MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS

The Lay of the Land

The Newsletter of the Maine Association of Professional Soil Scientists

Volume 23, Issue #1 www.mapss.org Winter 2020 Edition

PRESIDENT'S MESSAGE

Christopher C. Dorion, Maine CSS #454

This year marks a milestone for MAPSS. Multi-year efforts of the MAPSS Technical Committee, led by NRCS State Soil Scientist Tony Jenkins, saw the final acceptance of the *New Hydrologic Soil Group Assessment Method* by MDEP. Please read carefully the accompanying 3-page long article in this newsletter for a comprehensive report, which includes a 7-page long website link called "HSG and How To Use It guide". Due to the critical importance of this revised methodology, we will hold a 45 minute workshop practical during the morning, at our annual meeting on March 23rd at USM.

We planned a comprehensive, technically oriented annual meeting this year. Please see the accompanying agenda in this newsletter. The agenda, site map, and registration form are also located on the website. Aside from our required business matters to complete, we have many important decisions that the membership will have to vote upon: Components of this year's meeting are bulleted below.

- A proposal to hold a combined annual meeting with MAWS based on requests from regulatory staff and members from both organizations. My thoughts are that we should try it in 2021 and then evaluate the results

- A panel discussion on soil survey standards in Maine with MDEP, NRCS, LUPC, and MAPSS. MAPSS established their *Guidelines* many years ago for high intensity soil surveys, but these have been waived at times in favor of some blend of NRCS soil mapping, such as "confirmation of mapped soils" or other iterations. Regulatory staff has indicated that this topic is of interest to them.

- Dr. Stephen Norton will speak on mercury in the soils and waters of Maine. This talk should be of particular interest to MAPSS as storm water is increasingly required to infiltrate soil for attenuation of contaminants.

- Anthony Vannozzi, PLS, will present and discuss in a Q&A format another issue that has been simmering for many years, the processing of GPS data by non-PLSs, limitations in GPS data collection, and equipment.

- The Connotative Soil Mapping standard as accepted by the MDEP letter of April 16th, 2015, especially in light of the revised *New Hydrologic Soil Group Assessment Method*. Please see the accompanying article in this newsletter, and the links on the webpage (http://mapss.org/events.htm) and scroll down to 2014.

- We need to approve the 2019 annual meeting minutes, so we will make it easy for you to preliminarily review same by clicking on Amy's Meeting Minutes and will amend if needed during the meeting. We thank Amy Jones for always recording our Minutes as diligently as she does. Amy, we think you're the best!

- The September 9th, 2020 Natural Resources Field Workshop has been visiting several areas of York County this winter, as ground conditions permit, scouting for potential field locations. Conference Chair and State Soil Scientist Dave Rocque, along with Joe Noel and Chris Dorion, are working on locations and venues, with several options at this point. One of the goals is to attract New Hampshire natural resource professionals.

IN THIS ISSUE

HYPERLINKED ARTICLES & LETTER

- Draft Minutes of the MAPSS 2019 Annual Meeting
- HSG and How To Use It Guide
- Ducks Unlimited letter in response to donation

Note: Opinions expressed by the authors of articles are not necessarily endorsed by MAPSS.

Finally, our organization is only as effective as our volunteers who serve on the Executive Committee and other committee chairs. If you have the interest and time, please step forward to keep MAPSS a vibrant and relevant organization for the future.

January 25, 2020 by Beth King, Smithsonian Tropical Research Institute

The Skin Of The Earth Is Home To Pac-Man-Like Protists

Above: Dayana Agudo, lab manager in staff scientist Ben Turner's soil lab at the Smithsonian Tropical Research Institute in Panama.

Pac-Man, the open-mouthed face of the most successful arcade game ever, is much more well-known than any of the one-celled organisms called protists, at least among people over 30. But the first study to characterize protists in soils from around the world—co-authored by Smithsonian scientists—found that the most common groups of soil protists behave exactly like Pac-Man: moving through the soil matrix, gobbling up bacteria. Their results are published in Science Advances.

"As part of a bigger project to understand all of the microbes in soil we are characterizing bacteria and fungi, but also a lesser-known, but equally important group called protists," said Angela Oliverio, former STRI intern and lead author on the paper with professor Noah Fierer and post-doctoral fellow Manuel Delgado-Baquerizo at the University of Colorado, Boulder; staff scientist Ben Turner at the Smithsonian Tropical Research Institute in Panama; researcher Stefan Geisen at the Netherlands Institute of Ecology and professor Fernando Maestre at the Universidad Rey Juan Carlos and the Universidad de Alicante, Spain.

Protists reproduce quickly and are probably much more responsive to climate change than larger forms of life. Like the cartoon character Sheldon Plankton in Spongebob Squarepants, protists are not plants, animals or fungi. They are single-celled organisms but, unlike bacteria, they have a nucleus. They move through water using whip-like flagellae and tiny hairs called cilia. Some of the nastier protists cause sleeping sickness, malaria and red tide, but nearly all play important, if mysterious, roles in the energy- and nutrient-trading relationships that connect ecosystems.

Above: Even small soil samples contain vast numbers of microorganisms. Soil samples from different layers of soil wait to be analyzed in staff scientist Ben Turner's lab at the Smithsonian Tropical Research Institute in Panama.

Identifying millions of miniscule protists in soil used to be impossible, but recently-developed technology to classify protists based on their genetic code makes it possible to characterize them on a large scale. The team sequenced the 18S ribosomal RNA studied from soil samples collected from across six continents to better understand the ecological roles of the protists in the below-ground ecosystem.

They discovered that most of the protists are the Pac-Man types that consume other, smaller organisms. But in tropical soils, a larger number of protists were parasites, living inside other organisms. In desert soils, there were more protists capable of photosynthesizing and using sunlight directly as an energy source. The best predictor of what types of protists exist in a sample is the annual precipitation at the site. This may seem intuitive because protists depend on water to move, but it was a surprise, since soil acidity, rather than precipitation, is what usually predicts which bacteria and fungi are in soil.

Above: Soils collected at sites with high and low rainfall make it possible how the presence of water changes the soil microbiome. Ben Turner, staff scientist at the Smithsonian Tropical Research Institute, in a soil profile pit on Barro Colorado Island in Panama.

"Soils are home to an astonishing diversity of organisms, the lives of which we are only beginning to understand," said Ben Turner, staff scientist and co-author of the study. "Soil protists are an understudied group, so this work provides a foundation for future research on their ecology in ecosystems worldwide."

More information: Angela M. Oliverio et al, The global-scale distributions of soil protists and their contributions to below ground systems, Science Advances (2020). DOI: 10.1126/sciadv.aax8787

I'm sure all of us here at MAPSS would agree that a special 'Shout Out' should go to George Bakajza, who contributed this article for inclusion – with an assist from Dave Rocque, who sent it to me.

Treasurer's Report

Gary Fullerton, MAPSS Treasurer

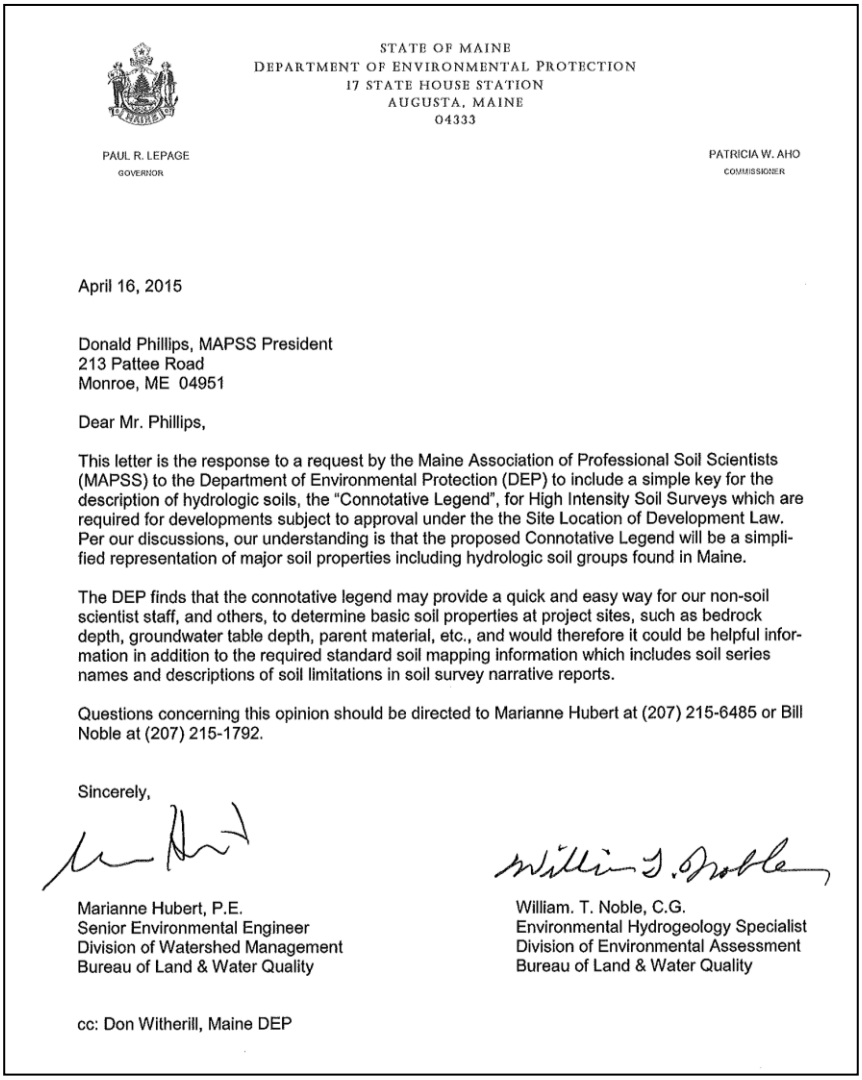
MAPSS 2019 Treasury Report		
MAPSS Checking Account as of 12/31/18		**$8,351.74**
2019 Income:		
2019 Dues (full membership)	$1,100.00	*44 full members at $25.00 each*
2019 Dues (associate membership)	$195.00	*13 associate members at $15.00 each*
2019 Dues (student membership)	$0.00	*3 student members at $0.00 each*
2019 Dues (honorary membership)	$0.00	*2 honorary members at $0.00 each*
	$1,295.00	
Annual Meeting Registration	$1,240.00	*31 registrants at $40.00 each*
	$50.00	*1 registrants at $50.00 each*
	$30.00	*2 students at $15.00 each*
	$1,320.00	
Reid State Park Workshop	$1,760.00	*44 registrants at $40.00 each*
	$850.00	*17 registrants at $50.00 each*
		0 registrants at $.00 each
	$2,610.00	
Unknown Discrepancy	**$360.00**	
TOTAL INCOME	**$5,585.00**	
2019 Expenses:		
Envirothon (Maine Association of Conservation Districts)	$1,000.00	
Annual Meeting Facility (Unity College)	$648.81	
Annual Meeting Expenses (copies)	$8.85	
2020 Annual Meeting Deposit	$150.00	
Janet Cormier Scholarship	$1,000.00	
Reid State Park Workshop (MAWS portion)	$720.00	
Website Host (DiscountASP.net)	$120.00	
Domain Registration (Speedsoft)	$18.95	
TOTAL EXPENSES	**$3,666.61**	
MAPSS Checking Account as of 12/31/19		**$10,270.13**

Finishing the Connotative Soil Map Method

Chris Dorion, MAPSS President

Abbreviations: *Connotative Soil Map* (CSM); *New Hydrologic Soil Group Assessment Method* (AM); *Hydrologic Soil Group* (HSG)

Accompanying this article is the April 16th, 2015 letter from MDEP staff Marianne Hubert and Will Noble, with copy to Don Witherill. This process was begun by the MAPSS Technical Committee prior to 2014 and was approved by the membership at the March 16th, 2014 annual meeting (see http://mapss.org/issues2.htm).



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

April 16, 2015

Donald Phillips, MAPSS President
213 Pattee Road
Monroe, ME 04951

Dear Mr. Phillips,

This letter is the response to a request by the Maine Association of Professional Soil Scientists (MAPSS) to the Department of Environmental Protection (DEP) to include a simple key for the description of hydrologic soils, the "Connotative Legend", for High Intensity Soil Surveys which are required for developments subject to approval under the the Site Location of Development Law. Per our discussions, our understanding is that the proposed Connotative Legend will be a simplified representation of major soil properties including hydrologic soil groups found in Maine.

The DEP finds that the connotative legend may provide a quick and easy way for our non-soil scientist staff, and others, to determine basic soil properties at project sites, such as bedrock depth, groundwater table depth, parent material, etc., and would therefore it could be helpful information in addition to the required standard soil mapping information which includes soil series names and descriptions of soil limitations in soil survey narrative reports.

Questions concerning this opinion should be directed to Marianne Hubert at (207) 215-6485 or Bill Noble at (207) 215-1792.

Sincerely,

Marianne Hubert, P.E.
Senior Environmental Engineer
Division of Watershed Management
Bureau of Land & Water Quality

William. T. Noble, C.G.
Environmental Hydrogeology Specialist
Division of Environmental Assessment
Bureau of Land & Water Quality

cc: Don Witherill, Maine DEP

The CSM is an optional mapping style in addition to the traditional named soil series. Because of the often-times extreme spatial variability and range in characteristics of Maine's soils, this mapping style can be a preferred method to describing the critical 5 parameters of soil map units in a high intensity soil survey:

1. Drainage class
2. Parent material
3. Bedrock class
4. Slope
5. HSG

The crux of the issue is that this mapping method should be a stand-alone product; however, the MDEP letter required "...soil series names...." (last sentence, second paragraph). The problem we must avoid is an engineer or regulator could use the named soil series' HSG found in the "Maine Erosion and Sediment Control BMPs - 10/20/16", without reading through an accompanying soil report that explains the actual AM used to derive the HSG, which may be quite different. When series variants are used, an engineer or regulator using the named soil series could reach an incorrect determination of site conditions, without reading through an accompanying soil report.

This topic can be discussed during the afternoon panel discussion (please see the agenda herein). Please come prepared to share project experiences and thoughts on this important topic.

MDEP Accepts The MAPSS 2019 HSG Assessment Method

Christopher C. Dorion, MAPSS President, ME CSS #454

Abbreviations: *Hydrologic Soil Group* (HSG); *Assessment Method* (AM)

President Chris Dorion received the confirmation letter entitled *New Hydrologic Soil Group Assessment Method* from Nicholas Livesay, MDEP Director, Bureau of Land Resources, on January 13th, 2020. His letter is reprinted at the end of this article.

The process to update how Maine licensed soil scientists determine hydrologic soil group (HSG) for a pedon, and hence a soil map unit within a high intensity soil survey, was begun several years ago, headed by NRCS State Soil Scientist Tony Jenkins. Tony was also serving as the MAPSS Technical Committee Chair, and continues to hold this position. Once the revised Assessment Method (AM) was finalized and approved at the March 13th, 2019 MAPSS annual meeting, Department of Agriculture State Soil Scientist Dave Rocque presented the AM to MDEP staff for review, including Karem Gungor, Ken Libbey, and Aubrey Strause.

The revised HSG AM referenced as a website link in this article (**HSG and How To Use It Guide**) comes with a step-by-step instructional user guide which is available (as far as we know) only in this Newsletter and our website.

The impetus for developing this revised AM arose from several areas of concern:

1) We saw a familiar challenge with the ~32 named soil series within the MWD drainage class. The 60 cm (24 in.) cutoff for SHWT falls in the middle of the MWD soils, of which we have many in Maine. In examining the "Maine Erosion and Sediment Control BMPs - 10/20/16", these soil series are placed in HSG B, but with a " ^ ", indicating that the SHWT must be below 60 cm (24 in.) AND Ksat of "lower horizon" (not very specific….) greater than 10 (need units….). We have all mapped many acres of common soils such as Peru (formerly Dixfield) that ranged from a SHWT at 16.1 inches to 39.9 inches (I'm using the end members of the drainage class). Thus, it is a very "broad brush" approach to lump all MWD soils into HSG C, when some contain SHWTs below 24 inches and would fall into HSG B. Additional considerations involved in the final HSG determination pertain to the "least transmissive layer above the water impermeable layer" and its associated, actual field properties:

a) Rock Fragment (formerly "coarse fragments") percentage may be higher than the NRCS reference pedon layer;

b) Fine Earth Texture may be one class or more different than the NRCS reference pedon layer;

c) Consistence and Structure may be one class or more different than the NRCS reference pedon layer

2) On page 117 of "Maine Erosion and Sediment Control BMPs - 10/20/16", second paragraph, the following sentence should be revised, from:

An on-site soil survey provided by a soil scientist should be performed to identify soils conditions, soil series, depth to groundwater and bedrock, non-stream water channels, and other features that might affect site engineering and constructability."

to:

An on-site soil survey provided by a Maine Licensed soil scientist shall be performed to identify site soil conditions including drainage class, parent material, bedrock class, slope, Hydrologic Soil Group, and other features that may affect site engineering and constructability. Hydrologic Soil Group determination shall follow the MAPSS 2019 new Hydrologic Soil Group Assessment Method.

4) We should be consistent with units. Both metric and English should always be used, and contiguous with each other.

5) The BMP manual also lists those soils in HSG B/D with a " + ", which will kick them into B if SHWT is below 60 cm (24 in.). See 1) a, b, c above.

6) The BMP manual also lists those soils in HSG C and C/D with a " * " or " ** " which reflects depth to the Cd horizon (we should use WATER IMPERMEABLE LAYER to be consistent).

Also in HSG C/D are soils with a " # ", which can move C soils into C/D if SHWT is above 60 cm (24 in.). See 1) a, b, c above.

7) The question of how to treat the dual HSG classes of A/D, B/D, and C/D? Perhaps a sentence similar to below, although we know it is very rough):

A given *Hydrologic Soil Group class can be dependent upon drained or undrained site soil conditions. Site engineering to lower an area's water table (site drainage) can increase soil permeability, changing the HSG to a different group.*

8) The BMP manual also lists "Dune land", "Pits, gravelly", and "Pits, sandy" in HSG A. But excavated pits can have a SHWT at the surface (although there should be a 5 foot separation, but there are so many old pits that were dug to or below the SHWT). This brings up the issue of soil mapping in Udorthents (Human Transported - Human Deposited), which we all know are areas where the traditional named soil series does not apply. How do we apply HSG?

9) Frequently our high intensity soil surveys contain variants of soil series What was the rationale for deciding on the HSG?

10) Sometimes a given field pedon description for a documented map unit lies outside the Official Series Description "range of characteristics"? What was the rationale for deciding on the HSG?

Because of the importance of the revised "Assessment Method" to Maine licensed soil scientists, we are dedicating a 45 minute block of time during the March 23rd, 2020 annual meeting for a review, question, and answer session. We urge all readers to attend since (among other reasons) even apparently simple things can become a beast if no training comes with it.

The MAPSS Executive Committee urges our members to read this letter from Nicholas D. Livesay, Director of the MDEP Bureau of Land Resources to unambiguously inform us what the DEP thinks about our efforts.

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

GERALD D. REID
COMMISSIONER

January 13, 2020

Via E-mail Only

Christopher C. Dorion
President
Maine Association of Professional Soil Scientists (MAPSS)
200 High Street, Suite #2D
Portland, ME 04101

RE: New Hydrologic Soil Group Assessment Method

Dear Mr. Dorion:

The Department understands MAPSS has developed a new, onsite hydrologic soil group (HSG) assignment method for Maine. We have reviewed the method, which was approved at your association's annual meeting on March 13, 2019 and adjusted with a minor revision in December 2019.

The new method is based on the *USDA NRCS National Engineering Handbook (NEH), Chapter 7*, which is a frequently used and highly cited reference by the engineers. In applying the new method, soil scientists will evaluate the "rock fragment," "fine earth texture," and "consistence and structure" of the least transmissive layer they observe in the soil test pits. Based on their evaluation, soil scientists will adjust the representative saturated hydraulic conductivity (Ksat) by a maximum ±40% and assign the HSG using the adjusted Ksat in NEH Table 7-1.

Since the site-specific factors influencing Ksat are considered in the new method, the new method will improve the accuracy of the HSG data required for the design of the stormwater management systems under the Department's Stormwater Management Rules (Chapter 500). We look forward to the implementation of this new methodology in Maine.

Sincerely,

Nicholas D. Livesay
Director
Bureau of Land Resources

cc: David Rocque (DACF)
Kerem Gungor, Ken Libbey, Aubrey Strause (DEP)

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MAPSS Executive Meeting Update

November 22nd, 2019Deering Agricultural Building, Augusta, Maine FINAL Meeting Minutes

Roll: Chris Dorion (Pres.), Roger St. Amand (V.P. - call-in), Dave Marceau (Past Pres. - call-in), Sean Donohue (Secretary - call-in), Dave Rocque (State Liaison and Program Chair), Tony Jenkins (Tech. Comm. Chair - call-in).

Item 1: 2020 Annual Meeting. We are planning on Tues or Wed or Thur, March 24-26 for the annual meeting. MAWS is scheduled for March 19th and MASE is near the end of February.

Locations could be a return to Unity, Augusta area, or Portland. President Chris Dorion volunteered to organize the annual meeting.

Major speaker topics were suggested, climate change & C sequestration (perhaps Ivan Fernandez); storm water regulatory issues (MDEP staff); storm water BMPs - buffers - engineered structures (civil engineering presentation? NH soil scientist?).

Short speaker presentations and updates - MDEP, LUPC, ACOE

Tech. Comm. Short presentation on results of MAPSS meeting with MDEP staff regarding the revised HSG determination methodology.

NRCS updates from Nick Butler - taxonomic changes, series changes, Web Soil Survey changes.

Lindsey Hodgeman report on integrating revised HSG methodology with Web Soil Survey.

Item 2: January meeting with MDEP storm water staff regarding the revised HSG determination methodology. Dave Rocque will organize the meeting. Best times are the weeks of January 6 or January 20th. MAPSS Tech. Comm. will present the new methodology via PowerPoint.

Item 3: Request from Dave Turcotte to print 250 copies of the 2014 MAPSS brochure. Discussion followed, with several notes: 1) the brochure is out of date and needs substantial revision; 2) there may be some still available with past president Don Phillips (Dave Marceau to verify); 3) the brochure can simply be uploaded to the MAPSS website and downloaded & printed by any interested party. For these reasons, the Executive Committee agreed to not fund the printing request but rather to upload the brochure in PDF format to the web page.

Item 4: MAPSS Facebook page review: Item tabled but it is being used and shared to some extent.

Item 5: Treasurer's report: Item tabled but will request Gary Fullerton to email the latest treasurer's report.

Item 6: Reid State Park workshop wrap-up: Dave Rocque summarized the field conference. Strengths and weaknesses were discussed. The objective of the field sites was to present attendees with difficult site conditions and their associated regulatory implications. It was decided that at

the 2020 field conference we will request regulatory staff to have specific answers to the field situations, which can always default to a "case by case basis" or request for a field determination. Gary Fullerton will have the revenue (gross and net) from the field conference in the treasurer's report.

Item 7: 2020 Field workshop ideas: President Chris Dorion volunteered to begin organizing a workshop. A proposal to ask SSSNNE if they would be interested in a joint workshop in southwestern or western Maine will be followed up.

Ideal time is first week of September, Tues or Wed or Thur directly after Labor Day on Monday.

Topics - Use & Management relative to forestry issues (logging road construction, rutting, landing areas); variability of seasonal high water table in Moderately Well Drained soil classes; HSG determination; storm water BMPs; Chapter 500 discussion relative to high intensity soil surveys.

Item 8: Additional discussion items: Tony Jenkins, MAPSS Technical Committee Chair, reported on the revised HSG methodology. He noted that he had requested the Soil Science Division of NRCS to formally accept the Chapter 7 / MAPSS methodology. He has not heard definitively yet. Lindsey Hodgeman from NRCS is working on the proposal so that it becomes part of Web Soil Survey.

2016 Storm Water BMP manual: Sean Donohue noted that the section on "Meadow Buffers" needs more detail. MAPSS to make recommendations or collaborate with MDEP?

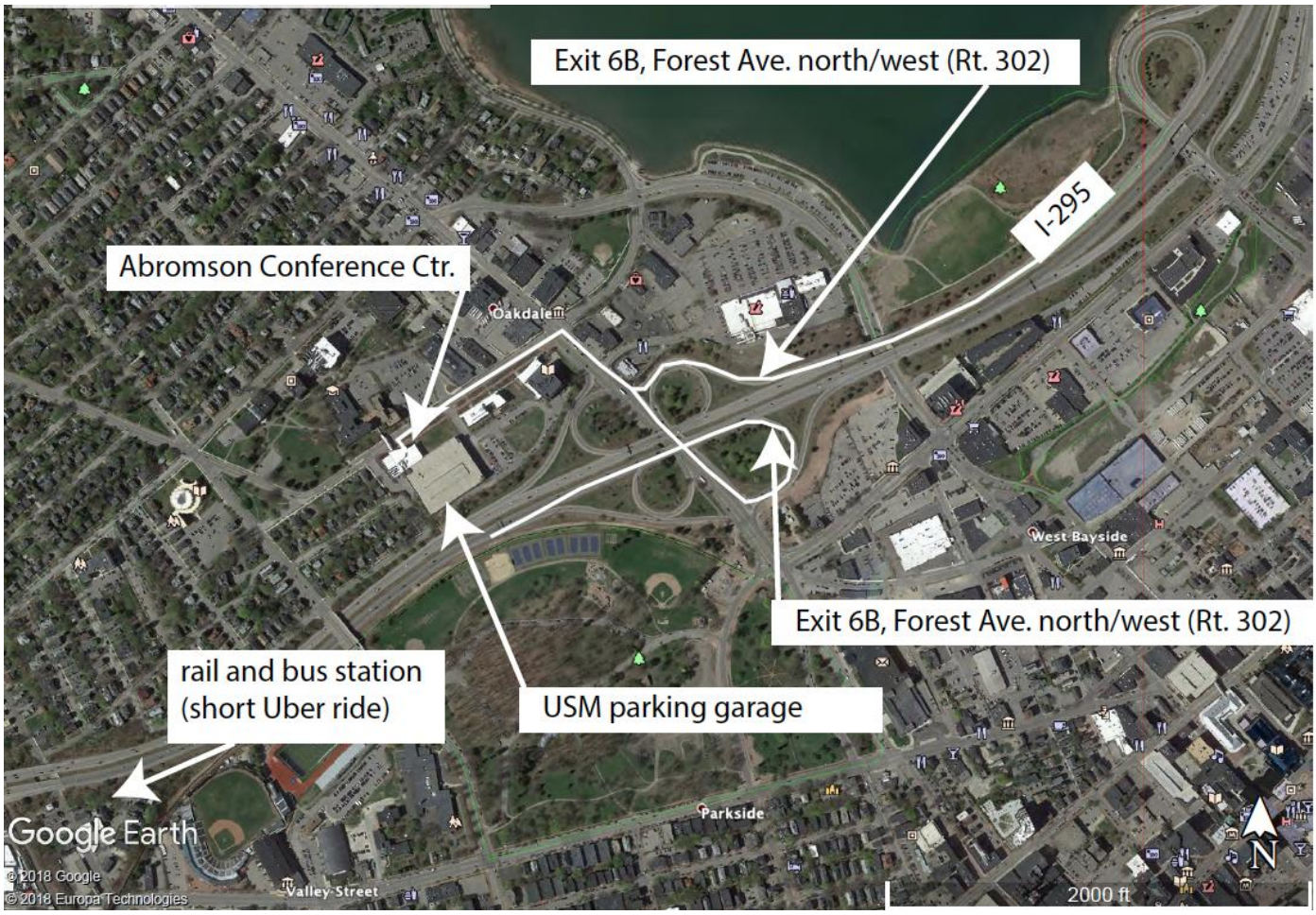
Potential MDEP - MAPSS field study (pilot) of bio-retention cell versus engineered structure in terms of attenuation of phosphorous, sediment, and temperature. There may be "319" funds available for a water quality study such as this over a multi-year period.

Minutes compiled by Chris Dorion, 24NOV2019

From The MAPSS Newsletter Editor

We wish to offer condolences to the family of Stewart Gramlich, whose father has been a member of the MAPSS and MASE families for several decades. Stewart passed away on December 13, 2019. The MAPSS Executive Committee sent a $100 financial donation to Ducks Unlimited to honor his memory.

MAPSS ANNUAL MEETING LOCATION



MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS ANNUAL MEETING

Abromson Center, Rooms 214/215 University of Southern Maine, Portland, Maine

Monday, March 23rd, 2020

8:30 am to 9	Registration (coffee and pastries provided)
9 to 10:45	BUSINESS MEETING - Welcome address President Chris Dorion, and annual updates: • Secretary's Report – Sean Donohue • Treasurer's Report – Gary Fullerton • Envirothon Donations – Dave Rocque and letter from Andrew Reed, Envirothon Fundraising Committee Chair • Scholarship Funds – Mike Jakubowski • MDEP, USACOE, LUPC Agencies' Updates – Proposal to combine with MAWS in 2021 • Membership Updates – Gary Fullerton • UMaine Update - Ivan Fernandez • Facebook/Social Media Update – Mike Jakubowski • NRCS Updates – Nick Butler • September 9th, 2020 Mt. Agamenticus Area Natural Resources Field Conference – Dave Rocque
10:45 to 11	Break
11 to 11:15	ELECTION OF OFFICERS and Committee Appointments
11:15 to 12:noon	Exercise practicum for the 2019 HSG Determination Methodology. **We Repeat --It Is Important That Our Members BE THERE for this exercise!**
12:noon to 12:45	Buffet lunch
12:45 to 1:30	Speaker #1: MDEP, LUPC, NRCS, and MAPSS panel discussion on mapping standards and their regulatory requirements: Web Soil Survey, MAPSS Guidelines, and how they interface
1:30 to 2:15	Speaker #2: Dr. Stephen Norton, The Occurrence of Mercury in the Soils and Waters of Maine: Trends and Future Predictions
2:15 to 2:30	Break
2:30 to 3:15	Speaker #3: Anthony Vannozzi, PLS, UMaine, Use of GPS equipment by non-PLSs: Issues, limitations, and new methods of base mapping and equipment

Maine Association of Professional Soil Scientists
2020 Annual Meeting Registration
Monday, March 23rd, 2020
Registration from 8:30-9:00 am
Abromson Center room 214/215, University of Southern Maine, Portland, Maine

Name: _____

Company or Affiliation: _____

Address:_____

Work Phone:_____ Cell Phone:_____

E-mail:_____

Are you a Maine Licensed Soil Scientist? _____ If yes, License #: _____

Are you a USDA-NRCS Soil Scientist? _____ If yes, How many years in Maine? _____

Are you SSSA Certified? _____ APSS _____ CPSS _____ Certification #:_____

Membership Dues: _____

*Full Member - **$25** Associate Member - **$15** Students who attend annual meeting - **Free**

*Full members must be Licensed Soil Scientists in Maine, NRCS Soil Scientists working in Maine for at least 3 years, or have taught collegiate courses in soil science in Maine and has been an associate member for at least 3 years.

Registration Fee: _____ Note: Registration deadline is Monday, March 16th, 2020

Full and Associate Members - **$45** Students - **$15** Non-members - **$50**
(add $10 if registering at the door; lunch will not be guaranteed)

Total Amount Enclosed: _____

Please submit form and check made payable to **MAPSS** and mail to:

Gary Fullerton
104 Millturn Road
Limington, ME 04049

for more information: www.mapss.org

gfullerton@sebagotechnics.com

Note: CEUs pending for Maine Licensed Site Evaluators and New Hampshire licensed wetland scientists and soil scientists