MO12 Soil Survey: News and Views

NRCS MLRA Soil Survey Region 12 Spring 2012

In this Issue...

MO12 Soil Survey News and Views is published by the Major Land Resource Area Soil Survey Regional Office 12 (MO-12) in Amherst, Massachusetts.

Your ideas, comments and articles are welcome.

Please send items to kristina.wiley@ma.usda.gov.

MO Message

By Dave Hvizdak, retired MO-12 Team Leader

Change is inevitable and we are now entering a time where some significant changes will be affecting how we do business in soil survey.

The biggest change of all will be the nationwide restructuring of the soil survey program. Hopefully by the time you read this, details of the soil survey restructuring will be known and we can all move on from there. What we do know, sadly, is that three of our soil survey offices are scheduled to close, which will affect the lives of many good soil scientists. But at the same time, new opportunities will arise that will give us an opportunity to enhance our careers.

The next significant change will be to our focus the next three years. This focus will be in the form of Soil Data Join Recorrelation (aka, SDJR or Harmonization). If you are not working on an initial or extensive revision soil survey, you will be working on SDJR. The great thing about this initiative will be that it will put us squarely on the path towards a seamless soil survey. The downside will be that for the next three years many soil scientists will spend a lot of time in the office researching and analyzing data and will not have many opportunities to work in the field.

Finally, a couple of significant changes involve retirements. Steve Gourley, State Soil Scientist for Vermont, has announced his retirement at the end of April. Steve's years of dedicated work in Vermont will be missed. As for me, most of you are aware that as of April 3rd I will have retired and moved on. My wife, Jane, and I plan to move back to the Midwest (Wisconsin) where we're both from and where our family resides. The past 3 ½ years have been very rewarding for us and coming to the Northeast as MO-12 Team Leader was one of the best decisions I've made. Jane and I have thoroughly enjoyed traveling around the MO-12 area, not only as tourists, but also to enjoy the opportunity and pleasure of meeting all of you. You folks have made my job easy with your dedication and skill, and I am honored to have been the MO-12 Team Leader.

Good luck to all of you and please look me up if you are ever traveling through Northwestern Wisconsin.

Communipaw Cove to Liberty State Park – A Soil Story

By Debbie Surabian, MLRA Soil Survey Office 12-6 Leader, Tolland, CT

Over 9,000 years ago, the area known as Liberty State Park in Hudson County, New Jersey was known to the native Lenape as Communipaw Cove. According to the New Jersey Department of Environmental Protection, this shallow body of water was known for its good fishing and vast oyster beds. Originally, the water of the Upper New York Bay hosted one of these vast oyster beds and was known to be harvested well into the 19th century (Kurlansky, 2006). The sandy alluvial soils in this area created a peninsula between Newark and New York Bays that extended into the Hudson River.

Throughout the Colonial Period and into the 19th century little changed in the Communipaw Cove area until the Industrial Revolution. Transportation was the key to this period. Raw materials had to get to the factories and finished products had to get to the markets. The once quiet

...continued on page 2

Communipaw Cove soon evolved into a major transportation hub to fulfill this need. First to arrive in this area was the Morris Canal in 1836. The canal connected the Delaware River at Phillipsburg, NJ to the New York Harbor.

Soon the Central Railroad of New Jersey (CRRNJ) purchased and began filling Communipaw Cove. Between 1860 and 1928, as the need to expand their facility grew, CRRNJ continued filling the cove. The terminal was constructed primarily on garbage from New York City, dredge spoil, and ship's ballast (sand, earth, and other low-value but weighty materials carried by sailing vessels to ensure stability at sea). At its peak, the northern area of the park was crisscrossed by nearly 100 miles of railroad tracks and surrounded by a web of docks and piers. The site was a virtual beehive of activity with hundreds of trains, ferries, barges and tugboats, and a variety of other water and land crafts arriving and departing daily (NJDEP, 2010).

A plaque at Liberty State Park shows the approximate dates of the filling of the land. The dashed line indicates the original coastline prior to 1860 and the different colors represent the approximate dates of filling. The colors and dates are as follows: pink is filled by 1860s; yellow is filled by 1872; dark brown is filled by 1905; purple is filled by 1916; and light brown is filled by 1928.

Heavier transportation demands soon rendered the original terminal inadequate. By 1889, a new terminal had been designed and constructed. With the opening of the Immigration Station on Ellis Island in 1892, traffic increased dramatically. Of the 12 to 17 million immigrants that passed through Ellis Island's Great Hall between 1892 and 1954, approximately two-thirds of these courageous newcomers would take their first step on American mainland soil at the CRRNJ Terminal. By the turn of the century, the CRRNJ Terminal accommodated between 30,000-50,000 people per day on 128 ferry runs and 300 trains.

Liberty State Park

In 1964, President Lyndon Johnson declared Ellis Island a National Monument and promised to beautify the area. The following year, Jersey City gave the State of New Jersey 156 acres, including the area that became the nucleus of Liberty State Park. By 1967, all train traffic was rerouted to Pennsylvania Station in Newark and CRRNJ declared bankruptcy and ceased operation (NJDEP, 2010). At this time, local residents convinced the state and federal governments to preserve the terminal with the development of Liberty State Park (NJCU, 2010). Through local, state and federal funds, the deserted and decaying ruin of the CRRNJ Terminal, and adjacent acreage, was added to Liberty State Park. A massive clean-up campaign began and by 1975 the terminal building was

The docks at Liberty State Park are home to the ferries that take visitors to Ellis Island and the Statue of Liberty.

...continued on page 3

added to both the State and National Registers of Historic Places. One of the first projects undertaken by the state was a systematic clearing of railroad tracks, dumps, abandoned industrial buildings, and the like, which incidentally stripped the site of much of its vegetation (NJDEP, 2010).

Through the efforts of local advocates, the deserted rail yard was transformed into New Jersey's first and largest urban park, opening to the public in 1976. Today the park encompasses 1,122 acres. It is a haven for local residents and weary travelers, human as well as a wide variety of birds, fish, and other small animals (NJDEP, 2010).

Restoration Initiative

The restoration of the 234 acre interior section of Liberty State Park, currently fenced off and inaccessible, will provide substantial benefit to all 1,122 acres by linking previously developed and restored, but isolated, components of the park into one cohesive whole. The four components of the restoration project include the creation of approximately 46 acres of salt marsh, the creation and/or enhancement of approximately 26 acres of freshwater wetlands, the creation of approximately 50 acres of warm weather grasslands and the enhancement of approximately 100 acres of urban successional northern hardwoods and maritime shrub assemblages (Gallagher, 2010).

Salt marshes, which once lined the harbor, were gradually eliminated during the Industrial Revolution. The restoration project would create new salt marshes that provide invaluable wildlife habitat. The creation and enhancement of 26 acres of freshwater wetland systems will help to restore this locally endangered habitat as well. The remainder of the site, currently dominated by northern hardwood tree species and maritime shrubs assemblages, will be used as a demonstration urban forest. The urban forest at Liberty State Park is one of the largest contiguous areas of naturally established successional hardwoods in the metropolitan area. Its management will focus on assemblage development and the control of invasive species, especially portions closest to the tidal marsh and freshwater wetland that will act as protective buffers for these rare habitats. The restoration of this site as a whole will provide a unique opportunity for long-term studies of urban environments.

Soils of Liberty State Park

In 2009, a memorandum of understanding was signed to complete the soil survey of Hudson County, New Jersey in accordance with National Cooperative Soil Survey (NCSS) standards at a scale of 1:12,000. This mission would be achieved by providing scientific expertise to identify, classify, characterize, correlate, and interpret soils through field investigations, remote sensing, and laboratory information.

As soil mapping progressed through this mostly industrial, commercial, and residential county, the parks became valuable assets to consistently track where the glacial till, outwash, and eolian material existed. The parks were also used to compare different types of fill materials used to expand or shape the areas. The largest park in the county and mostly made of fill, Liberty State Park, was the ideal location to investigate anthropogenic soils. It would also be one of the toughest since the majority of the park was capped with clean fill and digging holes in this area was not an option.

However, with the use of historical records, ground-penetrating radar (GPR), electromagnetic induction (EMI), and several backhoe pits for soil sampling and investigations, the soil survey crew was able to piece together the formation of the anthropogenic soils at Liberty State Park. Historical records indicate that the terminal was constructed primarily from New York City landfill material, dredge spoil, and ship's ballast. From soil descriptions done at the park, the majority of the area is described as the moderately well drained Ladyliberty (Sandy-skeletal, mixed, mesic Oxyaquic Udorthents) and Secaucus (Loamy-skeletal, mixed, superactive, nonacid, mesic Oxyaquic Udorthents) soils.

...continued on page 4

The Ladyliberty series consists of very deep soils formed in a thick mantle of human transported materials consisting of coal slag, dredged materials, and/or any geologic deposits ranging from till, outwash, alluvium, or coastal plain sediments usually from a local source.

The Ladyliberty series consists of very deep soils formed in a thick mantle of human transported materials consisting of coal slag, dredged materials, and/or any geologic deposits ranging from till, outwash, alluvium, or coastal plain sediments usually from a local source. Rock fragments within the particle size control section range from 35 to 75 percent and are mostly artifactual. Some areas mapped as Ladyliberty have a thin loamy capping of relatively clean refuse which contained less than 20 percent rock fragments.

The Secaucus series consists of very deep soils formed in a thick mantle of human transported material consisting of construction debris intermingled and mixed with natural soil materials which were used to fill wet areas. The construction debris material commonly originates from the demolition of buildings and roads. The dominant rock fragments in the construction debris are concrete, asphalt, bricks, coal ash, coal slag and steel with some natural rocks sparsely intermingled. The human transported natural soil material is dominantly from locally excavated upland materials such as alluvium, till, outwash, or coastal plain sediments.

Within the restoration area, there were several backhoe pits dug for lab soil sampling. At the bottom of one of the pits, large wooden timbers covered the entire floor bottom. The wooden timbers found at 150 centimeters from the soil surface were thought to have been part of the web of docks and piers. After locating a space in between the foot wide boards, a bucket auger pulled up the sandy natural soils of what once was Communipaw Cove. The soil was grayish in color and contained an occasional large oyster shell.

In the southern section of Liberty State Park, the soils become sandier with large amounts and sizes of artifacts. This area is mapped as the well drained Laguardia soil. The Laguardia series consists of very deep soils formed in a thick mantle of construction debris intermingled and mixed with natural soil materials. The transported construction debris may include pieces of plastic, glass, rubber, bricks, lumber, asphalt, coal ash, unburned coal, gypsum board, concrete, and steel. The transported natural soil material may originate from any geologic deposit ranging from till, outwash, alluvium, coastal plain sediments, or residuum, usually from a local source.

Included in the survey area is one of the state's largest remaining salt marshes. It is included in New Jersey's Natural Areas system which sets aside certain ecologically significant areas that may not be altered in any way and must have a comprehensive management plan to ensure the protection of the ecosystems and species found within the area. The wetland area is mapped as the very poorly drained, Westbrook (Loamy, mixed, euic, mesic Terric Sulfihemists) soils. The Westbrook series consists of organic deposits over loamy mineral material. The thickness of the organic deposits range from 40 to 130 centimeters of partially decomposed organic materials from salt tolerant herbaceous plants.

Two types of geophysical nonintrusive techniques, electromagnetic induction (EMI) and ground-penetrating radar (GPR), were used in areas of the park that were off limits to digging since being reclaimed. EMI was used to help characterize the fill materials and delineate zones with different types and amounts of artifacts. The EMI identified several major contrasting zones that appear to correspond with historical records of land use and possibly differences in the composition of the fill. GPR was used to estimate the thickness of clean fill material overlying the coal/ash slag or dredged materials. Radar records showed that there is a relatively thin cap (less than 30 centimeters thick) of clean fill materials that cover the reclaimed areas of the park.

References

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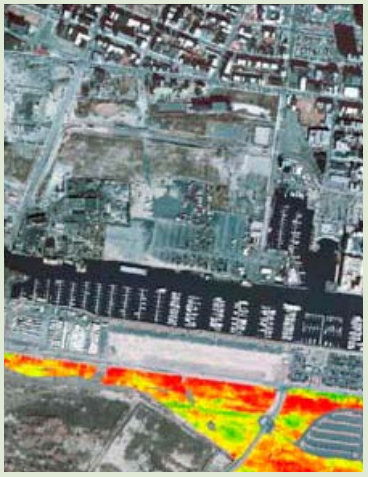
The Secaucus series consists of very deep soils formed in a thick mantle of human transported material consisting of construction debris intermingled and mixed with natural soil materials which were used to fill wet areas.



A map of the EMI data shows areas of high conductive soil materials or buried metallic objects in shades of yellow, green, and red. The red areas are undoubtedly associated with buried rails and other debris related to this former land use.

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SharePoint Site is Created for the Northeast Ecological Site Inventory

By David Clausnitzer, Northeast Ecological Site Inventory Quality Assurance Specialist

David Clausnitzer, Ecological Site Inventory (ESI) Quality Assurance Specialist based in the Amherst MO office, is pleased to announce the establishment of the Northeast QA Region ESI SharePoint. The Northeast QA Region currently encompasses MOs 12, 13, and 18, ranging from Maine to southern Illinois and northern Alabama.

This SharePoint is a subsite of the National ESI SharePoint. It provides capabilities for sharing information and ideas specific to the forests, wetlands, salt marshes, subaqueous areas, and other ecosystems found in the northeastern United States, as well as their associated soils.

The Northeast Region SharePoint can be accessed through the National ESI SharePoint (look under "Sites" in the left-side column of the Home Page) at https://nrcs.sc.egov.usda.gov/ssra/nssc/esi/default.aspx or directly at https://nrcs.sc.egov.usda.gov/ssra/nssc/esi/neqaesi/default.aspx . Please contact David Clausnitzer at david.clausnitzer@ma.usda.gov if you would like to have access to the site.

New MLRA Soil Survey Office Lab Is Up and Running

By Donald Parizek and Marissa Theve, Soil Scientists, MLRA Soil Survey Office 12-6

A recent remodeling project at the Tolland, CT NRCS office combined a storage room and a bathroom to create a new MLRA soil survey lab. The lab will be used to conduct rudimentary soil analysis locally, an efficient way to avoid expensive shipping costs and time delays normally encountered when shipping samples to our national soil survey lab in Lincoln, NE. The Lincoln lab will still conduct full characterization and special analysis for the soil survey office when necessary. The Tolland lab will be helpful in collecting valuable physical, chemical, and biological soil properties to enhance our data base, the National Soils Information System (NASIS), from which soil interpretations are generated.

Earth team volunteer, Diane Lambert, processing rapid carbon soil samples in the new MLRA soil survey lab.

Specific analyses that will be performed at the new soils lab include soil 1:1pH, organic calcium chloride pH, bulk density, organic pyrophosphate color, moisture content, sieve analysis, and a test for the presence of carbonates. Two conductivity measurements associated with salinity levels in subaqueous and tidal marsh soils are also being investigated using the lab at the request of the National Soil Survey headquarters. These methods include the 1:5 by volume EC and pore water

...continued on page 6

EC methods and are included as part of the soil halinity project which is currently in progress. The purpose of this project is to create standard halinity classes, which differ from salinity classes in that they reflect salts derived from the ocean, rather than salts accumulated from over-land evaporative processes. The lab will feature essential equipment for any soil lab such as a water deionizer, drying racks, sieves, shakers, vacuum pump, glassware such as beakers, graduated cylinders, and flasks, and a sample fridge and freezer for chemical analyses. For more information about soil laboratory procedures, see that Soil Survey Laboratory Methods Manual at: ftp://ftp-fc.sc.egov.usda.gov/NSSC/Lab_Methods_Manual/SSIR42_2004_print.pdf.

The Tolland soil survey lab is currently being used to prepare soil samples for the Rapid Carbon Assessment Program, an agency strategic priority to assess the levels of soil carbon present across the United States. With the expert assistance from Earth Team volunteers Diane Lambert and Dan Masella, the soil survey office staff has been able to process over 800 soil samples thus far. This help will alleviate a critical back log at the University of Rhode Island soil lab where NRCS-Rhode Island Resource Soil Scientist and MO-12 Rapid Carbon Coordinator, Maggie Payne, is diligently working away to analyze thousands of samples to meet the deadline for the project.

For more information on the new soil survey lab, contact Marissa Theve at 860-871-4018 or Donald Parizek at 860-871-4044.

Rhode Island Completes the First Freshwater Subaqueous Soil Survey

By Jim Turenne, State Soil Scientist, Rhode Island

The next upload of the RI-600 SSURGO spatial data will include soil mapping and data for six freshwater ponds in Rhode Island. This will make RI the first state to map Frasi wassents and Frasi wassists (freshwater mineral and organic soils). The mapping effort is lead by University of Rhode Island graduate student, Jonathan Baaken. Baaken, working under Dr. Mark Stolt, began his thesis study on freshwater submerged soils in 2010. For his study, Baaken collected and analyzed over 110 soil pedons, collected detailed bathymetry and ground penetrating radar data, mapped out submerged aquatic vegetation (identifying invasives and non-invasives), and worked with the NRCS to set up five new soil series to complete the mapping. At the 2011 American Society of Agronomy meeting Jonathan won 1st place for his poster on freshwater subaqueous soils. A list and the classification of the five new series are provided in *Table 1: Classification of the New Freshwater Soil Series*. While only mapped currently in Rhode Island, these map units could be mapped throughout the MLRA 12-6 region. The soil mapping for the six ponds studied (Watchaug, Worden, Tuckertown, Bellville, Bowdish, and Smith & Sayles) will be included in the next upload of the RI-600 spatial data version 4 (currently being reviewed by the digitizing unit). Plans are to continue the mapping during winter months. Thanks go out to the MLRA 12-6 staff, Shawn Finn, Mark Stolt, and Maggie Payne for completing this project plan.

Table 1: Classification of the New Freshwater Soil Series

MU ID	Series name	Classification
Sn	Shannock sand	Sandy, mixed, mesic Typic Humaquepts *
Tt	Tuckertown muck	Dysic, Sapric Frassiwassists
Wk	Wickford muck	Loamy, Dysic (Terric) Sapric Frassiwassists **
Aq	Aquapaug loamy sand	Mixed, non-acid, mesic Psammentic Frassiwassents
Bu	Burlingame sandy loam	Coarse loamy, mixed, active, non-acid, mesic Aeric Frassiwassents

* Current taxonomy could not classify to Wassents.
** Terric subgroups not currently recognized in the Wassists suborder

It's been a busy year for Rhode Island soils. Other improvements to the RI-600 SSURGO data include: the recorrelation of Adrian and Carlisle to Swansea and Freetown soils; a complete redigitizing of Block Island (a 6,000 acre offshore island) to correct a spatial shift in the original digitizing; removal of over 2,000 polygons under the 0.5 acre minimum (mostly water units which were changed to spot symbols); phase II of the coastal zone soil survey (dunes, marshes, beaches, and subaqueous soils from Point Judith to Greenwich Bay); and numerous corrections and adjustments to the data.

Rapid Carbon Assessment Update

By Maggie Payne, Resource Soil Scientist, Rhode Island

The Rapid Carbon Assessment (RaCA) has been a priority for the National Soil Survey Center and many soil scientists throughout the nation for the past two years. In an effort to inventory soil carbon stocks by land use and soil type, over 6,000 sites were visited throughout the nation and 30,000 soil pits were sampled since the project began in the summer of 2010.

In the MO-12 region, we sampled 380 sites, 1,900 pedons, and over 9,000 horizons in just over a year of field work. All of these samples have been gathered at the University of Rhode Island (URI) were we are in the final phases of processing and uploading data. With an average of four student assistants at URI working a total of 30 hours per week out of Dr. Mark Stolt's pedology lab, all samples are weighed for bulk density, air dried, and sieved to remove coarse fragments. Samples are then scanned with the visible and near infrared (VNIR) spectrometer, and subsamples are oven dried to determine moisture content in order to calculate the bulk density. In order to speed up the process, the university was able to purchase a soil crusher that dramatically increases productivity for clayey samples. Work is also being shared with the MLRA 12-6 soil survey office where Earth Team volunteers are drying and sieving samples. Some samples were shipped to Auburn, AL where they had some extra lab space and assistance to accommodate a small percentage of our samples. After analysis, selected samples are sent to the National Soil Survey Center to be archived or analyzed.

To date we have completed 75 percent of the lab work required for this project and are simultaneously uploading all workbooks and laboratory data to NASIS as samples are completed. Despite our best efforts, the project deadline of March 30, 2012 will be pushed to the end of May for finishing up analysis of MO-12 samples. Nationwide, approximately 80 percent of data from the project has been uploaded to NASIS as the project comes to a close in many areas. The data review and analysis stage has begun at the national level and we can expect to see some results soon.

For questions regarding the Rapid Carbon Assessment, contact maggie.payne@ri.usda.gov.

Ground-Penetrating Radar Surveys in Connecticut

By Debbie Surabian, MLRA Soil Survey Office 12-6 Leader

At the request of the Connecticut State Archaeologist, ground-penetrating radar (GPR) surveys were conducted at sites located in Harwinton and Ellington, Connecticut. A favorable feature of GPR for archaeological investigations is its ability to detect disturbances and the intrusion of foreign materials in soils. On radar records, the depth, shape, size, and location of subsurface features may be used as clues to infer buried cultural features. GPR offers the horizontal and vertical resolution necessary for this type of application. The GPR data images do require someone with field experience to accurately determine the findings. The collection of ground truth data is important for correlating GPR signatures with specific underground targets in a given survey.

T.A. Hungerford Library and Museum in Harwinton, Connecticut

Before his death in 1903, Theodore Alfred Hungerford set aside money in his will to fund a library building and a trust fund for maintenance of the building. He also wrote provisions in his will to include a tomb that would be included in the foundation of the building. The T.A. Hungerford Library, including a tomb for Mr. Hungerford, was completed in 1909. It was told that the tomb was located in the basement of the building. However, searches in the basement have not revealed the missing tomb. New research indicates that the tomb may be located outside on the northwest corner of the building.

Pictured to the right is a photograph of the area of interest at the T. A. Hungerford Memorial Library and Museum. The area of interest is located directly next to a large flat rock holding the base of an emergency staircase.

...continued on page 8

A photograph of a very large headstone at the South Street Cemetery in Harwinton, CT. This headstone stood more than six feet high above the soil surface and was engraved on one side. It was noted that the stone under the staircase is quite similar in size to this headstone and should be investigated to see if there is writing on the other side of the stone.

Survey Procedures:

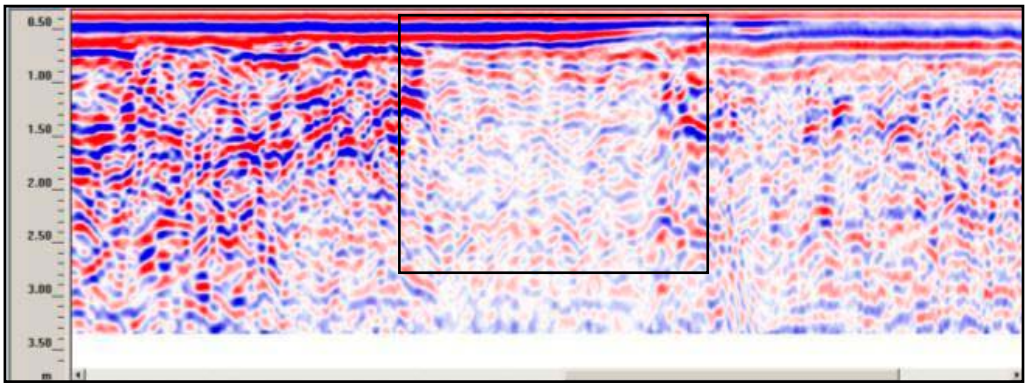
Using the 400 MHz antenna, random radar traverses, known as a wildcat survey, were conducted across a grassed area located north of the T. A. Hungerford Library and Museum. The wildcat survey was completed in an attempt to locate an area of soil disturbance related to the burial of T.A. Hungerford.

The soil in this area is mapped as Paxton and Montauk fine sandy loams, 8 to 15 percent slopes. The Paxton and Montauk soils are formed in glacial till, more specifically, lodgment till derived mostly from schist, gneiss, and granite. Glacial till is material that has been transported and deposited directly by ice. Till typically has unsorted sediments varying in texture, mineralogy, and degree of consolidation. Material carried in different parts of the glacier produces till with different characteristics. Lodgment till is compact and contains a greater amount of fine-grained sediment. Paxton soils formed in a loamy mantle underlain by loamy dense till and are classified as coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts. Montauk soils formed in a loamy mantle underlain by sandy dense till and are classified as a coarse-loamy, mixed, subactive, mesic Oxyaquic Dystrudepts. Paxton and Montauk soils are considered well suited to GPR applications.

Results:

The GPR provided added insight into subsurface conditions and the presence of glacial till features as well as an area of disturbed soils. The data revealed an anomalous feature that may be attributed to a burial in 1912.

The radar record shows widely dispersed and chaotic patterns of high-amplitude reflections that are typically associated with the underlying till soils. The radar record also shows an abrupt change from the high amplitude reflections to an area of low amplitude reflections located within the black box. Due to the fact that burial plots are backfilled immediately with excavated materials, it is speculated that soils within a burial shaft would be more mixed than the surrounding soils. This lack of uniformity between the natural soils and disturbed burial shaft is expected to produce differences in soil moisture and/or soil density and a contrast in dielectric properties. The greater and more abrupt the difference in dielectric properties, the greater the amount of energy that is reflected back to an antenna, and the more intense will be the amplitude of the reflected signals on the radar record. This area was flagged and determined to be approximately 8 feet long and 5 feet wide. This rectangular shaped feature, as well as the very large flat stone used as the base of the emergency staircase, may be deemed worthy of further attention by archaeologists.



Pictured to the right is a two-dimensional radar record showing an area of high amplitude reflections on either side of an area of lower amplitude reflections. This abrupt change in amplitude reflections was determined to be approximately 8 feet long and 5 feet wide.

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A photograph of the front of the Nellie McKnight Museum built in 1912.

A soil map from the Soil Survey of the State of Connecticut via Gmaps. The red dot indicates the approximate area of interest. The soil mapped across this area is 33A Hartford sandy loam, 0 to 3 percent slopes.

Nellie McKnight Museum, Ellington

The Nellie McKnight Museum, formerly the McKnight family house, was built in 1912. It has eight rooms and originally seven fireplaces. Upon Nellie McKnight's death in 1981, the house was left to the Ellington Historical Society to be used as a museum. Today, it is still maintained as the town museum. This year, there is considerable interest by the Ellington Historical Society to conduct an archaeological dig onsite with the coming of the 200th anniversary of the house.

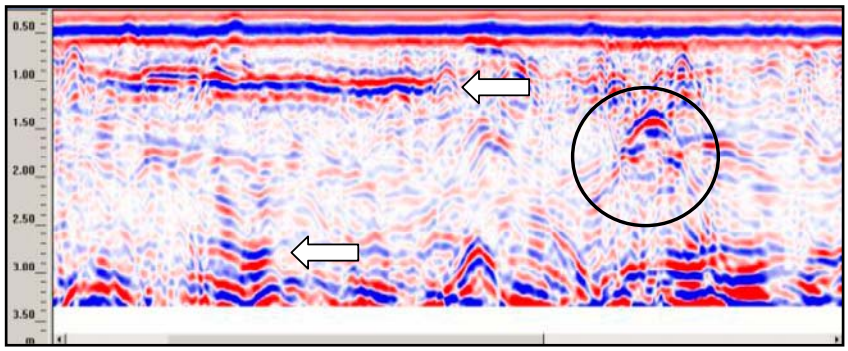
Survey Procedures:

Using the 400 MHz antenna, random radar traverses were conducted across the lawn of the museum. A wildcat survey was completed in an attempt to locate an area of soil disturbance or fill materials related to activities of everyday life from as far back as 1912.

The soil in this area is mapped as Hartford sandy loam, 0 to 3 percent slopes. The Hartford soils are formed in sandy glacial outwash, more specifically, well sorted sands and gravels derived mainly from red sedimentary rocks and basalt. Hartford soils are considered well suited to GPR applications.

Results:

The use of geophysical techniques provided added insight into subsurface conditions and the presence of outwash features. The figure below contains a radar record completed on the east side of the museum. The radar record reveals an anomaly (within the black circle) at approximately 1.5 meters below the soil surface which may be a pipe exiting the house to the septic tank. The radar record also shows the dominance of planar reflections of different amplitudes in the upper left-hand portion and lower portion of the radar record (noted by the white arrows) which may indicate the stratified sands and gravels of the natural undisturbed outwash soil.



A two-dimensional radar record showing an anomaly (circled in black) which may represent a buried pipe exiting the house to the septic tank. The radar record also shows the dominance of planar reflections of different amplitudes in the upper left-hand portion and lower portion of the radar record (noted by the white arrows) which may indicate the stratified sands and gravels of the natural soil.

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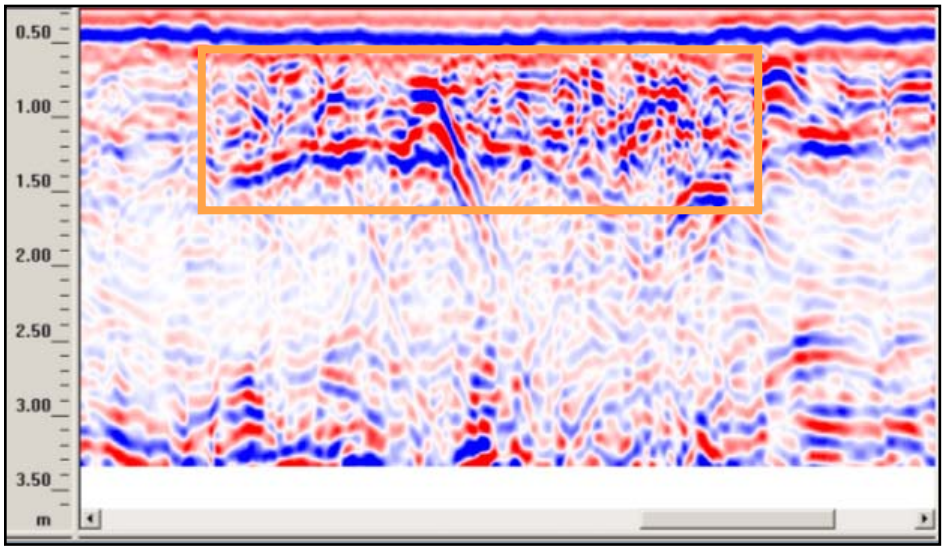

A two-dimensional radar showing an area of fill material (in the orange box) indicated by random patterns and intensities of reflections.

The radar record above shows an area of fill material (in the orange box) indicated by random patterns and intensities of reflections. The mixed materials may have been used to fill and level the site or was used as a dumping site off the back of the house. The inhomogeneities in the filled soil materials or debris are indicated by various breaks, shapes, and intensities of the reflections.

2012 Northeast Cooperative Soil Survey Regional Conference

Submitted by Tony Jenkins, State Soil Scientist, Maine

The 2012 Northeast Cooperative Soil Survey Conference will be held June 18-21 in Orono, Maine. A central theme of maximizing soil survey value will underlie interesting presentations ranging from the restructuring environment of the NRCS soil survey program to cutting edge incorporation of spatial and laboratory data.

The technical tour on Wednesday, June 20, will take us into the woods, along the beautiful rapids of the Penobscot River, to look at soils and landscapes in the shadow of Maine's greatest mountain, Katahdin. Bring your favorite field clothes to cover the weather possibilities (from cold rain to sunny and 80s) and terrain. After the tour, a lobster dinner and banquet will be held at the Black Bear Inn.

More information, including the agenda, is available at http://soils.usda.gov/partnerships/ncss/conferences/regional.html. Please consider attending this conference. If you have questions, contact Tony Jenkins, tony.jenkins@me.usda.gov or 207 717-0422.