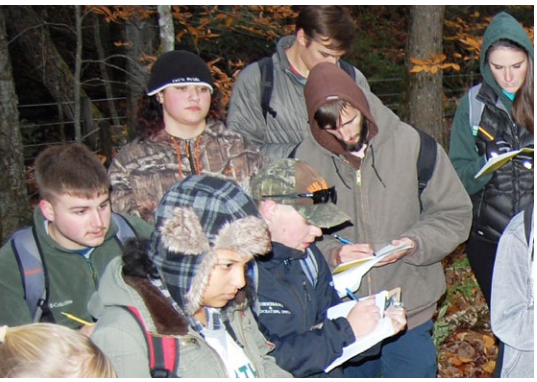
United States Department of Agriculture

Glacial Gazette

Glaciated Soil Survey Region 12 Newsletter

March 2016



Pictured above: Environmental science students from Paul Smith's College received a soil science lesson in the field and in the classroom.

In this Issue

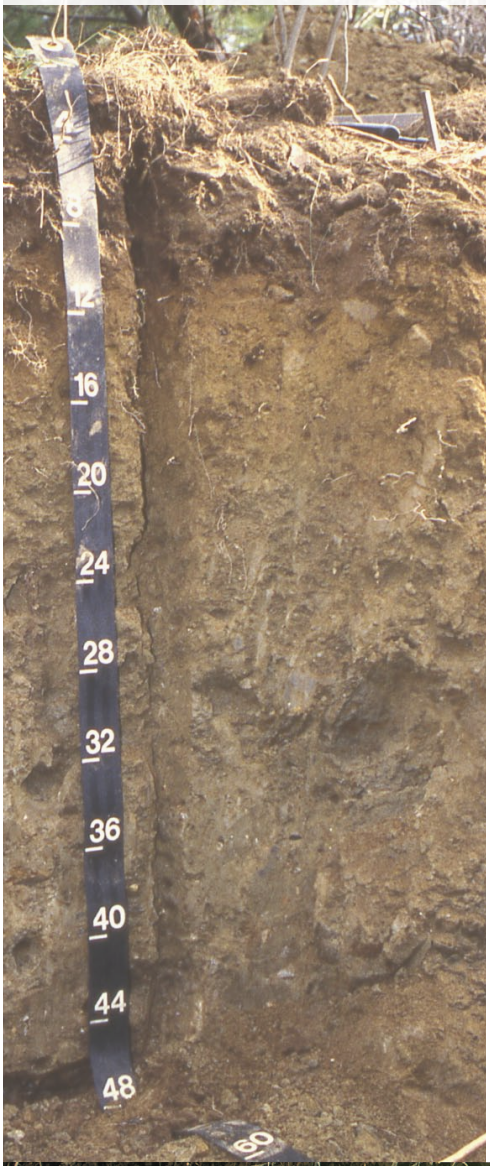
Soil Scientists Deliver Guest Lecture at Paul Smith's College

by Rebecca Fox, NRCS Soil Scientist–Paul Smiths, New York

Soil scientists from the Paul Smiths MLRA Soil Survey Office (12-PAS) took Environmental Studies students on a soils field tour on the Paul Smith's campus and served as guest lecturers at Paul Smith's College. The Foundations of Environmental Science class includes freshman students from the Environmental Studies Program. Gerald Smith, 12-PAS Soil Survey Office Leader and Paul Smith's College alumnus, gave a general soil science lesson and presented traditional soil survey methods. Soil scientists Janella Cruz and Rebecca Fox demonstrated new technology used in soil survey and soils tools that readily provide information to the public. Students and instructors were really interested in Web Soil Survey, Soil Geodata Gateway, and ArcSIE. During the lab portion of the class, the soil scientists took the students on a field tour to observe five different soil sites located on the college campus. The students learned the formation processes for Spodosols and Histosols in the area and the differences between organic soils, glacial outwash, ablation till, and basal till. After leading discussions about different soil properties such as drainage and texture, both soil scientists and students talked about how differing properties would affect the land use and management.

The soil scientists received positive feedback from both the students and the instructors. The students enjoyed getting their hands dirty and were especially impressed with how different soils can be in a small area.

Luis A. Hernandez
Regional Director



Greetings!

It's hard to believe calendar year 2016 just started two months ago—and we are already in the month of March! Knowing that spring and summer are rapidly approaching, makes us reflect on the exciting National Cooperative Soil Survey activities ahead of us in fiscal year 2016.

The MLRA soil survey offices, working along with technical teams and management teams, identified and prioritized a large number of projects to modernize about 3 million acres through soil survey activities including Initial Soil Survey, MLRA Soil Survey Update, Soil Survey Extensive Revisions, and Soil Data Join Recorrelation (SDJR) Initiative. In addition, MLRA soil survey offices continue to dedicate many hours of assistance to support NRCS Soil Health Initiative, educational activities, soil investigations, wetland delineations, etc. This fiscal year, MLRA soil survey offices will be fully engaged with soil sampling of two national projects: National Ecological Observatory Network (NEON) and Environmental Protection Agency National Wetland Condition Assessment.

The Soil Science Division launched a new national initiative for developing provisional ecological site descriptions across the entire country. It's a five-year initiative to organize ecological site information and prepare for the next phases of delivering ecological site information to users in a very efficient manner.

Thanks to the leadership of seven State Conservationists and their State Soil Scientists, the Soil Science Division approved a new regional initiative: Coastal Zone Mapping Initiative. This initiative will focus on coastal zones throughout SSR 12 and the northern portion of SSR 3. Coastal zone areas that will be considered in this work include near shore or subaqueous soils, along with adjacent terrestrial soils including upland tidal marshes or barrier beaches. The plan is to begin fieldwork in 2017.

The 2016 Northeast Cooperative Soil Survey Conference will be held June 20–23, in Lake Placid, N.Y. The conference planning team is developing a very exciting and interesting conference program. Additional information will be available in the very near future.

As always, we appreciate your efforts nurturing the cooperative spirit of the National Cooperative Soil Survey.

Thanks!

Luis Hernandez

Evaluation of Geophysical Methods for Mapping Soils in Urbanized Terrain

by Dr. Jeffrey Howard, Associate Professor, Wayne State University, Detroit, Michigan

A team of five students was able to sample soils at 75 points on a grid, and map 1.5 hectare of vacant land in 2 days using geophysical methods.

A study was carried out in Detroit, Michigan during the summer of 2015 to field test the effectiveness of pH, penetrability, electrical conductivity and magnetic susceptibility (referred to here as geophysical methods) for mapping urban soils. The study was funded by a grant from the U. S. Geological Survey's EDMAP program which has the goal of training the next generation in the art of geologic mapping. NRCS soil scientists Joe Calus, Eric Gano, and Carla Ahlschwede from the Flint, Michigan MLRA Soil Survey Office provided technical advice to Dr. Jeffrey Howard and his five students from Wayne State University. Howard obtained a license from the Detroit Land Bank which granted temporary access to their approximately 50,000 pieces of property, many of which had abandoned and derelict buildings. Mapping urban soils is generally complicated by the fact that they are often so artifact-rich that auger refusals occur 50 to 90 percent of the time. Geophysical methods were known from previous studies to provide a non-invasive alternative approach, but they had not yet been tested as a tool for mapping urban soils.

In this study, measurements of electrical conductivity and magnetic susceptibility using field probes were compared with laboratory analyses and auger-based ground truth. Transects were made across different land use types (park, residential demolition, undemolished residential, industrial). A 1.5 hectare parcel of vacant land produced by building demolition was mapped, and an auger-based map of anthropogenic surficial deposits in Detroit city was compared with soil maps based on soil geophysical properties. The transect studies showed that there were distinct differences in soil geophysical properties as a function of land use type. This is attributed to physical mixing of earth materials by human activity, and differences in the type and abundance of artifacts. Graduate student Katharine Orlicki carried out detailed studies of artifacts as part of her Master of Science thesis project. She was able to distinguish petrographically amongst different types of microartifacts, which were found to be common in the sand fraction of urban soils. Her work showed that microartifacts had an impact on soil geophysical properties even at low concentrations (less than 5 to 10 percent). Waste building materials (concrete, brick, etc) were found to have the greatest impact on electrical conductivity, whereas magnetic susceptibility was affected most by coal-related and iron-smelting wastes, which are highly magnetic.

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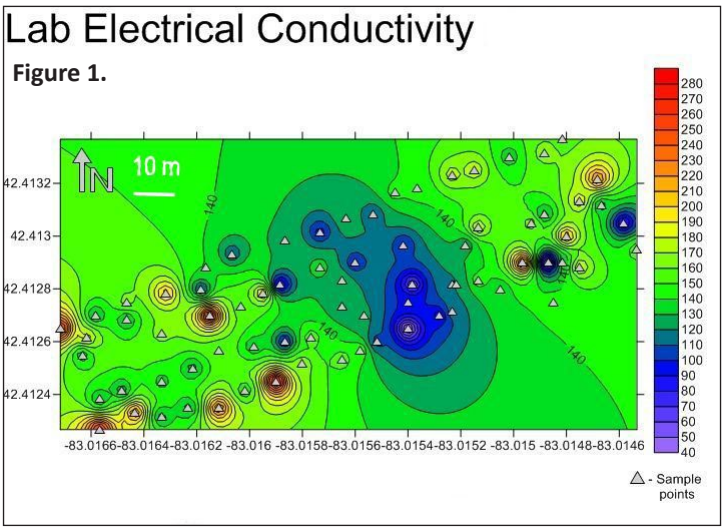
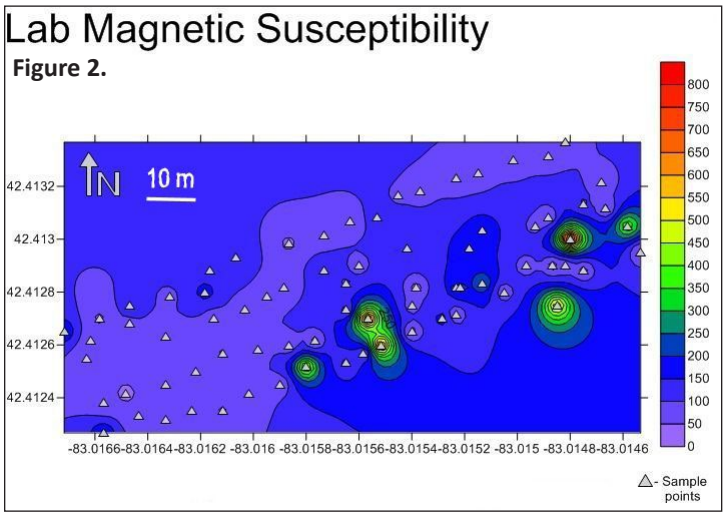
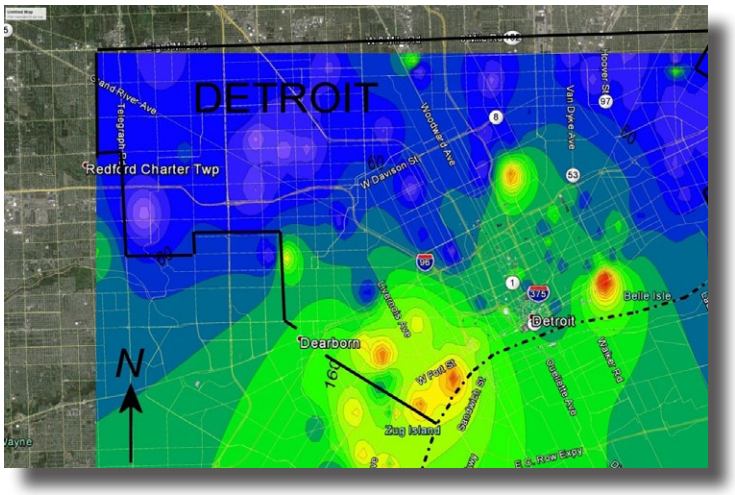
Evaluation of Geophysical Methods for Mapping Soils in Urbanized Terrain continued...



Figures 1 and 2.—Electrical conductivity (µS cm^{-1}) and magnetic susceptibility (10^{-8} m^3 kg^{-1}) geophysical maps of a 1.5 hectare parcel of vacant urban land in Detroit based on a grid of 75 sampling points.





The large-scale (1:1,800) maps of vacant urban land revealed the spatial complexity of anthropogenic soils (figures 1 and 2). Each property studied had a unique map pattern. The cold spot in the center of the lab electrical conductivity map corresponded to a patch of sandy fill, surrounded by clayey fill materials, with relatively few artifacts. Electrical conductivity hot spots corresponded to the former locations of demolished homes, whereas magnetic susceptibility hot spots are thought to indicate the presence of coal-related wastes. Domestic coal-burning stoves were used widely in Detroit until about 1936. Small-scale (1:100,000) electrical conductivity and magnetic susceptibility maps of Detroit city were made using soils either at demolition sites, or at abandoned derelict homes. Again, electrical conductivity and magnetic susceptibility maps generally reflect the geographic distribution of waste building materials and coal-related wastes, respectively.

The magnetic susceptibility map created by sampling soils in the front yards of abandoned derelict homes (fig. 3) is particularly interesting because it shows a prominent hot spot centered on the heavily industrialized part of southwest Detroit. Orlicki's thesis work showed that soils there contained microspheres comprised of magnetite, which are characteristic of fly ash. The magnetic susceptibility hot spot spreads out across the older part of Detroit, which was built during the 19th century and which is underlain by human-transported material (Anthroportic Udorthents). In contrast, the northwest and northeast quadrants are characterized by magnetic susceptibility cold spots. These residential areas were built mainly during the early boom of the automobile industry in the 1920s.

Figure 3.—Pictured to the left is a lab-based magnetic susceptibility (10^{-8} m^3 kg^{-1}) map of Detroit, Michigan based on soil samples from the front yards of 65 abandoned, derelict homes. A prominent hot spot is centered over the fly ash-impacted soils in the heavily industrialized area around Zug Island.

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Evaluation of Geophysical Methods for Mapping Soils in Urbanized Terrain continued...

Very fine sand-sized microspheres comprised of magnetite in fly ash-impacted urban soils in Detroit.

Soils here are relatively less disturbed by human activity, and developed in a surface mantle which is more like human-altered material. Statistical analyses showed that the differences between quadrants were statistically significant.

Overall, each of the methods tested distinguished successfully between native and anthropogenic soils. Anthropogenic soils had a pH greater than 7.0, an electrical conductivity greater than 130 µS cm^{-1}, a magnetic susceptibility greater than 150 x 10^{-8} m^3 kg^{-1}, and a penetrability greater than 4,000 kPA; whereas native soils were less. Unfortunately, artifacts interfered with field probes which needed to be inserted into the ground, and tall grass severely restricted the use of field probes which relied on surface scanning. Thus, lab-based measurements of electrical conductivity and magnetic susceptibility worked better. Electrical conductivity was best for distinguishing amongst soils on vacant land produced by building demolition, whereas a combination of electrical conductivity and magnetic susceptibility was useful for small-scale (city-wide) mapping. Magnetic susceptibility was especially effective for delineating soils impacted by fly ash. Although they are less rapid and more labor-intensive than field methods, lab-based analyses of surface soil samples still provide a non-invasive alternative which complements auger-based mapping. Lab-based geophysical surveying can be carried out first, and the results used as a guide for a subsequent auger-based soil survey.

References

Howard, J.L., Orlicki, K. M., 2015. Effects of anthropogenic particles on the chemical and geophysical properties of urban soils, Detroit, Michigan. Soil Science 180, 154-166.

Howard, J.L., Orlicki, K. M., 2016. Composition, micromorphology and distribution of microartifacts in anthropogenic soils, Detroit, Michigan USA. Catena 138, 38-51.

Save the Date

Dates have been set for the 2016 National Cooperative Soil Survey (NCSS) Regional Conferences.

Mark your calendars and stay tuned for more details!

Northeast Conference
Date: June 19-23
Location: Lake Placid, New York
Host: Cornell University

South Conference
Date: June 20-24
Location: San Juan/Mayaguez, P.R.
Host: University of Puerto Rico

North Central Conference
Date: July 12-15
Location: DeKalb, Illinois
Host: North Illinois University

West Conference
Date: July 25-29
Location: Fairbanks, Alaska
Host: University of Alaska-Fairbanks

Agendas, registration, and committee contacts and descriptions will be available, as information is provided, at the National Cooperative Soil Survey website.

NRCS Soil Scientist, Bob Long, Retires After 35 Years of Public Service

by Luis Hernandez, Soil Survey Region 12 Director, Amherst, Massachusetts

Pictured left to right: Bob Long, Tom Burke (now working in Alamosa, CO), Roger DeKett, and Jessica Philippe at the Essex County Last Acre Ceremony.

Robert (Bob) Long, MLRA office leader in St. Johnsbury, Vermont, retired from NRCS on January 3, 2016, after 35 years of outstanding public service. Let me take this opportunity to thank Bob for his contributions, dedication, and passion for conserving our nation's natural resources. He has been a national leader preparing a new generation of scientists and equipping them with cutting-edge soil mapping technologies such as Digital Soil Mapping and Raster Soil Survey. He also has been very effective bringing partners to the table, promoting partnerships, and building coalitions with other federal agencies such as U.S. Forest Service and U.S. Fish and Wildlife Service, colleges and universities, as well as some international partnerships. We wish Bob and his family the best of luck during retirement. Without question, he is leaving a legacy upon us for many generations to come.

Detail in Salem, Oregon

by NRCS Soil Scientists Marissa Theve (Tolland, Connecticut) and Carla Ahlschwede (Flint, Michigan)

View of Mount Jefferson from a field site.

Soil scientists Carla Ahlschwede (12-FLI in Flint, Mich.) and Marissa Theve (12-TOL in Tolland, Conn.) were delighted to be able to participate in a two-week detail to Salem, Oregon, last September. Though both scientists have experience mapping order two urban areas, this opportunity allowed for experience with traditional, natural settings and with order three mapping. Duties included pre-mapping assignments, more than 10 full pedon descriptions each, ecological site and plant ID discussions, landscape identification and site selection, and assistance with an ecological site description field tour with U.S. Forest Service staff.

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Detail in Salem, Oregon continued...

The detailees each paired up with a local soil scientist and worked almost entirely on U.S. Forest Service land in the Western Cascade mountain range in the Willamette National Forest. As they began to get to know the landscape, Carla and Marissa were able to distinguish cirques, earth slides, debris flows, moraines, and ridges both on the topographic maps and on the ground. As the detail went on, plant types such as Oregon grape, rhododendron, vine maple, and of course Douglas and silver fir, were also easily recognizable. The identification of these differentia are key to mapping soil, climate regimes, and ecological sites accurately and efficiently in these rugged volcanic landscapes. Luckily, the detail was situated at the end of fire season and right before the winter rains, so the weather was pretty cooperative. Interestingly, Carla and Marissa are both from Soil Survey Region 12, but had never met, so another beneficial side effect of the trip was opening communication between the Tolland, Conn. and Flint, Mich. soil survey offices, as well as between soil survey regions 12 and 1.

Marissa Theve said, "As someone from an area that is in 100 percent update mode, I found this opportunity to be invaluable. The skills and techniques I brought back to my office are refreshing, and I was able to gain a more holistic perspective of the Soil Science Division. I feel lucky to have been able to get to know the beauty of the Western Cascades so well in two short weeks. Other than a run-in with some unhappy yellow jackets, it was a near perfect experience!"

Carla Ahlschwede added, "I have been lucky enough to work on an initial urban soil survey in Detroit, but it was a treat to work with the very different soils of Willamette National Forest. I was able to learn new approaches to solving problems and took away some new ideas to tackle challenges in my own region. The Salem staff was kind enough to include us in a field meeting with U.S. Forest Service staff, and provided a great opportunity to collaborate with our customers. Touching base with the customers while a survey is in progress allowed us to discuss potential changes moving forward to ensure the end product is as useful as possible."

Special thanks from both detailees to everyone who helped to make this detail happen, especially region 1 staff for hosting and region 12 staff for facilitating participation.

Marissa Theve and Jason Martin prepare the first pit for the U.S. Forest Service Ecological Site Description field tour on September 23, 2015.

U.S. Forest Service staff hiking to the second pit of the day during the ecological site description field tour.

Carla Ahlschwede traverses a north cirque wall with drainageway inclusions.

Soil Survey Detail in Southwestern Wyoming

by Matt Dorman, NRCS Soil Scientist, Dover-Foxcroft, Maine

Soil scientists mapping soils in southwestern, Wyoming.

This past summer, I spent three months working on the Initial Soil Survey in southwestern Wyoming. The major land resource area office (MLRA) is located in Pinedale—just two hours south of Jackson, near Yellowstone National Park. The cadre I worked with was stationed in Kemmerer, Wyo., near Fossil Butte.

This area is known for being rich in fossils formed in its sedimentary bedrock. During the Pleistocene Era, the landscape was submerged by a large lake, thus the plethora of fish and aquatic life captured in time in the stone. The majority of these fossils are found in the Evanston Formation along with some small coal deposits. Though there are some coal deposits, there isn't enough to be commercially mined.

Our task was to assist the MLRA staff develop a map unit legend with map unit descriptions, and capture pedon descriptions and ecological variation across the landscape. Throughout our detail, we worked within frigid temperature and aridic or ustic moisture regimes. We utilized 33 existing ecological sites to reach a mapping goal of 50,000 acres.

The landscapes of this part of Wyoming are comprised of breached anticlines, fold-thrust hills, intermontane basins, foothills, mountains, and erosional landforms. The landforms in my mapping area consisted of hills, slumps, fan aprons and terraces, fan remnants, escarpments, hillslopes, stream terraces, eroded fan remnants, alluvial fans, and drainageways. The parent materials these landforms were derived from were alluvium, slope alluvium, colluvium, residuum, and colluvium over residuum.

Some of the common soils in the area were fine, fine loamy, and coarse loamy mixed frigid Calcidic Haplustalfs, Torrertic Haplustalfs and Aridic Natrustalfs. Here are a couple of examples of some of our pits.

Landscape: foothills

Saline Lowland Ecosite

Key soil features:
Argillic horizon: 4-45 cm (Bt, Btk)
Calcic horizon: 45-100 cm (Bk)
Particle-size control section: 4-45 cm (Bt, Btk)

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Soil Survey Detail in Southwestern Wyoming continued...

Horizons:
A: 0-4 cm; fine sandy loam; 12 percent clay; 7.0 pH
Bt: 4-30 cm; sandy clay loam; 26 percent clay; 7.2 pH
Btk: 30-45 cm; loam; 26 percent clay; 8.2 pH
Bk: 45-100 cm; loam; 25 percent clay; 8.4 pH
BCk: 100+ cm; loam; 24 percent clay; 8.4 pH

Key soil features:
Argillic horizon: 12-100+ cm (Btk1, Btk2)
Calcic horizon: 40-100+ cm (Btk2)
Particle-size control section: 12-62 cm

Soil Profile

Horizons:
A: 0-12 cm; loam; 25 percent; clay; 8.2 pH
Btk1: 12-40 cm; clay loam; 39 percent clay; 8.2 pH
Btk2: 30-45 cm; clay; 42 percent clay; 8.2 pH


Columnar Structure with Caps

I finished up the detail right before the visibility got too bad from all of the neighboring state forest fires blowing all the smoke within the valley.

A special thanks to the state conservationists, state soil scientists, assistant state soil scientists, regional soil scientists, administrative assistants, and Pinedale Bureau of Land Management and MLRA offices working together to make this detail possible and a success.

** Photos were taken by Bob Spokas, the SDQS, while on our field review.*

SSR 12 Welcomes Jonathan Diaz-Cruz to the Grand Rapids Soil Survey Office

Jonathan Diaz-Cruz, a recent graduate of The University of Puerto Rico, joined the Grand Rapids Soil Survey Office staff last month through the Pathways program. He was born in Guayama, Puerto Rico in the southeast side of the island, and received a Bachelor of Science in Agronomy with a concentration in Soils from the University of Puerto Rico, Mayagüez campus, the only land grant university on the island. During his bachelor program, Jonathan worked as an undergraduate research student in a saline and sodic soil remediation project for a year. In his spare time, Jonathan enjoys reading about geography and history, outdoor activities, and watching and playing football (soccer). Jonathan is excited about his first position with NRCS. He said, "I have never worked for NRCS before, but I'm excited for this new opportunity and expect to learn as much as possible about The Great Lakes State."

Rhode Island NRCS Soil Scientists assist with "Beach Blast" Investigation

by Jim Turenne, Assistant State Soil Scientist, Rhode Island

On July 11, 2015, a woman was injured at a Rhode Island state beach from a mysterious explosion that occurred while she was in the intertidal area of the beach. Investigators ruled out man-made causes for the explosion. The investigation then turned to looking for a natural cause such as a buildup of methane or hydrogen sulfide gasses. The Rhode Island Department of Environmental Management (RI DEM) was the lead state agency for the investigation as they manage the "Salty Brine" beach where the explosion occurred. RI DEM contacted experts at the University of Rhode Island and the Graduate School of Oceanography (GSO) to assist with the investigation. GSO recommended that cores be taken in the vicinity of the blast to determine the composition of the soils and identify if there are any sources for gas production such as buried organics, seaweed, or other sources.

Members of the beach blast investigation team retrieving a vibracore sample near the blast site.

RI NRCS was then contacted to obtain the soil cores as they had a portable vibracore rig and the equipment needed for collecting cores. RI NRCS has been conducting a Coastal Zone Soil Survey of the state and has an arsenal of tools and technology for sampling coastal and submerged soils. The RI DEM also requested the RI NRCS profile the beach with ground-penetrating radar (GPR) to look for buried objects or something that may trap gasses.

The GPR survey identified a linear anomaly just above the water table on the beach. A small test pit was then dug to determine what the feature was and it turned out to be a buried copper electrical cable that the U.S. Coast Guard installed to power the breakwater near the area the blast occurred. The cable was no longer active as the Coast Guard changed to solar powered lights in 2007. The cable was then removed by digging a trench across the beach and pulling the cable out for inspection.

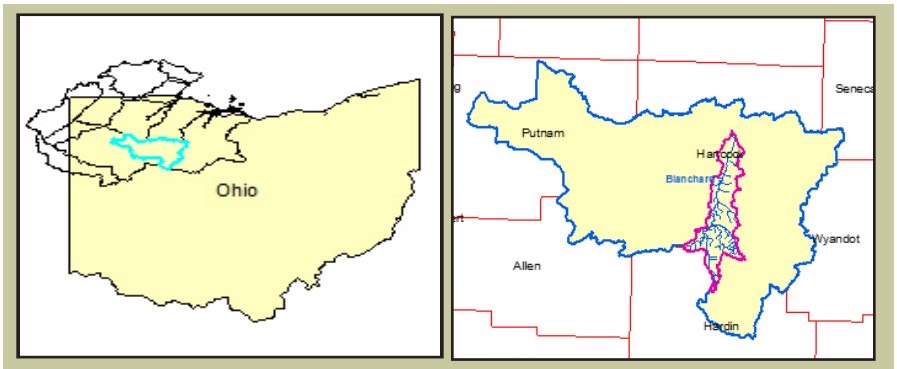
RI NRCS working with URI-GSO obtained six aluminum vibracore and three plastic hammer core samples in the vicinity of the blast. The samples were taken to the GSO laboratory for analysis. A return visit a few days later retrieved an additional 10 vibracore soil samples. The soil samples obtained at the site helped determine that the explosion was caused by hydrogen gas that was formed from the electrolysis of the seawater from the buried copper cable. The story made the local nightly news for several weeks and even made the national news.

View news coverage at: http://wpri.com/2015/07/21/scientists-return-to-salty-brine-beach-in-hopes-of-solving-mysterious-blast/

East Region Modeling Unit—Great Lakes Restoration Initiative

by Glenn Stanisewski, East Region Modeling Unit Team Leader, Amherst, Massachusetts

Excess nutrients from point and non-point sources have caused harmful algal blooms in the West Lake Erie Basin in recent years. These water quality impairments have led to temporary closings of beaches and municipal water sources impacting tens of thousands of people. The Great Lakes Restoration Initiative (GLRI) is an interagency effort co-chaired by USDA-NRCS and the Environmental Protection Agency initiated in 2010 in order to restore and revitalize the Great Lakes. The GLRI has targeted three priority watersheds for the reduction of phosphorus runoff into the Great Lakes. Within these watersheds, sub-basins (10-digit hydrologic unit codes (HUCs)) have been targeted for coordinated reduction efforts and edge-of-field water quality sampling and monitoring.



Location of Blanchard and Eagle Creek Great Lakes Restoration Initiative priority watersheds.

One of these priority watersheds is the Blanchard (HUC 0410008) which contains the Eagle Creek priority sub-basin (HUC 041000803). These watersheds are located in northwest Ohio and are a part of the West Lake Erie Basin. The East Region Modeling Unit located in Amherst, Mass. is using the Agricultural Policy Environmental Extender (APEX) model to assess best management practices in the Eagle Creek GLRI priority watershed. The best management practices (BMP) assessed were: nutrient management, cover crops, crop rotation, and conservation tillage–no-till.

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National Cooperative Soil Survey Awards

The Soil Science Division is accepting nominations for the 2016 National Cooperative Soil Survey (NCSS) Awards: the Soil Scientist of the Year Award, the Soil Scientist Achievement Award, and the Cooperator Achievement Award.

Nominations are accepted from any individual, agency, or group in the NCSS. Approval by the State Conservationist, Soil Survey Regional Director, or other Federal or State team leader is recommended. Completed nominations must be sent to (email preferred):

David L. Lindbo
Director, Soil Science Division
USDA-Natural Resources Conservation Service
1400 Independence Avenue SW., Room 4838-S
Washington, DC 20250
Email: david.lindbo@wdc.usda.gov

Nomination form and guidelines are available at: http://directives.sc.egov.usda.gov/39084.wba

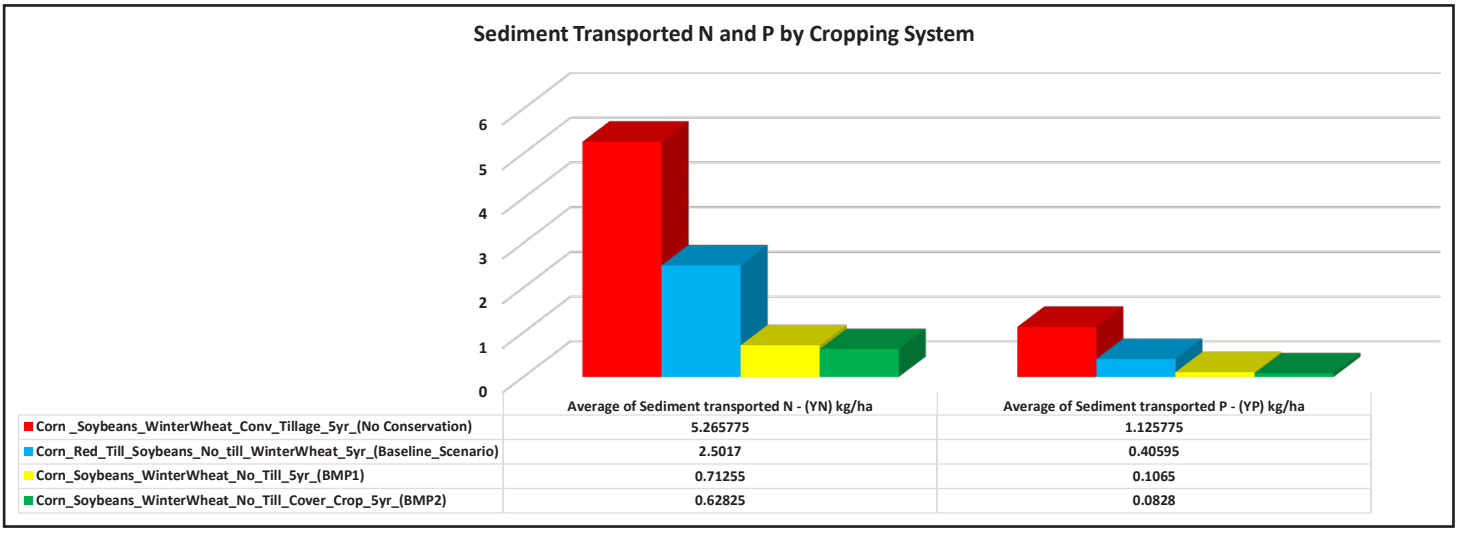
The deadline to submit nominations is April 15, 2016.

East Region Modeling Unit—Great Lakes Restoration Initiative continued...

A forty-year model simulation was used on a five year corn-soybean-corn-soybean-winter wheat rotation under four different scenarios:

- No Conservation (all conventional tillage),
- Baseline (what is practiced on most farms in the watershed currently),
- BMP1 (all no-till), and
- BMP2 (all no-till and cover crops).

Pictured below is an example of a model output that was presented to Dr. Lee Norfleet, Leader of the Conservation Effects Assessment Project Model Team based at the Texas A&M Agri-Life, Blackland Research and Extension Center located in Temple, Texas.



	Average of Sediment transported N - (YN) kg/ha	Average of Sediment transported P - (YP) kg/ha
Corn _Soybeans_WinterWheat_Conv_Tillage_5yr_(No Conservation)	5.265775	1.125775
Corn_Red_Till_Soybeans_No_till_WinterWheat_5yr_(Baseline_Scenario)	2.5017	0.40595
Corn_Soybeans_WinterWheat_No_Till_5yr_(BMP1)	0.71255	0.1065
Corn_Soybeans_WinterWheat_No_Till_Cover_Crop_5yr_(BMP2)	0.62825	0.0828

APEX model run Sediment Transported N and P by Cropping System (average annual kg/ha).

Provisional Ecological Sites—The First Steps of an MLRA-Wide "Phased" Approach to Inventory

by Nels Barrett, Ecological Site Inventory Specialist, Soil Survey Regions 6 and 12

The Natural Resources Service (NRCS) is committed to developing "provisional" ecological sites for all soil components mapped within each Major Land Resource Area (MLRA) across the entire United States, over the next five years. Describing provisional ecological sites on an MLRA-wide basis is the first, and accelerated stage, of a "phased" approach toward completing more comprehensive ecological site descriptions.

Ecological sites are the fundamental land units that make up the pattern relating vegetation and soils across the landscape at a local scale. Within any landscape setting, ecological sites provide a consistent framework for organizing vegetation-soil relations and, in turn, for estimating the effects of disturbances or responses to management.

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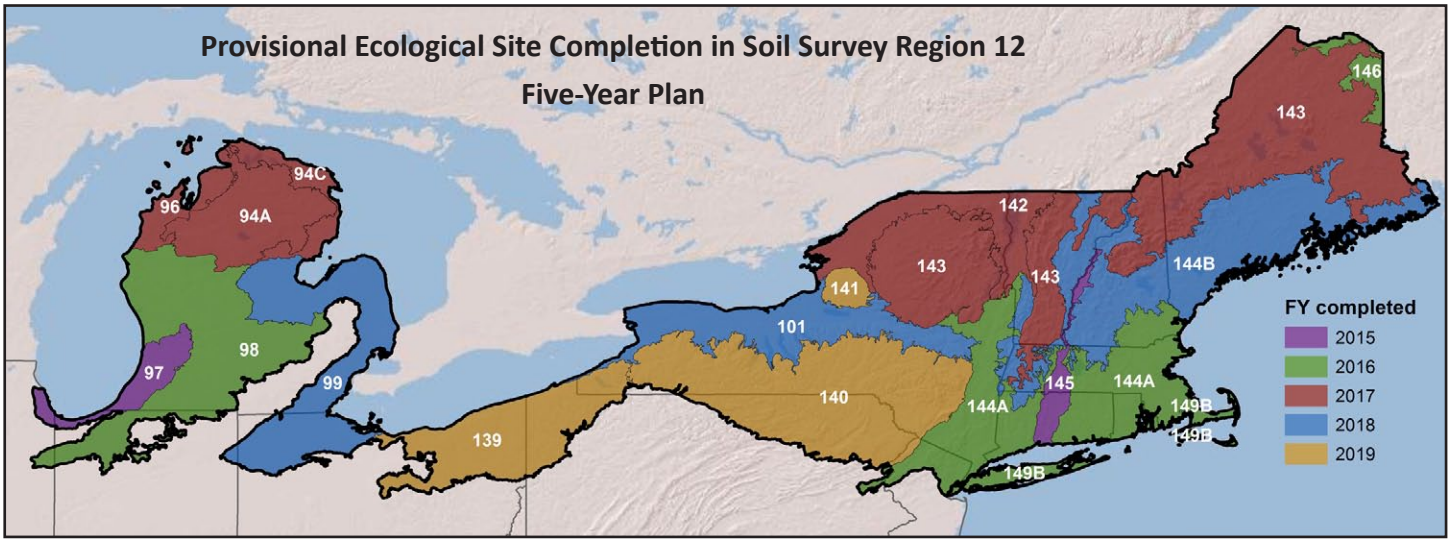
Provisional Ecological Sites continued...



CONTENTS OF AN ECOLOGICAL SITE DESCRIPTION The level of completion for Ecological Site Descriptions is progressive across levels. But any information considered complete can still be updated.	*Provisional*	*Approved*	*Correlated*
ECOLOGICAL SITE NAME and ID	x	x	x
INTRODUCTION - ECS EXTENT MAP	x	x	x
Ecological Site Concept	x	x	x
PHYSIOGRAPHIC FEATURES	x	x	x
CLIMATE DATA	x	x	x
SOIL FEATURES	x	x	x
INFLUENCING WATER FEATURES	x	x	x
PLANT COMMUNITIES	x	x	x
Ecological Dynamics	x	x	x
State & Transition Diagram		x	x
Plant Community Narratives	x	x	x
Plants list / plot sampling (list only)*	*	x	x
INTERPRETATIONS			x
SIMILAR AND ASSOCIATED ECS	x	x	x
INVENTORY DATA SUMMARIES		x	x
REFERENCE TYPE LOCATIONS		x	x
REFERENCES	x	x	x

Contents of an ecological site description at progressive levels of correlation.

The documentation of ecological site characteristics and corresponding interpretations relevant to land use and management are contained within a written document called an ecological site description. Describing a fully correlated and written ecological site description is very time consuming because it requires a significant amount of background investigation and fieldwork in order to develop and test the site concepts and explain the ecological dynamics and relevant management implications. To facilitate this process, an incremental "phased" approach is used to build ecological site information in several stages over a more realistic time frame.

Accordingly, three progressive levels of ecological site descriptions are recognized with varying levels of information: provisional, approved, and correlated. Essentially, the provisional level is considered a first approximations or "hypothesis" of soil-vegetation combinations based largely on pre-existing data and occasionally, general observations through reconnaissance. The approved level is a more detailed ecological site characterization based on field-tested results from standardized inventories of soils and vegetation—including the associated dynamics as influenced by nature or land use management. The correlated level is the most comprehensive, detailing both an ecological and corresponding management context, with an additional catalog of interpretations as guidance for relevant conservation planning. Each progressive level of ecological site description documentation provides greater in-depth information to improve the land manager's ability to better focus on suitable practices that provide goods and services while ensuring ecosystem sustainability.

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Your suggestions, comments, and articles are welcome! Articles may be sent via email as either an MS Word attachment saved as text only, or pasted directly into your email message. Photographs should be emailed as a separate jpg attachment. Please include a caption for each photo submitted.

Send items to SSR 12 editor, **kristina.wiley@ma.usda.gov**