfield fine sand, 3 to 8 percent slopes**

Major Component List:

**Deerfield (80%)**  
Typic Udistalfs

Ap 0 cm  
Bw1 23 cm  
Bw2 38 cm  
BC 48 cm  
C 69 cm  
165 cm

**Merriam (4%)**  
Typic Dystrudepts

Ap 0 cm  
Bw1 25 cm  
Bw2 38 cm  
Bw3 56 cm  
2C 66 cm  
165 cm

**Mashpee (4%)**  
Typic Endoaquods

Ep 0 cm  
Eg 28 cm  
Bh2 43 cm  
Bs 60 cm  
C1 60 cm  
C2 99 cm  
165 cm

**Massasoit (4%)**  
Typic Duraquods

Ep 0 cm  
Eg 28 cm  
Bh2 43 cm  
Bs 58 cm  
BC 66 cm  
C 109 cm  
203 cm

**Carver (4%)**  
Typic Quartzipsamma

A 0 cm  
E 13 cm  
Bw1 20 cm  
Bw2 33 cm  
BC 66 cm  
C 76 cm  
165 cm

click to view official series description (OSD)

Deerfield fine sand, 3 to 8 percent slopes  
deltas / Footslope  
deltas / Shoulder  
terraces / Shoulder  
terraces / Footslope  
outwash plains / Shoulder  
outwash plains / Footslope

Deerfield fine sand, 3 to 8 percent slopes  
kames / Shoulder  
kames / Summit  
terraces / Summit  
terraces / Shoulder  
outwash plains / Shoulder  
outwash plains / Summit

Deerfield fine sand, 3 to 8 percent slopes  
terraces / Footslope  
terraces / Toeslope  
drainageways / Toeslope  
drainageways / Footslope  
depressions / Toeslope  
depressions / Footslope

Deerfield fine sand, 3 to 8 percent slopes  
terraces / Footslope  
terraces / Toeslope  
drainageways / Toeslope  
drainageways / Footslope  
depressions / Toeslope  
depressions / Footslope

Deerfield fine sand, 3 to 8 percent slopes  
moraines / Summit  
moraines / Shoulder  
pitted outwash plains  
Shoulder  
pitted outwash plains / Footslope  
outwash plains / Footslope  
outwash plains / Summit

Imagery Date: Jul 29, 2007 41°45'59.44" N 70°40'06.52" W elev 18 ft Eye alt 1679 ft

start

Inbox - ...

Dynamic ...

2 Micro...

E:\Googl...

Google E...

10:38 AM

# Google

Soil-Web: CA, AZ, NV - Windows Internet Explorer

File Edit View Favorites Tools Help

http://casoilresource.lawr.ucdavis.edu/soil\_web/ssurgo.php?action=explain\_component&mukey=309346&cokey=309346:18 Live Search

Dynamic Export of Soil Surve... Soil-Web: CA, AZ, NV

California Soil Resource Lab

### Soil Taxonomy

Order:	<a href="#">Entisols</a>
Suborder:	<a href="#">Psamments</a> <a href="#">[Map of Suborders]</a>
Greatgroup:	<a href="#">Udipsamments</a>
Subgroup:	<a href="#">Oxyaquic Udipsamments</a>
Family:	<a href="#">Mixed, mesic Oxyaquic Udipsamments</a>
Soil Series:	<a href="#">Deerfield</a> <a href="#">[Link to OSD]</a> <a href="#">[Link to SM Tool]</a>

Data: [\[Lab Data\]](#) [\[Nitrate Groundwater Pollution Hazard Index\]](#)

Raw Data: [Component](#) [All Horizons](#)

### Land Classification

<a href="#">Storie Index</a>	NOT RATED
<a href="#">Land Capability Class [non-irrigated]</a>	3-w
<a href="#">Land Capability Class [irrigated]</a>	-
<a href="#">Ecological Site Description</a>	

### Soil Suitability Ratings

<a href="#">Waste Related</a>	<a href="#">Engineering</a>
<a href="#">Urban/Recreational</a>	<a href="#">Irrigation</a>
<a href="#">Wildlife</a>	<a href="#">Runoff</a>

### Hydraulic and Erosion Ratings

<a href="#">Wind Erodibility Group</a>	3
<a href="#">Wind Erodibility Index</a>	86
<a href="#">T Erosion Factor</a>	2
Runoff	Very high
Drainage	Moderately well drained
Hydric Rating / Hydrologic Group	No [Group B]

Queried map unit polygons in yellow, queried point in red.

start | Inbox - ... | Soil-Web... | 2 Micro... | E:\Googl... | Google E... | 10:39 AM



# Thanks Rob!

