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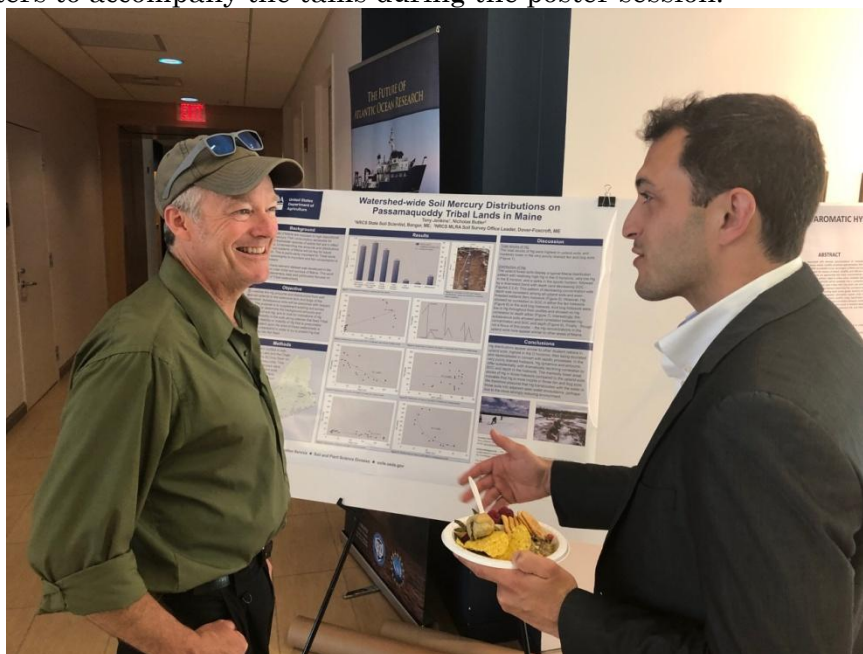
EXECUTIVE COMMITTEE UPDATES

Christopher C. Dorion, MAPSS President

ME CSS #470

National Cooperative Soil Survey Conference 2019, Narragansett, Rhode Island

State of Maine soil scientist Tony Jenkins, along with MAPSS President Chris Dorion, presented talks and posters during the week of June 10th. This biennial meeting draws State soil scientists and associated NRCS folks from Hawaii to Alaska to Florida and Maine. The conference was held at the University of Rhode Island's Coastal Institute. Tony Jenkins presented 2 talks, one on mercury accumulation in soils in eastern Maine, and a second on the new hydrologic soil group (HSG) field determination methodology. Chris Dorion presented a talk on the connotative soil survey mapping legend (CSSML). Both presented posters to accompany the talks during the poster session.



State soil scientist Tony Jenkins (L) discussing mercury fate and transport in Maine soils during the 2019 NCSS conference, Narragansett, Rhode Island

My notes from the week are briefly summarized as follows:

- A potential new soil order, *Artesols*, presented by John Galbraith, which would describe Human Altered and Human Transported (HAHT) soils;
- Potentially moving Soil Moisture Regime to the family level to simplify some taxonomic keys, presented by Mark Stolt
- A potential new soil order, *Aquasols*, to describe subaqueous soils;
- A new field and lab methodology for IRIS tubes was presented both in lecture and in the field (a salt marsh) by Marty Rabenhorst, now adding manganese oxide, in addition to iron oxide;
- The proper use of Web Soil Survey (WSS), especially the new warnings regarding enlarging scale beyond its intended use

The highlight of the week was Wednesday's field tour, which visited multiple soil pits in multiple parent materials, subaqueous soils directly related to the rapidly growing oyster farming business, salt marsh restoration as related to sea level rise, eroding coastal bluffs, and IRIS tube field demonstrations (reduction occurred within 20 minutes). The field day was capped off by a lobster - clam - mussel traditional seaside dinner. Awards were presented and thanks given to the conference organizers.



NCSS conference organizer and University of Rhode Island soils professor Mark Stolt describing a mollisol developed in eolian cover sands overlying glaciofluvial outwash on Narragansett Bay



Facebook Group Page

MAPSS Education Committee Chair Mike Jakubowski is assembling the Facebook group page. It should be live in the next 2 weeks. This will provide a different type of forum relative to the MAPSS web page, which is a predominantly static resource for medium to long term membership items, on-going issues, workshop registration materials, and the repository for regulatory subjects such as the *MAPSS Guidelines 2009*. In contrast, the FB page will provide a rapid forum for soil related issues. The intent of the page will be similar to the existing MAWS FB page, where job openings, vernal pool activity in the spring, regulatory updates, public hearings, conference and workshop notices and any last-minute changes, and other related issues can be shared quickly.

Meeting with MDEP Staff

Clarification is requested regarding the CSSML relative to the letter from MDEP of April 16, 2015. The letter from Marianne Hubert (now retired) and Bill Noble allows the CSSML but still requires the named soil series. In light of the new HSG field determination methodology, HSG should be determined on-site, based on the typical pedon that occurs in each soil map unit delineated by a licensed soil scientist. MAPSS will communicate with MDEP staff regarding the improved accuracy of the HSG field determination methodology (the 7 page guide MAPSS Technical Committee developed). In addition, we will request that the CSSML act as a "stand alone" mapping standard (but retaining all other such as soil limitations, narrative, and existing standards). The E.C. at their April 12th, 2019 meeting decided the most efficient route to achieve these ends would be to hold a "Step 1" meeting with MDEP Stormwater personnel including Kerem Gungor, Bill Noble, Jeff Dennis, and Dave Wadell.

That wraps up the E.C. work to date and proposed future work. I hope to see MAPSS members in 2 short months on Wednesday, September 4th at Reid State Park. Please pass on the opportunities to be provided by this workshop.

Cheers,

Chris

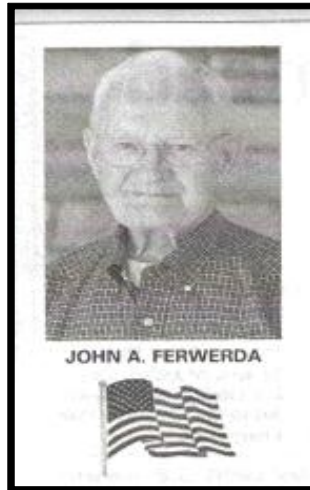
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HYPERLINKED ARTICLES

- [Draft Minutes of the MAPSS 2019 Annual Meeting](#)
- [HP 1249 - LD 1754; An Act To Amend the Geologist and Soil Scientist Licensing Laws](#)
- [LD 1754 Implications \(CD\)](#)
- [LD-1754 Implications Comments \(DR\)](#)

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



VEAZIE - John A. Ferwerda, 94, passed away May 21, 2019, at a Bangor Hospital. He was born May 18, 1925 in Whitensville, Massachusetts, the son of Martin and Annie (Hockstra) Ferwerda. John married his beloved wife, Lola (Youngsma) Ferwerda on September 11, 1947.

John was a Navy Veteran of WWII and an Army Veteran of the Korean War. He was a graduate of Northbridge High School, Northbridge, Massachusetts, Class of 1943. He received a Bachelor's Degree in Agricultural Science from the University of Vermont, Class of 1950. He then attended Cornell University and received his Master's Degree in Soil Science in 1963. He spent his career working for the U.S. Department of Agriculture and participated in the National Cooperative Soil Survey. He retired from the USDA as the Maine State Soil Scientist in 1983.

John was always active in his local church community. He was an avid gardener and loved the outdoors. He raised African violets, loved to hike, bike, and walk to the Penobscot River in Veazie. In his later years, he taught his great-grandchildren the love of gardening, bird watching, and rock collecting.

In addition to his parents, John was predeceased by his siblings, Mary Oppenwall, Grace Bolekns, Anne Batts, Peter Ferwerda, and Martin Ferwerda; and a granddaughter, Jessica Mildner. He is survived by his wife of 72 years, Lola Ferwerda; a son, Martin Ferwerda; daughters, Loralie Mildner, Jean McLeod, and Judy Kelly; 7 grandchildren; and 12 great-grandchildren.

In keeping with John's wishes, services will be private for the family. Interment with military honors will be in Fairview Cemetery, Veazie.

Re-typed by Don Phillips from the Bangor Daily News, page C7, May 25-26, 2019 issue.

Ivan Fernandez shared the following anecdote he has about John that occurred about four years ago.

"I was doing a lot of bicycling, and would come back through Veazie by his house. One day I stopped, asked if he remembered me when he was out tending his yard (at 90 with heart issues) and we had a really wonderful conversation. Last fall he called me out of the blue when he and his wife were moving to assisted living. At his request, I went to his house. I will never forget that visit. He toured me through his home office, the impeccable records of key soil events he had been keeping over the years, and gave me a couple of posters from NRCS that he had framed because he wanted to hand down some of these items he cherished. Clearly he was saying goodbye to his soils world. John (a MAPSS member from the beginning) and I had a great conversation, and I am so grateful for having had that opportunity to reminisce."



**Maine NRCS and the Maine Association of Professional Soil Scientists
Collaborate on Hydrologic Soil Group Procedure for Consultants**

By Tony Jenkins, State Soil Scientist, NRCS

Background: Most of us are familiar with Hydrologic Soil Group (HSG) ratings for predicting runoff in the process of sizing culverts and bridges – its principal intended use when it was introduced in the mid-1900s. HSGs are attributed to soil map unit components according to a methodology laid out in the NRCS National Engineering Handbook, [Part 630, Chapter 7](#). If you are not familiar with it, that is an excellent place to start, followed by some interaction with civil engineers and hydrologists to see HSG in action. Very briefly, HSG categorizes a soil's inherent ability to take in and hold precipitation in 4 base classes from A to D, with A being well drained sands and D including soils, swamps, and concrete. To illustrate: for a given storm event, the peak flow response for a watershed would be higher if the soils were HSG group C than group B, and so on. More on that later.

HSG has become important in ways that were probably never envisioned by the soil scientists and engineers that cobbled their nomographic method together for sizing culverts! Today in many if not most states, HSG is central for much more than designing water conveyances and crossings. Here in Maine, HSG is used as a key parameter for siting and sizing stormwater management systems and for determining buffer/setback parameters for activities near streams, ponds, and wetlands. State and municipal regulations have HSG “hard wired” into statutes and rules, as well as referenced in handbooks, guides, and manuals. Many other states have HSG similarly ingrained in regulatory statutes and references. HSG is directly tied to the required treatment areas for stormwater management, buffer sizes, and in the case of HSG rating of D – prohibition of certain practices. The economic implications are large. While many of us feel that HSG is widely applied beyond its intent or applicability, the “horse has left the barn”, so to speak.

Three soil characteristics determine HSG:

1. Depth to impermeable layer (e.g. densic or bedrock).
2. Depth to seasonal high water table (SHWT).
3. Saturated hydraulic conductivity (Ksat) of the least transmissive layer (above the impermeable layer).

Each of these 3 soil characteristics has a high, low, and representative value (RV) in NASIS. NASIS uses an algorithm to apply Table 7.1 from the Chapter 7 guidance to attribute a single HSG rating for each soil component in the U.S. That rating gets used a lot. It is the most popular Web Soil Survey rating *by far* (>131,000) for 2018 (Figure 1). But that's another story. The story here is that the range in characteristics for the HSG parameters within a soil series make it possible that most series could have 2 or more HSG ratings, and that presents issues for consulting soil scientists.

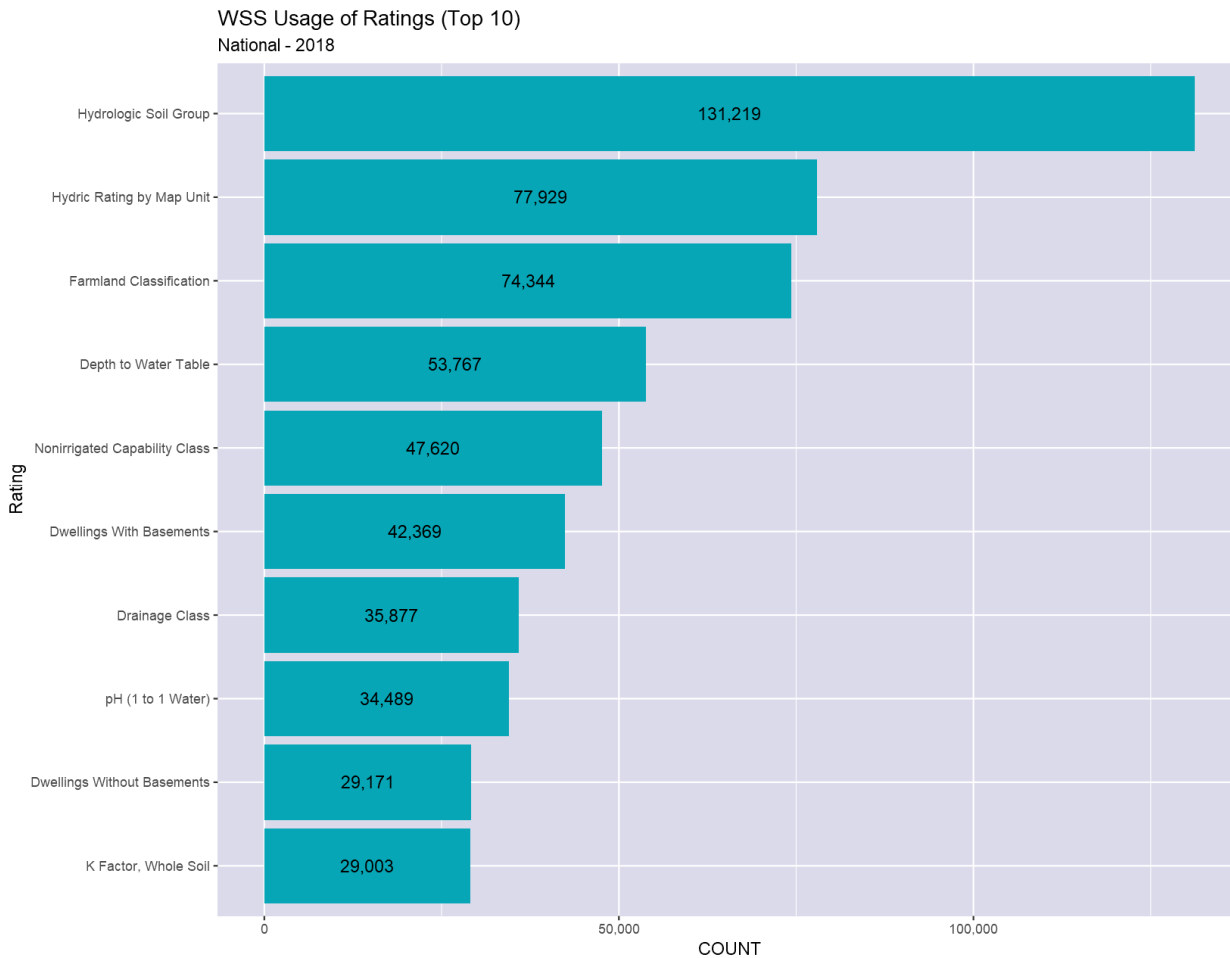


Figure 1: Downloaded soil ratings from Web Soil Survey, courtesy of the NSSC.

HSG attribution in Maine: HSG is also the most common product that clients want when they hire a consulting soil scientist. In Maine and most of New England, consulting soil scientists must identify HSGs for sites individually, e.g. for a specific stormwater management area for a parking lot; or for components of map units for what we call [High Intensity Soil Surveys](#) (HISS) that are conducted for proposed industrial developments, etc. Our NCSS partner, the Maine Association of Professional Soil Scientists ([MAPSS](#)), has adopted specific guidance for HISS. Historically, in order to attribute HSG to sites and HISS map unit components, certified soil scientists would assign a soil series (quite often a “variant”) and use its HSG from the local soil survey.



Figure 2: A Maine soil profile with bedrock, densic, and redox features varying across the pit face.

The moderately well drained soils of Maine are extensive and quite variable over short distances (Figure 2). And a moderately well drained moderately deep to deep soil can have an HSG of B, C, or D depending on where the RV values were set in the (now harmonized) NASIS dataset. MAPSS consultants have endured a predictable problem for a long time: they were locked into one HSG as soon as they identified a series. And that was frustrating, to say the least. A client might want to simply buffer the runoff from a planned home site parking lot on what is clearly a good site and be told that they have to move things or enlarge buffers because the published soil series is static with an HSG of D. And dear readers – group D can range from a moderately well drained soil that you could grow corn on (undrained), to bare rock outcrop, to a peat bog or open water. That’s a whole other problem.

Anyway, MAPSS and NRCS-Maine couldn’t fix that group D rating range issue, but we could and did enable consulting soil scientists to attribute HSG directly to their clients’ soil. We devised a method that is quite simple – identify a representative pedon (RP), describe it, and use Chapter 7 to assign an HSG. That [method](#) entails assigning the depth to impermeable layer and to SHWT directly from the soil morphology of the site or HISS component RP. Ksat is assigned using NRCS soil survey information. Specifically, we use the Ksat of the most analogous layer of the most analogous component in the published soil survey. Check the link for the details.

MAPSS 2018 Workshop Soil/Site Hydrologic Group & Connotative Legend Worksheet

<u>Rep Pedon</u>	<u>RP Impermeable layer depth (cm)</u>	<u>RP SHWT depth (cm)</u>	<u>NRCS Soil Survey reference component name</u>	<u>NRCS Component HSG data</u>			<u>RP HSG</u>
				<u>NRCS series HSG</u>	<u>NRCS Reference layer (bottom depth)</u>	<u>NRCS Ksat RV</u>	
1/Elmwood	70	56	Elmwood	B	76	28.23	B/D
2/Nicholville	105	80	Nicholville	C	102	15	B
3/Peru	75	56	Peru	C/D	66	7.81	C/D
4/Brayton	49	8	Brayton	D	58	7.8	D
5/Peru	90	85	Peru	C/D	66	7.81	C

Figure 3: MAPSS worksheet showing the published series' HSG and the on-site HSG (in red).

In September of 2018 MAPSS and NRCS sponsored a workshop in Orono, Maine where a variety of soil scientists tested the method on 5 RPs. We spent the lovely fall morning doing what soil scientists love to do – arguing about soil characteristics (Figure 4)! When the dust settled, we assigned depths for the HSG parameters and the best fit soil series. We used our HSG worksheet (Figure 3) to document the key soil parameters, and to enter the series and Ksat data for the selected layers. We also note the official NRCS HSG rating for the series. The results from our workshop pedons illustrate the value of the method quite well.

RPs deviated both up and down the scale from the published soil survey HSG rating. While the deviations may not seem radical to many readers, consider the following: an HSG of B instead of C can save tens to hundreds of thousands of dollars in stormwater management costs for a development. An HSG of C instead of D can make the difference in whether or not a project can even proceed at all. While the deviations may not seem radical to many readers, consider the following: an HSG of B instead of C can save tens to hundreds of thousands of dollars in stormwater management costs for a development. An HSG of C instead of D can make the difference in whether or not a project can even proceed at all. Conversely, look at the Elmwood component on the worksheet. The published soil survey indicates an HSG of B, but our pedon had a SHWT at 56cm – thus effectively making it HSG group D! That could wind up protecting property and water quality on a site that might have been under-protected by using the rating from the published data. This is not necessarily an indictment of the B rating for Elmwood in the WSS. It is absolutely an illustration of the value of using the onsite soil characteristics to the advantage of the land and land-user. This collaboration of NRCS and MAPSS is resulting in tremendous added value to consultants' products, and better decision making in land use activities!



Figure 4: MAPSS soil scientists describing an Elmwood profile. Both photos by Chris Dorion, MAPSS.



Figure 5:- More MAPSS soil scientists discussing what the Hydrologic Soil Group is at the pit nearby

Soil Tunnel: The Origin

By Jim Turenne, Assistant State Soil Scientist of Rhode Island, NRCS

In recent years there have been numerous articles and stories on the use of a “soil tunnel” to teach young people about soils. So where did the idea of soil tunnels originate? England.

Here is the story: In the early 1990s, the soil survey of Plymouth County, Massachusetts, had two young volunteers, Nicola Shirt and Richard Bonner from England, for a summer internship. Nicola and Richard wanted to learn about soils and assist with the soil survey. One day during a trip to an elementary school to talk to the students about soil, they mentioned how they use an education display called a soil tunnel to get kids excited about soils. They said it was a simple table with panels that kids would crawl through like they were a worm to see what a soil profile looks like. With that concept in mind, Soil Survey Project Leader Peter Fletcher went to work in his wood shop designing a soil tunnel. The tunnel, a table with panels on the sides, included hands-on experiments on the top, where kids could feel the soil and build mini profiles. After kids learned about the soil, they could put on a headlamp and crawl through the tunnel. In the tunnel, they could see roots and rocks hanging down, soil horizons, and creatures that lived in the soil. After the tunnel’s first visit to a school, we knew we had a hit—the kids loved it!



Figure 1 (above).—Meredith Ashworth, soil scientist, with the original soil tunnel in Washington DC.

Figure 2 (Below).—Peter Fletcher, soil survey project leader for Plymouth County Soil Survey, with the soil tunnel in Roxbury, Massachusetts



Survey staff then worked with the Massachusetts Plymouth Conservation District on an education program that included taking the tunnel to a school for a week and having an instructor come to classes to learn about soils. The district employed soil educators and created a teaching package. Thousands of kids crawled through the soil tunnel as it travelled throughout the State. An educational video was made and distributed by Massachusetts Agriculture in the Classroom and featured at a national meeting of Earth Team volunteers.

As the survey came to an end and staffing shortages hit, the original soil tunnel was set up at the Marion Massachusetts Children’s Museum. It remained there for several years until it was retired.



**SOILS AND NATURAL RESOURCE IDENTIFICATION WORKSHOP
REID STATE PARK
WEDNESDAY, SEPTEMBER 4, 2019**

By David Rocque, Maine Department of Agriculture, Conservation & Forestry

I have been talked into coming out of workshop retirement to organize one more MAPSS/MAWS/MASE Soils and Natural Resource workshop to be held at Reid State Park in Georgetown, Maine. (Note from Editor: *Reid State Park is where the author organized his first such workshop 12 years ago. Faithful readers of this Newsletter probably remember this Workshop, and if you don't, then scroll down to the next page where two photos were dredged up from some deep place as a reminder of what it looks like.*)

Anyway, this is where I organized my first such workshop 12 years ago which used the format of visiting sites and then having all the State and federal regulators present to discuss each site and answer questions. I believe there is a lot of value in having everyone see the exact same sites, in the field, and then having the opportunity to hear state and federal regulators discuss each site with questions and answers to follow. Reid State Park is a great location, readily accessible to most of the State and early September is a great time of year. Summer vacation is over, most of the tourists have left so the Park will not be crowded and the weather is usually very nice. The first workshop I organized at Reid had 7 sites while this one has 11. There will be 16 soil pits to evaluate for soil series, septic system suitability and hydric soil determination with hydrologic soils group determinations to be made for three of the soil pits. You will also be asked to identify a number of natural resources and determine what regulations are associated with those natural resources. Of the 11 sites, 4 are completely new from the 2007 workshop while 4 are in the same general location but have new features and/or soil pits. The remaining 3 are unchanged from the original workshop because I wanted to see if regulatory determinations had changed in the past 12 years for 2 of them and the third is one I considered to have oxyaquic soils where iris tubes have been installed to prove the presence or absence of anaerobic conditions in the soil. You will have to visit the site to find the answer. The workshop includes a field portion requiring visits to the 11 sites. Attendees will be provided with a set of questions to answer for each of the sites (for your own use only). There will be assistants at most of the sites to help direct attendees to the specific parts of the sites to be evaluated and will also provide all appropriate natural resource maps of the sites necessary to make proper determinations. You will be asked to make a number of field determinations including:

1. determination of what is and isn't a vernal pool and whether it is or may be significant
2. determination of what is and isn't a stream
3. determining where the starting point is for measuring shoreland zone and natural resources protection act setbacks for river, stream, wetland, pond and ocean settings
4. determining the upland/wetland boundary
5. determining what is and isn't a wetland of special significance
6. determining where the boundary is between a coastal and freshwater wetland (how to tell the difference)
7. determining how to tell if a sandy soil in a back-sand dune is hydric
8. determining if a flood plain soil is hydric
9. determining the difference between podzolization and redoximorphic features in a spodosol
10. determining the difference between a folistic and histic epipedon and what difference it makes in making a hydric soil determination
11. determining the Hydrologic Soil Group (based on saturated hydraulic conductivity of the least permeable layer above a hardpan or bedrock) of specific soil profiles as compared to the assigned representative rating based on soil series established by the NRCS using a newly adopted Maine Association of Professional Soil Scientists technique

In addition to field determinations, you will be asked a number of regulatory questions for each site. After visiting the sites and answering the questions, there will be a discussion of the sites at a very scenic pavilion with a beach reserved for our workshop. Participating in the discussion will be Jay Clement from the ACOE, Dustin Dorr and Colin Clark from DEP, Karen Bolstridge and Debra Kaczowski from LUPC and Brent Lawson from the State Plumbing Program. The idea is to provide a field exercise similar to what many of us face with our jobs on a daily basis and then to get closure for the many gray areas we typically encounter by having all of the appropriate regulators present to discuss each site and answer questions.

This workshop should have broad appeal to people who work with natural resources including: soil scientists, wetland scientists, site evaluators, foresters, engineers, planners, code enforcement officers, municipal officials, natural resource regulators, conservation commission members, lake association members and the general public who are interested in natural resource issues. It will be held in a very attractive location at a great time of year. Please use the form shown on the next page to register.

NOTE: PLASE BRING YOUR OWN LUNCH AND SOMETHING TO DRINK AS NONE WILL BE PROVIDED AND THERE ARE LIMITED OPPORTUNITIES TO PURCHASE FOOD IN THE AREA.

DO YOU REMEMBER REID STATE PARK A BIT BETTER NOW?



Photo on left shows a challenging forested wetland? or upland dominated by *Picea rubens* and *Abies balsamea*. Photo on right shows a challenging wetland delineation along a Great Pond. A soil scientist and botanist will be available at each transect.



2019 SOILS AND NATURAL RESOURCE WORKSHOP
Wednesday, September 4, 2010

The 2019 MAPSS/MAWS/MASE Soils and Natural Resource Workshop will be held at Reid State Park in the town of Georgetown, Maine, on Wednesday, September 4, 2019 from 9:00 am until 3:30 pm. Check-in will be by the gate on the Park Access (Seguinland) Road from 8:30 am to 9:00 am. You will be given a location map to sites you are to visit. **Carpooling is recommended** because of limited parking at some of the sites located beside the road. Assistants will be at most of the sites to point out the soil pits and other areas where you are to make observations (and determinations). You have from 9:00 am – 12:30 pm to visit the sites. After visiting the field sites, travel to the pavilion for a 1:15 pm – 3:30 pm discussion of the sites and soils by state, local and federal regulators and experts. **Lunch is on your own.** There aren't many places to buy your lunch in the area but there are a number of excellent places to enjoy what you bring with you including the pavilion, beaches or rocky prominences. The workshop has many interesting sites which include back sand dunes, flood plain soils, an oxyaquic soil transect with iris tubes, a new method for determining the Ksat and HSG of soils, streams, an upland to forested freshwater wetland to a salt marsh transect, vegetated stormwater buffer treatment area evaluations, where to begin measuring from for setbacks in the shoreland zone and vernal pools. These are challenging sites that will generate a good deal of discussion. Experts as well as State, local and Federal Regulators will be present to answer questions and provide valuable guidance for dealing with these difficult sites and soils. See attached workshop description for more details.

The cost of the workshop is \$40.00 for MAPSS/MAWS/MASE members or associate members and \$50.00 for all others.

Please send your checks, payable to MAPSS, to:
Gary Fullerton
104 Millturn Road
Limington, Maine 04049-3141

Though registrations will be accepted the day of the workshop, for planning purposes, we ask that you register by September 1. Check www.mapss.org for background information and updates.

If you have any questions about the workshop, call Dave Rocque at 287-2666 or send him an e-mail at david.rocque@maine.gov.



REGISTRATION FORM

**MAPSS – MAWS -MASE - SSSNNE 2019 SOILS & NATURAL RESOURCE WORKSHOP
ENTRANCE GATE ON PARK ACCESS ROAD
REID STATE PARK, GEORGETOWN, MAINE**

Name: _____

Address: _____

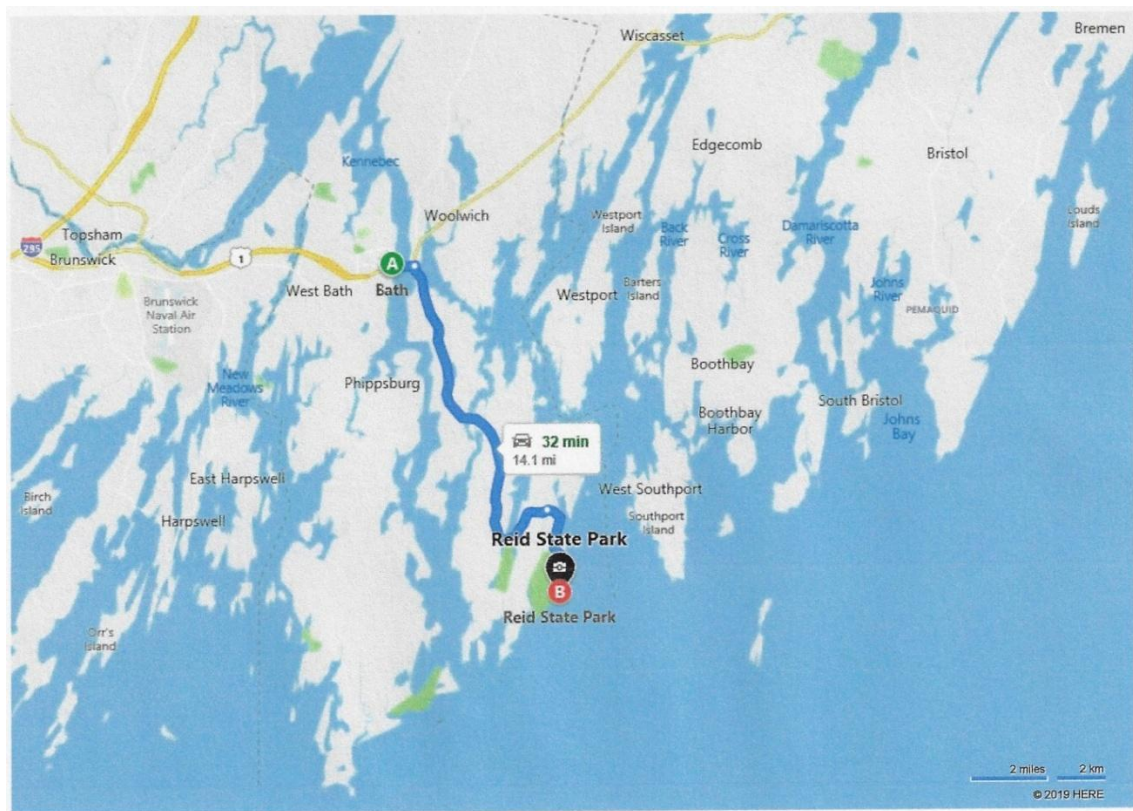
Phone Number: _____ E-mail: _____

Number Attending Workshop: _____ X \$40.00 = _____

_____ X \$50.00 = _____

Total Due: _____

DIRECTIONS TO 2019 NATURAL RESOURCES IDENTIFICATION WORKSHOP



From the east side of the Kennebec River east of Bath, take Rt 127 south for about 30 miles to the Seguinland Road, into the Park.



MAPSS 2019 Treasury Report		
MAPSS Checking Account as of 12/31/18		\$8,351.74
<u>2019 Income:</u>		
2019 Dues (full membership)	\$1,025.00	<i>41 full members at \$25.00 each</i>
2019 Dues (associate membership)	\$195.00	<i>13 associate members at \$15.00 each</i>
2019 Dues (student membership)	\$0.00	<i>3 student members at \$0.00 each</i>
2019 Dues (honorary membership)	\$0.00	<i>2 honorary members at \$0.00 each</i>
	<u>\$1,220.00</u>	
Annual Meeting Registration	\$1,240.00	<i>31 registrants at \$40.00 each</i>
	\$50.00	<i>1 registrants at \$50.00 each</i>
	<u>\$30.00</u>	<i>2 students at \$15.00 each</i>
	<u>\$1,320.00</u>	
Reid State Park Workshop	\$0.00	<i>0 registrants at \$40.00 each</i>
	\$300.00	<i>6 registrants at \$50.00 each</i>
	<u>\$0.00</u>	<i>0 registrants at \$.00 each</i>
	<u>\$300.00</u>	
TOTAL INCOME	\$2,840.00	
<u>2019 Expenses:</u>		
Envirothon (Maine Association of Conservation Districts)	\$1,000.00	
Annual Meeting Facility (Unity College)	\$648.81	
Annual Meeting Expenses (copies)	\$8.85	
Janet Cormier Scholarship	\$1,000.00	
Workshop		
Website Host (DiscountASP.net)		
Domain Registration (Speedsoft)		
TOTAL EXPENSES	\$2,657.66	
MAPSS Checking Account as of 5/14/19		\$8,534.08

Lastly, let's congratulate our newest Licensed Soil Scientist, **Natalie Marceau, #613**, for all of the long and hard work she demonstrated over the last few years to become licensed.

And here's wishing the best of luck to **Eric Whitney** and **Michael Jacubowski** when they take the necessary exam(s) to become licensed themselves. We are confident you'll make it!