



PENNSOIL

SEPTEMBER 2007

The Newsletter of the Pennsylvania Association of Professional Soil Scientists
PO Box 61035, Harrisburg, PA 17106-1035

Inside:

- Chester County Soil Survey Updated 2
- Annual ASA-CSSA-SSSA Conference 2
- PSU hires new soil science professor 3
- **2007 Annual meeting and fall technical session** 4
- Professionalism and maintaining NCSS standards 5
- PSU program celebrates 100 years 6
- Army Corps issues wetland guidance 7
- PADEP proposes changes to onlot regs 7
- PA Cooperative Soil Survey Conference 8

Important Announcement:

**Fall Technical Session and Annual Meeting
October 5, 2007
Williamsport, PA
page 4**

POWRA Hosts Meeting on Site Evaluation and PA DEP Guidance Manual for Re-Use of Treated Wastewater



By Michael Lane

The PA On-site Wastewater Recycling Association held a one-day meeting on May 10, 2007 at the Holiday Inn Grantville. Topics covered included Site Evaluation and Design Strategy for Severe Sites and Wastewater Loading Rates presented by Tom Ashton, a panel discussion about drip sewage disposal systems, and an overview of the DEP guidance manual for re-use of wastewater.

Mr. Ashton, a soil scientist with Virginia-based American Manufacturing, provided an overview of the design boundaries to consider when siting a sewage disposal system. The infiltration zone is often the only prescriptive design boundary, with typical loading rates throughout the country ranging from 0.2 gallons per square foot of disposal area to 0.6 gal/s.f., depending on soil type. Other design boundaries to consider in a morphological assessment of a site are the most restrictive horizon in the vadose zone below the system and the depth to seasonally high water table. He discussed the soil loading rate chart developed by Dr. Jerry Tyler (University of Wisconsin) and the importance of timed dosing vs. demand dosing on severe sites.

Bryan Allen of American Manufacturing, Meghan Andress of PreDoc, Dennis Fox of AllState Septic Systems, and Darryl Fritz of DEP led a spirited discussion about the pitfalls of designing and installing drip disposal systems. The panel discussed many problems that they have personally observed during installations and received agreement from many in the audience. Surface stoniness affects tubing installation and must be accounted for prior to permitting. Designers should consider the impact of trees and rocks on the effective layout of tubing, and how to mitigate freezing of valves, manifolds, and flex tubing. The key point that all agreed upon is that the site evaluator, designer, and installer cannot assume that someone else will address potential problems with a particular site. The soil scientist must provide a detailed site overview, not simply test pit descriptions, and the designer and installer must visit every site before designing and bidding on a drip system.

In the afternoon, Kevin McLeary, P.E. with the PA Department of Environmental Protection presented an overview of the Re-Use of Treated Wastewater Guidance Manual, yet to be released for public comment. The manual addresses supplemental treatment facilities, water quality/quantity, industrial contributions, environmental benefits, and potential uses of treated water. Treated wastewater will be divided into varying use classes, including A+, suitable for direct groundwater injection, A, suitable for groundwater infiltration, B, suitable for unrestricted public access, and C, suitable for restricted public uses. All reuse will require a water quality management permit with a design engineers report and long-term monitoring. The manual is expected to be available for public comment sometime this year. ■

2007
Pennsylvania
Cooperative
Soil Survey
Conference

Wednesday,
September 26, 2007,
USDA-NRCS
Conference Room,
Harrisburg PA

State Soil Survey
Conferences serve to
determine and
incorporate views and
needs of agencies and
individuals to provide
guidance to the
activities of the
National Cooperative
Soil Survey within
Pennsylvania.

See Page 8 for details...

Chester County Soil Survey Updated

By Steve Dadio

In June, the USDA-NRCS issued the approved update of the Chester County Soil Survey. This survey serves to replace the soils information for Chester County that is presented in the Soil Survey of Chester and Delaware Counties (1963). The updated Soil Survey maps are available on the USDA-NRCS Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) and the updated tables are available at the Soil Data Mart website (<http://soildatamart.nrcs.usda.gov/>).

There are many changes between both surveys. In the 1963 Soil Survey, there are 43 different soil series listed. In the updated Soil Survey, there are 46 soil series, 21 of which are different from the 1963 Soil Survey. To briefly highlight some of the changes:

There have been new series added for soils that formed in granitic gneiss (Parker, Gladstone, Califon, Cokesbury), Triassic-Age conglomerate (Joanna), and anorthosite, diabase, diorite and related rocks (Legore). Additionally, many of the alluvial and hydric soil series from the 1963 Soil Survey were re-classified as being in the thermic temperature regime (Chewacla, Wehadkee, Worsham) and have been replaced with series in the mesic temperature regime (Codorus, Hatboro, Baile). Additionally, the Urban Land complexes also have much greater detail than in the 1963 Soil Survey.

This updated Soil Survey represents the official Soil Survey by the USDA-NRCS and would be the official soils information for all federally governed programs. In the world of consulting and municipal engineering, however, there will still be instances where the 1963 Soil Survey will be utilized, as local and county agencies still refer specifically to that document in their ordinances or regulations. Over time, it is hoped that local governments and county agencies will update their ordinances and regulations to incorporate the information from this new, updated Soil Survey.

For more information regarding the updated Chester County Soil Survey, contact John Chibirka NRCS Soil Survey office in Leesport, PA @ 610-372-4655 or via email at john.chibirka@pa.usda.gov. ■

ASA-CSSA-SSSA 2007 International Annual Meeting

November 4 - 8, New Orleans, LA

In addition to many symposia, the annual ASA-CSSA-SSSA conference takes advantage of the New Orleans area to offer tours including:

HYDRIC SOILS TOUR

Travel about 50 miles north of New Orleans to the Abita Creek Flatwoods Preserve to view soils in natural and manmade wetland systems.

TURFGRASS TOUR OF NEW ORLEANS

Begin with a short video presentation at the Ernest M. Morial Convention Center about Hurricane Katrina, then travel to City Park for a traditional Louisiana meal, followed by a walking tour. After viewing of some of the city's devastated areas, arrive at the English Turn Golf Course for a tour and meeting with area golf course superintendents.

AGRONOMY TOUR

Visit and tour the Graceland Sugar Mill and USDA-ARS Sugarcane Research Facility before stopping for a Cajun-style lunch. Afterwards, you will visit and tour the USDA-ARS field research facility and observe a sugarcane harvesting operation before returning to the Convention Center.

FORAGE & GRAZINGLANDS TOUR

Travel to a cattle ranch in Thibodaux, LA to see how cattle operations in the area have dealt with the damage from Hurricane Katrina. Then tour a swamp grazing operation in Raceland, LA.

LEARNING MORE ABOUT THE SUPER HIGHWAY OF AGRICULTURE TOUR

Tour the facilities of Zen Noh Grain Corporation and CF Industries. Learn about the equipment and logistics involved when grain comes down and fertilizer goes up.

FOR SALE

**Soil Consulting and
Wastewater Design
business located in
Northwestern PA**

**Available Fall 2007
Owner Financing**

**Contact:
L.R. Auchmoody
& Associates
PO Box 161
Warren, PA 16365
814-723-4466**

FOR SALE

Smile – You’re a Soil Scientist

By Michael Lane

Mycobacterium vaccae activate serotonin production in laboratory studies

British researchers treated lab mice with the common soil bacteria, *M. vaccae*, and found increased production of serotonin, a neurotransmitter believed to play an important role in the regulation of anger, aggression, mood, body temperature, and appetite. The higher levels of serotonin appeared to alter behavior in the mice, similar to antidepressants. A previous study on human cancer patients indicated that the bacteria do not provide help in cancer treatment, but did reveal similar positive effects on patients' moods. Lead author, Dr. Chris Lowry from Bristol University said, "These studies help us understand how the body communicates with the brain and why a healthy immune system is important for maintaining mental health".

Dr. Lowry wondered "if we shouldn't all be spending more time playing in the dirt." Sounds like a good plan. The full research article can be found in the May 11, 2007 issue of the journal *Neuroscience*. ■

Penn State Hires New Soil Science Professor

By Steve Dadio

The Penn State Department of Crop and Soil Science appointed Patrick Drohan as an Assistant Professor of Soil Genesis. Dr. Drohan is coming from Hartwick College in Oneonta, NY where, since 2006, he was the Director of the Pine Lake Institute for Environmental & Sustainability Studies. Previously, he was an assistant professor of environmental studies and then of soil science Soil Science at the University of Nevada at Las Vegas (UNLV) from 2003 – 2006. At UNLV, Dr. Drohan focused his research on soil and plant landscape interactions, soil genesis, and surficial pedologic and hydrologic changes due to invasive species. Patrick cooperated with NRCS personnel in Nevada for much of his research. Prior to UNLV, Dr. Drohan was an assistant professor at Shepherd College in Shepherdstown, West Virginia from 2000 – 2003. While in West Virginia, Patrick was active with the West Virginia Association of Professional Soil Scientists and briefly was the WVPSS President in 2003 before moving to Nevada.



Although his post-doctoral experience is outside of Pennsylvania, Dr. Drohan received his master's and doctoral degrees from Penn State in 1996 and 2000, respectively. [He received his bachelor's degree from Rutgers-Cook College, but we will not hold that against him.] Patrick's master's research with Dave DeWalle (PSU Forestry) examined changes in watershed baseflow chemistry due to differing land uses. His doctoral research concerned the decline of the sugar maple trees in the northern tier of Pennsylvania and how soil factors may be contributing to the decline. His graduate advisor for his doctoral research was Gary Petersen (PSU Crop and Soil Sciences).

Dr. Drohan has received some national notoriety by serving as SSSA Chair for the Smithsonian Soils Exhibit Design Committee. He also was the lead author for a paper, A proposal for the formal designation of rare and threatened soils, that was used for the cover of the Soil Science Society of America Journal (Nov-Dec 2006). Patrick has also been active representing SSSA for the House Soils Caucus, which is an informal group of federal Congressional members that are concerned about soils.

Dr. Drohan's appointment at Penn State is 50 percent teaching and 50 percent research. His teaching responsibilities include teaching soil genesis and soil mapping, soil judging in addition to advising undergraduates. He is currently establishing his research program, which will also include a soil characterization laboratory.

Please join me in welcoming back Patrick Drohan to Pennsylvania. He should prove to be an asset to both Penn State and PAPSS and should prove to be an advocate for soil science and soil scientists throughout the Commonwealth. ■

PAPSS 2007 ANNUAL MEETING & FALL TECHNICAL SESSION

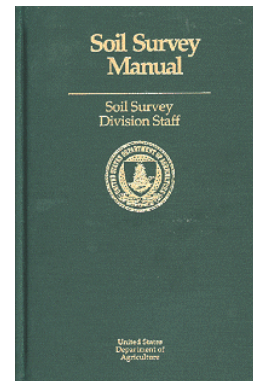
FRIDAY, OCTOBER 5, 2007, 8 AM to 6:30 PM
Penn College of Technology, Williamsport, PA

8:00 to 8:30 AM Meeting Registration
8:30 to 11:00 AM PAPSS Annual Meeting and Elections
11:00 to 12:00 PM Intro & Technical Session
12:00 to 1:00 PM LUNCH
1:00 to 2:30 PM Tech Session "National Cooperative Soil Survey Standards"
2:30 to 4:30 PM Test Pits
5:00 to 6:30 PM Picnic Dinner

Fees: PAPSS Members \$45
Non-Members \$75

"National Cooperative Soil Survey Standards"
Meeting organized by Laurel F. Mueller
Coordinated by Ed White, USDA-NRCS, PA State Soil Scientist

- Refresher on the 12 Orders
- The Orders in Pennsylvania
- Suborders in PA and Their Diagnostic Horizons
- Criteria for Diagnostic Horizons
 - Examples from "Official Series Descriptions"
 - Connecting horizon names with the descriptions
 - Current depth measurements for organic surfaces
 - Refresher on descriptive terms – textural modifiers, structure, consistence, films, pores, roots
- Standardized soil profile description forms
- Depth Classes
- Drainage Classes
- Family/Series Particle Size Classes, Control Sections
- Redoximorphic Features terminology
 - Describing mottles and/or redox features
- How NRCS groups soil mapping units into:
 - Land Capability Classes
 - Prime Farmlands Soils
 - Hydric Soils
 - Hydrologic Groups



All participants will be provided "NCSS Standards Documents" CD prepared by National Soil Survey Center, May 2006 including:

Soil Survey Manual
Soil Taxonomy
Keys to Soil Taxonomy
Field Indicators of Hydric Soils
Field Book for Describing and Sampling Soils
National Soil Survey Handbook
Soil Survey Photography
Soil Survey Laboratory Information Manual - SSIR 45
Soil Survey Laboratory Methods Manual
National Forestry Handbook
National Forestry Manual
Rationale for Concepts in Soil Taxonomy
MLRA Handbook 29

Professionalism & Maintaining NCSS Standards

by Laurel F. Mueller, PAPSS Treasurer, CPSS /CPSC /RPSS

Our PAPSS Bylaws state that our purposes for existence are: 1) to provide a forum for pedological information, 2) to encourage and enhance communications with other technical disciplines, 3) to serve as a body of opinion on matters relating to soil classification and interpretations, and 4) to maintain professional standards in the application of soil science.

I joined PAPSS in 1985, shortly after returning to my native state after 7 years with the Soil Conservation Service in Oregon, where I was a soil surveyor in two counties.



I have owned and managed a soil science consulting firm in PA for 23 years. I recently realized how fortunate I was to begin my career with standardized USDA training, seasoned soil surveyors as mentors, a rigid soil survey party leader, and regional correlators who kept us true to the National Cooperative Soil Survey (NCSS) standards. When I first started in business, I remember feeling quite alone in an engineer's world. The soil descriptions and interpretations that I submitted to municipal, state, and federal agencies met NCSS standards, but the regulators and officials who reviewed the work did not have a clue. In the early 1980's, it was difficult to receive updates in NCSS standards,

because the USDA-SCS was reluctant to include private businesses in the mailing loop. This demand for dissemination of technical information to the private sector was a major catalyst for starting the National Society for Consulting Soil Scientists. The growth of soil science consulting and "the Internet" have changed this. The Natural Resource Conservation Services (NRCS) and the Soil Science Society of America (SSSA) have done a tremendous job in meeting our needs by making NCSS standards, data, training, publications and research available to all!

I have had the opportunity to view many soil profile descriptions, soil reclassification and mapping projects, wetland reports, prime agricultural land studies, alluvial soil hazard map reports, etc. prepared by a variety of our PAPSS members over the years. I am sorry to say that I have been disappointed by the lack of adherence to NCSS standards! Our soil profile descriptions and interpretations are widely variable and inconsistent, with the authors often ignoring Soil Taxonomy and the Soil Survey Manual. Horizon name suffixes often do not agree with the descriptions of the horizons, and soil mapping unit names are "reclassified" with no regard for diagnostic horizons. "Variant" names are invented for profiles which do not quite fit a series name. The standards for soil profile description formats have strayed, as they have been molded by employers, non-soil scientist colleagues, special-need reports, DEP reviewers, Army Corps wetland data forms (chroma only) and the abridged soil profile description standards which we have used for teaching SEOs how to do our job. I have witnessed skewed and biased sampling patterns to facilitate reaching pre-determined conclusions to satisfy clients' objectives. As a body of professional soil scientists, we need to mentor each other in staying true to our science! When we need outright policing, this is where licensing would serve.

It is my opinion that many soil scientists finish school, and then begin practicing within firms and agencies where there is no mentoring by experienced soil scientists in the use of the NCSS Standards. This is the reason that I proposed and organized this year's technical topic: "National Cooperative Soil Survey Standards." PAPSS has always been a friendly and supportive forum for working toward better professional practice.

cont...

Working toward this same objective, I will be participating in the 2007 National Cooperative Soil Survey Conference in Harrisburg on September 26. I am seeking federal leadership from the NRCS in the form of oversight, standards, and/or protocol to steer soil scientists in private practice when they “reclassify” federally published soil mapping units with high-intensity purpose-driven soil investigations, classification, and mapping. Others are welcome to join me!

Licensing for soil scientists in Pennsylvania has eluded us for more than two decades. We need to move beyond fretting over each new policy and regulatory change to make sure we do not lose our place. If licensing were accomplished, then “our place” would be secure. Licensing is about consumer protection, turf protection, and “bad-egg” control. It should be our focus for the next 2 to 3 years. We can pave the way by communicating with the other licensed professionals (engineers, surveyors, geologists, landscape architects) to enlighten them in the value of receiving reliable, standardized soil information from licensed soil scientists.

As a step toward unifying our credentials and simplifying qualification standards for a future soil science licensing board, my recommendation is that we follow the lead of Luther Smith of the SSSA (see the “Certification Process” tab at the web site listed in this issue for the U.S. Consortium of Soil Science Associations). At our October meeting, I will be proposing that PAPSS work toward the goal of getting all PAPSS professional members, who ultimately wish to be licensed as soil scientists, their CPSS certifications through ARCPACS. This means that some will need to take additional courses and/or the certification exam. The SSSA has pledged their support in helping us to meet this goal. The short-term pain for our membership will be worth the long-term gain, as it will better position us for licensure.

I am optimistic that our organization can achieve licensing in PA, and that it is possible in the next 2 to 3 years, if we set a goal. I believe that PAPSS is the best forum for improving and refreshing our skills, continuing our education, sharing our experiences, and steering our professional practice. I thank Ed White for organizing speakers for our technical topic, and I hope to see a large turn-out for this year’s annual meeting! ■

Penn State Department of Crop and Soil Sciences Celebrates 100 Years

By Steve Dadio

There will be a celebration September, 22, 2007 in honor of the 100th Anniversary of the Department of Crop and Soil Sciences (formerly the Agronomy Department). The Centennial Celebration will take place on the grounds of Penn State’s Ag Progress Day’s facility in Rock Springs. Activities for this celebration include a tour of campus facilities, fly fishing, hiking, lunch, children’s activities, dinner, and a country social and square dance.

All alumni and friends are invited to attend this special celebration. Please register by September 12th. For more information, contact the Department of Crop and Soil Sciences at:



**a Century of
SOLUTIONS**

Kathy Barr
Crop and Soil Sciences Department
The Pennsylvania State University
116 Ag Sciences and Industries Bldg.
University Park, PA 16802

Phone: 814-865-2025
ksb1@psu.edu

Or log onto the web at <http://cropsoil.psu.edu/> ■

US Army Corps Releases Wetland Jurisdiction Guidance

By Michael Lane

In June 2007, the US Army Corps of Engineers issued updated guidance for completing jurisdictional determinations pertaining to wetlands and waters of the U.S. The updated guidance was released almost a year after the US Supreme Court issued decisions that questioned the Corps' interpretation of the Clean Water Act. The Clean Water Act defines wetlands as *those areas that are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 232.2(r)).* The CWA prohibits the discharge of dredged or fill material into navigable waters without a permit.

In *Rapanos, et al v. United States*, the plaintiffs challenged the Corps' assertion that protected waters include not only traditionally navigable rivers and streams, but also tributaries and adjacent wetlands. The petitioners had filled four ditches and were subsequently cited by the Corps for violation of the CWA. In *Carabell et al v. US Army Corps of Engineers et al*, the plaintiffs challenged a permit denial to fill a wetland separated from a drainage ditch by an impermeable berm. The Court's mixed decisions resulted in a reworked guidance and many months of delays in receiving jurisdictional determinations from Corps personnel.

The guidance implements the Court's decision, does not allow jurisdiction over erosional features such as swales and ditches that do not carry a relatively permanent flow of water, and does not reverse or allow for jurisdiction over wetlands deemed non-jurisdictional by earlier Court decisions.

Further information about the cases and the new guidance can be found on the Army Corps website http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/cwa_guide.htm . ■

PADEP Proposes Changes to Sewage Facilities Regulations

By Michael Lane

Draft versions of the revised on-lot sewage regulations, Chapters 72 and 73 were distributed to the Sewage Advisory Committee in 2007. The draft versions of the revised regulations are available for review online at the Sewage Advisory Committee website <http://www.depweb.state.pa.us/advcommittees/cwp/view.asp?a=1521&q=524177>.

Chapter 72 covers permitting of on-lot sewage disposal systems and the certification of sewage enforcement officers. The revised chapter proposes a new permitting structure involving minor permits and major permits. Minor permit activities include only repairs and modifications to existing systems and must be performed by an individual meeting proposed installer training qualifications. Major permit activities include new construction or changes to existing systems involving wholesale addition or replacement of system components.

Language has been added to Chapter 72 to tighten operation and maintenance standards, requiring municipal officials to take written responsibility for long-term maintenance of systems with secondary or advanced treatment, and for all pressure-dosed systems.

Chapter 73 covers the design and installation of individual and community septic systems. The entire chapter has been reordered and expanded to include many alternate technologies. Non-critical isolation distances to driveways and steep slopes are proposed to change from 10 feet to 25 feet. Disposal area sizing is also modified in the proposed regulations, with varying absorption area requirements based on the degree of treatment. Systems proposing primary septic tank treatment only would nearly double in size for fast percolation sites, while reductions in size are proposed for systems employing secondary or advanced treatment.

If you have any involvement with the on-lot sewage program, please read the revised regulations and provide comments to the DEP or to the PAPSS Board. ■

2007 Pennsylvania Cooperative Soil Survey Conference

Wednesday, September 26, 2007, USDA-NRCS Conference Room, Harrisburg PA

General Session:

Status of Pennsylvania Soils – (9:30 – 10:45) Craig Derickson, NRCS

Soil Information is Critical to Pennsylvania Gary Peterson, Penn State
Current Status of the National Cooperative Soil Survey Mike Golden, NRCS
Status of Soil Survey in Pennsylvania Ed White, NRCS

New Technology is Soil Survey for Users (11:00-12:00)

Soil Data Access- Not you old Soil Survey Tim Craul, NRCS
Web Soil Survey
Data Mart
Soil Data Viewer
Where we are with Soil Data and Use Ed White, NRCS
New Interpretations for PA
Future Products

New Soil Survey Technology – (1:00 – 2:30)

National Technology to Improve Soil Survey Information Jon Hempel, NGC
Pennsylvania Applications of Soil Survey Technolog Rick Day, Penn State
SoLIM, Data Mining, Modeling
Remote Access, Data Collection and Coordination
Lidar
Soil Investigations to Improve Soil Survey Interpretations Henry Lin, Penn State
and Watershed Management
HydroPedology and Watershed research
Ground Penetrating Radar/Electromagnetic Inductance

Planning Our Future:

Cooperator Overview of Soil Survey Use (2:45 – 3:30) Agency Panel

Panel Discussion (3:30 – 5:00) Facilitator Ed White
Current issues needing resolution
Emerging Needs for Soil Survey Information
Research to meet future needs

Contact Ed White for more information at (717) 237-2207 or ed.white@pa.usda.gov. ■

Submit stories, news articles, announcements, website links, photographs, corrections, suggestions, or complaints to

Michael Lane
610-692-5770
mlane@brickhouse-environmental.com

AROUND THE WEB

<http://www.papss.org/> PA Association of Professional Soil Scientists

<http://www.nscss.org/> National Society of Consulting Soil Scientists

<http://soilsassociation.org/> United States Consortium of Soil Science Associations

<http://www.soils.org/> Soil Science Society of America

<http://soils.usda.gov/technical/> National Cooperative Soil Survey Standards

<http://www.soilsassociation.org/certifications/cert.htm> Approach to Soil Scientist Licensing