



# President's Message

## Barb McCarthy, PSS

Mark your calendar for the MAPSS Summer Workshop – August 6-7, 2009.

Come learn from the best about water movement through soils. Dr. Aziz Amoozegar from North Carolina State and Dr. Satish Gupta from the University of Minnesota will lead a 2-day classroom and field workshop for those who want to gain a better understanding of water movement through soils. A team of MAPSS members has been working to make this a great learning experience.

Water movement through soils is important to the understanding of soil-based wastewater systems, irrigation of crops, spray irrigation of wastewater, drip irrigation, and the land application of municipal and industrial wastes.

What is Darcy's Law all about? What's saturated and unsaturated flow - how do you measure it? What is Ksat? What is an amoozometer and what does it measure? How do you use an amoozometer and other flow measuring devices in the field? You should attend this workshop if these questions

are of interest to you.

Hope to see you there.

Executive Committee  
2009 Meeting Dates

June 19  
July 24  
September 25  
November 13



Barb McCarthy

## Confidence Intervals for Estimated Saturated Hydraulic Conductivity Measured Using Compact Constant Head Permeameters

### John Beck, PSS

How many field measurements are necessary to meet specific confidence limits when measuring in situ saturated hydraulic conductivity (Ksat)? We hypothesize that, for any given landscape, there is a threshold number of samples (e.g. "replications")

necessary to capture the variability within a soil consociation single named series. Fewer replications than the minimum threshold may fail to capture the inherent variability present. Conversely, field time invested in the collection of more observations than the threshold may not significantly increase the

accuracy of the measurements. The objective of this study is to determine a threshold number of replications necessary to meet varying confidence intervals for estimating Ksat. Constant head permeameter measurements using Amoozemeters were taken from the upper 10 cm of

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### Mark Your Calendars!

- Registration form for the MAPSS Summer Tour (August 6 and 7 in Baxter, MN) is attached.
- Deadline to register for the FSS and PSS exams is September 21, 2009.
- MAPSS Winter Technical Event on December 4, 2009 in St. Cloud, MN.

# The Living Soil Tunnel

**Doug Miller, PSS**

The Living Soil Tunnel and Kiosk were featured at the USDA-NRCS display at the Mankato Area Career Day, this last April 1st. Junior High students checked out monoliths of Lester and Muskego soils on the kiosk before going through the soil tunnel and listening to a 1 minute narrative on soil formation and importance of Minnesota's soil resources. To those really interested, they were able to pull up their farm on the NRCS Web Soil Survey, and take a look at the soil map. Students and teachers found the Living Soil Tunnel and Web Soil Survey to be their favorites. Students were encouraged to ask questions about what people

do for their jobs. Individuals at the booths provided information to students on careers and discussed the schooling or training required to do their job. The day went by quickly in the fast paced, high energy environment of junior high students. About 150 students stopped by the booth.



Doug Miller showing students horizonation on the Living Soil Tunnel (which represents an unplowed profile of Lester loam from Nicollet County). The soil kiosk is in the background.

## Confidence Intervals

*(Continued from page 1)*

the Bt horizons. Systematic measurements were collected using a regular 3 m grid across an entire soil map unit delineation. Three separate map unit delineations were sampled within Major Land Resource Area 127 (Eastern Allegheny Plateau and Mountains) in West Virginia. Standard confidence intervals

of 75, 80, and 90 percent were used to determine the number of samples necessary to achieve the limit. Through this methodology, we will attempt to demonstrate that there is a limit to the number of samples (a threshold number) required to capture the full expected range of variability with respect to Ksat. Additional sample observations above the calculated minimum number fall within

the range of the total population and do not substantively improve the confidence accuracy of the measurements.

Editors note - John's poster will be presented at the ASA-CSSA-SSSA Annual Meeting at the beginning of November.

## Winter 2009 Technical Event—Mark Your Calendars!

Mark your calendars!

MAPSS Winter Technical and Business Meeting

Where: The Old Same Place (Best Western Kelly Inn), St. Cloud, MN

When: Friday, December 4, 2009

What: Agenda is under development. Suggestions can be forwarded to Michael Whited at: [wetsoil@aol.com](mailto:wetsoil@aol.com)

**MAPSS Winter Technical  
Event will be on Friday,  
December 4th in St.  
Cloud, Minnesota.**

## Upcoming Events

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### August 6&7, 2009

**MAPSS Summer Tour** will be held in Baxter, Minnesota. The focus will be on fluid movement in soils and will include classroom and outdoor activities. Please refer to the website for additional information. [www.mnsoilscientist.org](http://www.mnsoilscientist.org)

### November 1-5, 2009

**ASA-CSSA-SSSA Annual Meeting** "Footprints in Landscape – Sustainability through Plant and Soil Science" is in Pittsburg, PA. [www.acsmeetings.org](http://www.acsmeetings.org)

### November 16-18, 2009

**National Brownfields Conference** in New Orleans, LA. [www.brownfields2009.org](http://www.brownfields2009.org)

### October 23, 2009

**WSPSS Fall Meeting** will be held in Steven's Point, WI. [www.wspss.org](http://www.wspss.org)

### December 4, 2009

**MAPSS Winter Technical Event** will be held in St. Cloud, Minnesota. Please refer to the website for additional information. [www.mnsoilscientist.org](http://www.mnsoilscientist.org)

### Now through January 3, 2010

**"Dig It! The Secrets of Soil"** at the Smithsonian Natural History Museum in Washington DC! <http://forces.si.edu/soils/>

Articles for the Autumn issue of the Auger will be accepted through

September 15, 2009

[mapss@mnsoilscientist.org](mailto:mapss@mnsoilscientist.org)

## Losses to the Soils Community

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Marlin Cline, born in Bertha (Todd County), Minnesota, passed away on January 9, 2009 at the age of 99. After graduating from high school he farmed for 6 years then enrolled at NDSU and was student of Kellogg. He was a mentor to many soil scientists at Cornell, where he taught for many years. He also made significant contribution to Smith's Soil Taxonomy. (bio provided by Dick Rust)

Peter Graham died suddenly on May 9, 2009. He was a lecturer in microbiology at the University of Sydney from 1963-1971. From 1972-1981 he was a microbiologist at the Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia. Since 1982 he has been a professor at the University of Minnesota. He was the research leader at the *Rhizobium* Research Laboratory. He will be missed.

## Membership Committee Update

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### Jim Barott, PSS

The MAPSS membership committee met on March 27 in St. Cloud with a primary goal of finding ways to increase our membership. Some of the ideas we talked about were recruiting students, associate members and licensed soil scientists who are not MAPSS members. We also discussed changing the meeting

format or date and contacting former and inactive members.

We discussed ways to help people feel welcome who attend MAPSS meetings for the first time. Perhaps we could get volunteers to introduce new members to the rest of the group? After all, networking may be one of MAPSS benefits that professionals find useful.

We will be sending out a list of former members to current MAPSS members to get feedback on their most current addresses so we can contact them.

The committee agreed that the upcoming summer workshop will be a great opportunity to attract new members, full and associate. Sponsoring a fish fry was one

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# “X” Tills in the Minnesota River Valley near Henderson

**Terry Bovee, PSS**

As you may recall, the MAPSS 2008 Summer Meeting was held in the Henderson, MN area, within the Minnesota River valley. The ‘tour’ part of the day was visiting a very distinctive exposure of glacial tills, very near the Ney Nature Center. Alan Knaeble, a Minnesota Geologic Survey geologist attending the trip clambered up the slope to grab a few samples from the various layers of tills. Alan and others are working on a project along the Minnesota River valley to characterize the Quaternary stratigraphy based on texture and lithology. The following is Alan’s preliminary provenance interpretations:

The upper unit (#1), as shown in the accompanying photo, is probably a sequence of three (3) Des Moines lobe phases. The sample was taken about 3 feet from the base of this unit and probably reflects the oldest phase which commonly is sandier than ‘typical’ Des Moines lobe till and has low shale content. This material is likely of **Riding Mountain Provenance** – north of the Red River valley and North Dakota.

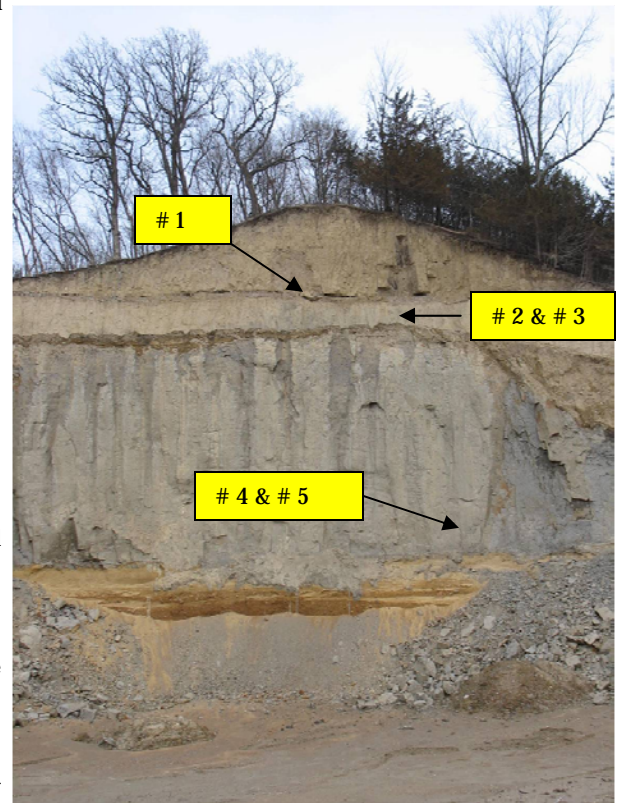
The middle unit had two (2) samples taken (#2 and #3). Interpretation is highly speculative but here is my take using the process of elimination, from youngest to oldest. Probably not Des Moines till because: Textures have high silt content, carbonate rock content is very high and sam-

ple #3 has only trace shale – the upper sample, #2, may have as much shale as it does due to mixing at the contact with the overlying Des Moines till. Not Wadena till because texture is too fine and carbonate content is too high. Probably not Browerville till because of the high carbonate content and the lack of Cretaceous grains in sample #3. My guess is that it is an old pre-Wisconsin till related to what we call the “X” sequence tills of central Minnesota. Extensive, sometimes thick, deposits of these tills are found in central Minnesota and along the entire Minnesota River valley as far as the western Minnesota border. **Winnipeg Provenance.**

The lower unit, samples #4 and #5, appear also to be another “X” sequence till, probably the oldest of the three called the Eagle Bend by Gary Meyer (1986). High silt and carbonate content along with a little Cretaceous gray shale and some dark Cretaceous limestone (which includes Inoceramous shells and pyrite) in these samples are typical of the Eagle Bend unit. **Winnipeg Provenance.**

Alan said this is all preliminary

interpretations and that upon completion of the present work in the area and further analysis of the data he will provide an updated interpretation. Alan reminded me that geologic interpretations evolve as more data is collected and a better understanding is acquired. I look forward to finding out more about the mysterious ‘X’ tills!



## Membership Committee

*(Continued from page 3)*

suggestion.

One last point is that we need to do some soul-searching to determine what makes our MAPSS organization special. Why should a soil scientist invest their time and money into our group as opposed to more specialized organizations? What can MAPSS offer that other organizations

don't?

If you have suggestions about attracting new members or maintaining our current membership, feel free to contact me or other membership committee members.

**Keep an eye on these for 2010!**

**<https://www.soils.org/awards/award/>**

# Executive Secretary Update

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## Board of AELSLAGID

Beginning July 1, 2009 there will be a 10% surcharge added to the cost of licenses through the Board of AELSLAGID ([www.aelslagid.state.mn.us](http://www.aelslagid.state.mn.us)), which includes PSS licenses. This was implemented by the Office of Enterprise Technology through a mission of the governor and runs through 2015. Contact your representatives if you like or do not like this surcharge ([www.leg.state.mn.us](http://www.leg.state.mn.us)).

The next fundamentals and professional soil science exam is slated for November 20, 2009 (application deadline is September 21, 2009).

The Board continues to review the model law for geoscientists to determine if any changes are needed. Geoscientists do not have a provision for "work under direct supervision."

There are 90 professional soil scientists licensed in the State of Minnesota in June, 2009. Other professions licensed by the Board of AELSLAGID consist of: architects (3,352), professional engineers (11,721), professional land surveyors (586), landscape architects (412), professional geologists (560) and certified interior designers (758).

## Legislature—2009 Session

A summary of bills that may affect soil scientists can be found on the MAPSS website <http://www.mnsoilscientist.org/?nav=news>. The website for the state legislature is: [www.leg.state.mn.us](http://www.leg.state.mn.us).

## Joint Professional Committee

The JPC will be June 24, 2009 at the AIA offices in the International Market Square building in Minneapolis.

**Register for the next  
fundamental or  
professional soil science  
exams by September 21!**

# WSPSS — Spring Meeting and Tour

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## Suzanne D'Souza, PSS

The Wisconsin Society of Professional Soil Scientists held their spring meeting and tour in La Crosse, Wisconsin on Friday, May 29, 2009. The meeting was held at Grandad's Bluff and was attended by approximately thirty soil scientists primarily representing government agencies (read NRCS). The event began with

coffee, donuts and chatting, followed by a business meeting where we discussed scholarships (two \$500 scholarships were awarded), purchasing promotional items (new shirts and decals), joint ventures with other states, maintaining membership, etc. John Campbell was applauded as a Million Acre Mapper. After a sloppy joe and salad lunch, we hopped on a bus and looked at areas that

were impacted by landslides during a short and quick downpour, an SSTS (fusion) system and eight soil pits excavated in fluvaquents located on Mike Havlik's (WSPSS president) property.

The WSPSS fall meeting is scheduled for October 23, 2009 and will be held in Steven's Point, Wisconsin.

# MAPSS Committees

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*Award Committee – in 2009*  
Jorja DuFresne, PSS

Mike Lieser  
Scott Smith, PSS

David Bauer, PSS  
Dennis Fuchs, PSS  
Charles Saari, PSS

*Education Committee*  
Doug Miller, PSS – Chair  
Peter Hartman, PSS  
Howard Hobbs, PG  
Thomas Jackson, PSS  
Al Gienke, PSS  
Mark Perry  
Steve Lawler, PSS  
Dennis Rodacker, PSS

*SSTS Committee*  
Laurie Brown, PSS - (on leave)  
Terry Bovee, PSS  
Norm Kuhlman, PSS  
Peter Miller, PSS  
Mike Rutten, PSS  
Kim Steffan, PSS  
Mark Wespetal, PSS

*Professional Practice Committee*  
Peter Miller, PSS – Chair  
Kelley Bopray, PSS  
Gary Elsner, PSS  
Tom Fait, PSS

*Election Committee – in 2009*

*Membership Committee*  
Jim Barott, PSS – Chair

*Scholarship & Funding Committee*  
Roger Berggren, PSS – Chair  
Terry Cooper, PSS  
Suzanne D'Souza, PSS



affiliated

## Minnesota Association of Professional Soil Scientists

Organization Address  
c/o Spectrum Research, Inc.  
4915 E. Superior St. Suite 100  
Duluth, MN 55804

612-741-1365  
mapss@mnsoilscientist.org

*MAPSS promotes the understanding and wise use of Minnesota's soil resources.*

[www.mnsoilscientist.org](http://www.mnsoilscientist.org)

The Auger is the newsletter of the Minnesota Association of Professional Soil Scientists. It is composed of articles submitted by the MAPSS membership and is published three times each year (February/March, June and October). The Auger is available in PDF format on our website at [www.mnsoilscientist.org](http://www.mnsoilscientist.org).

If you want to contribute articles or announcements contact the editor, Suzanne D'Souza, at 612-741-1365 or [newsletter@mnsoilscientist.org](mailto:newsletter@mnsoilscientist.org).

### MAPSS Officers – 2009

President Barb McCarthy, PSS  
President Elect Michael Whited, PSS  
Past President Mike Lieser  
Secretary Peter Hartman, PSS  
Treasurer Jim Balogh, PSS  
Exec. Secretary Suzanne D'Souza, PSS (ex officio)

### MAPSS Representation – 2009

Board of AELSLAGID and the Joint Professional Committee – Suzanne D'Souza, PSS

MPCA Subsurface Sewage Treatment Systems (SSTS) Licensing Stakeholder Task Force - Terry Bovee, PSS

BWSR Wetland Conservation Act Rule Advisory Committee - Peter Miller, PSS

### Advertise in the Auger

Classified - first 40 words \$5.00, then \$0.20/ additional word. Position (free to MAPSS members) – same as a classified ad. Ad copy MS Word ready format is \$15.00/column or non-standard \$25.00.

Your advertisement will also be added to the MAPSS website for the duration of one issue of the Auger. Contact the editor:

[mapss@mnsoilscientist.org](mailto:mapss@mnsoilscientist.org).

## Here's what you might have missed!



Summer Tour 2008 near the Ney Nature Center, Henderson, MN.



Summer Tour 2007 at the Cloquet Forestry Center, Cloquet, MN.

Many thanks to John Beck for reviewing this issue of the Auger.

# Minnesota Association of Professional Soil Scientists

## 2009 MAPSS Summer Workshop

### Understanding and Measuring Water Movement through Soils

August 6-7, 2009  
9:00 am – 4:00 pm

*Attend 1 day or both days*  
**Limited seating so register now!**

Northland Arboretum  
14250 Conservation Drive  
Baxter, MN

Come learn from the best about water movement through soils. Dr. Aziz Amoozegar from North Carolina State and Dr. Satish Gupta from the University of Minnesota will lead a 2-day classroom and field workshop

for those who want to gain a better understanding of water movement through soils.

Water movement through soils is important to the understanding of septic systems, irrigation of crops, spray irrigation of wastewater, drip irrigation, and land application of municipal and industrial wastes.

What is saturated and unsaturated flow and how do you measure it? What is saturated hydraulic conductivity (Ksat)? What is an amoozemeter and what does it measure? How do you use an amoozemeter and other flow measuring devices in the field? You should attend this workshop if these questions are of interest to you.

Join the team of soil scientists for both classroom and field training in water movement through soils.

**Continuing Education Credits: 10.0**

#### Lodging Information

20 rooms are available at a reduced rate of \$70.00 plus tax by **July 15, 2009** at

Country Inn & Suites  
15058 Dellwood Drive  
Brainerd, MN  
(218) 828-2161

## Topics & Speakers

Dr. Aziz Amoozegar is a Professor in Soil Physics from North Carolina State.

Dr. Satish Gupta is a Professor in Soil Physics from the University of Minnesota.

### *Thursday, August 6, 2009\**

**Morning** – principles of water movement through soils

**Afternoon** – methods to determine water movement through soils

### *Friday, August 7, 2009\**

**Morning** – practice in the field measuring water movement

**Afternoon** – calculations and wrap-up of field calculations and examples

*\*Rain may alter this schedule*

**Certificates of Attendance  
available at the end of the  
workshop**

Lunch will be served at the Northland Arboretum. The cost of lunch is included in the registration. Coffee and rolls will be available in the morning.

# Registration Form

## Complete and mail this form.

Please register by July 30, 2009 to avoid a late registration fee and to help MAPSS plan for space, materials, and food at the workshop. Thank you.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_  
Zipcode \_\_\_\_\_  
Telephone \_\_\_\_\_  
email \_\_\_\_\_

### Workshop fee

member (1 day) \$ 70.00 \_\_\_\_\_  
member (2 day) \$ 95.00 \_\_\_\_\_

non-member (1 day) \$ 120.00 \_\_\_\_\_  
non-member (2 day) \$ 160.00 \_\_\_\_\_

student (1 day) \$ 25.00 \_\_\_\_\_  
student (2 day) \$ 45.00 \_\_\_\_\_

late fee (per day) after 7/30/2009  
\$10.00/day \_\_\_\_\_

total enclosed \$ \_\_\_\_\_

**Check which day(s) you will be attending**  
**Thursday \_\_\_\_\_ Friday \_\_\_\_\_**

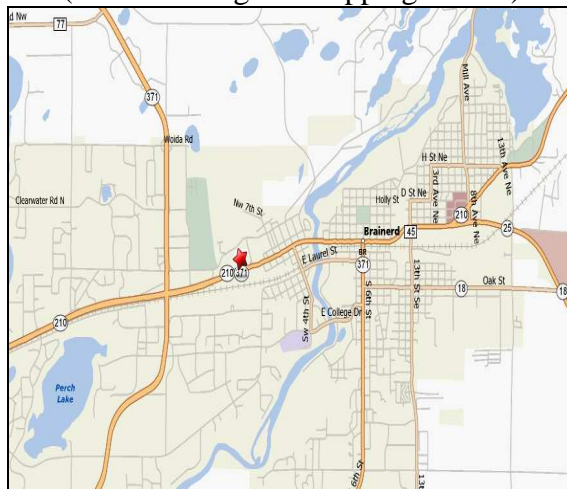
**Make checks payable to MAPSS  
and send it, along with a completed  
registration form to:**

**MAPSS 2009 Summer Workshop**  
c/o Spectrum Research, Inc.  
4915 E. Superior St., Suite 100  
Duluth, MN 55804

**Northland Arboretum**  
**14250 Conservation Drive**  
**Baxter, MN**

**218-829-8770**

(behind Westgate Shopping Center)



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# Minnesota Association of Professional Soil Scientists



2009 Summer Workshop  
Understanding and Measuring Water  
Movement through Soils

**Continuing Education**  
**Baxter, Minnesota**

**August 6 – 7, 2009**  
**9:00 am – 4:00 pm**

**Attend 1 day or both days**