PCPG Newsletter

Communicating Key Information & Concerns to Geologists and Environmental Professionals

Issue 3 / 2021

Inside this issue...

Message from the President

Scorecard

Did you happen to attend PCPG's virtual annual meeting in April? We had a great program with lots of variety, something for everyone. The *2021 Annual Meeting Report* outlined PCPG's accomplishments last year and our 2021 Action Plan – Targeted Momentum goals for this year. I'd like to check off a few more boxes by highlighting some items that are now available, the first one being Webinar Recordings.

Most of the annual meeting talks and many other webinars from last year are now or shortly will be available for replay and can be found by mouse-hovering on the Courses and Events menu tab of our website, under Webinar Recordings. If you need PDH credits, missed a talk due to a schedule conflict or you simply forgot to register, check out the selection available. There is a small fee which covers the costs of the technical platforms, storage, processing and administering the PDH certificate credits. More webinars will be added as they become available. Also available in this area is the Student and Young Professional Virtual Session that was held in conjunction with our annual meeting. The session moderator asked questions provided by the attendees to a panel of four professional geologists who provided insight and career advice based on their varying levels of experience in several different geologic disciplines. We had very positive feedback on the session, which is also available at no charge under the Recordings page.

The next box that I'd like to check off on our 2021 Targeted Momentum goals is that our podcasts are now available on most podcast platforms. Search for PCPG on your favorite podcast host and *PCPG's Poorly Sorted but Well Rounded Series* should pop up. The series includes practical and timely topics, technical and social matters, trends and tips for the office or the field and interesting subjects and interviews that may remind you of why you chose a career in Geoscience. New podcasts will drop every few weeks.

During my annual meeting talk, I also mentioned our new PCPG website, which has launched and is being updated with even more content. If you haven't been to the

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UPCOMING PCPG EVENTS

July 26 - August 11, 2021
Six Webinar Package:
PG Review Course for the Practicing Geologist and ASBOG® Exam Candidate (900 mins.)

Webinars:
Monday and Wednesday - 6:00 - 8:30 PM
PCPG Members $399; Non-Members $599

Or, enroll individually according to specific topics of interest:

July 26, 2021 - Part 1
General, Field Geology and Geomorphology; Mineralogy and Igneous/Metamorphic Petrology (150 mins.)
Webinar: 6:00 - 8:30 PM

July 28, 2021 - Part 2
Sedimentology, Stratigraphy, and Paleontology; Seismology, Exploration Geophysics, and Well Logging (150 mins.)
Webinar: 6:00 - 8:30 PM

August 2, 2021 - Part 3
Structural Geology and Tectonics (150 mins.)
Webinar: 6:00 - 8:30 PM

August 4, 2021 - Part 4
Hydrogeology and Geochemistry (150 mins.)
Webinar: 6:00 - 8:30 PM

August 9, 2021 - Part 5
Engineering Geology (150 mins.)
Webinar: 6:00 - 8:30 PM

August 11, 2021 - Part 6
Economic and Resources Geology: Petroleum, Coal, and Mining (150 mins.)
Webinar: 6:00 - 8:30 PM

August 24, 2021
Webinar: Variations in Produced Water Chemistry and Relation to Regional Geology and Production in the Marcellus Shale, Northcentral West Virginia (60 mins.)
Webinar: 1:00 - 2:00 PM

September 14, 2021
Karst Site Characterization, Focusing on Geophysics for Geotechnical Projects (60 mins.)
Webinar: 1:00 - 2:00 PM

September 23, 2021
A New Approach to Urban and Semi-Urban Watershed Hydrologic Characterization for Stormwater Management (60 mins.)
Webinar: 1:00 - 2:00 PM

FOR A COMPLETE LIST OF UPCOMING EVENTS OR TO REGISTER ONLINE, CHECK OUR HOME PAGE EVENT CALENDAR, OR VISIT PCPG'S COURSES AND EVENTS WEB PAGE.

PCPG's Summer 2021 PG Review Course Webinar Series

Attention anyone preparing to take the ASBOG® Geologist Examinations in the fall or anyone interested in earning some PDHs with some great overall review of geologic topics. PCPG will be presenting their PG Review Course Six Webinar Series this summer between July 26 and August 11 (a total of 900 minutes!). The components of this seminar are aligned with the general subject areas contained in the ASBOG® Geologist Examinations. However, the course is not intended as a sole-source for your test preparation. It is instead a proven resource and guide to supplement your preparation efforts. The course provides a concentrated fast-paced review as well as a general refresher for the practicing Professional Geologist.

During this seminar series about one hour is devoted to review a full-semester college course. *The webinars are not intended as a "How to take the Test" review*. Seminar registrants usually take this course six to 12 months from their intended exam date with the understanding that significant, additional preparation will be needed prior to sitting for their examination.

We are certain that you will find the provided information helpful to your preparation, enabling you to better succeed in the ASBOG® Examinations! Note that most instructors will include mock tests and answer keys and extra information or references for further study.

Below is a list of topics and speakers for the summer series. Topic sessions range from 65 minutes to 150 minutes.

Rachel O'Brien, PhD, P.G., Professor of Geology and Department Chair at Allegheny College, will be reviewing **General, Field Geology, and Geomorphology**. Rachel teaches Physical Geology, Geologic Hazards, Field Geology, Geochemistry, and Hydrogeology.

Kurt Friehauf, PhD, P.G., an economic geologist and professor at Kutztown University of Pennsylvania, who has also worked as a gold exploration geologist and an underground mine geologist, and is a current PCPG board member, will be teaching two different sessions on **Mineralogy and Igneous/Metamorphic Petrology and Economic and Resources Geology: Mining**.

Tamra Schiappa, PhD, is a Professor of Geology at Slippery Rock University who specializes in Stratigraphy and Paleontology and is also President of the Pittsburgh Geological Society. She will provide review of **Sedimentology, Stratigraphy, and Paleontology**.

Thomas E. Jordan, PhD, P.G., is part-time teaching and research faculty at Youngstown State University, a Supervising Geologist/Geophysicist with Key Environmental, Inc., and current PCPG board member. Tom will be discussing **Seismology, Exploration Geophysics, and Well Logging**.

"I just completed the PCPG Professional Geologist Review Six-Part Webinar Course and was absolutely blown away by the expertise of the speakers as well as their meticulously-crafted 1-1.5 hour PowerPoint presentations and accompanying practice quizzes. I highly recommend this packed three-week course to anyone studying for the FG or PG, though content was specifically tailored to the PG course during these webinars. The exam feels just a tad less dauting than it did a month ago! Now the nine-month study sprint begins…"

Rachel J. Davis, GIT at Environmental Resources Management, Inc.

Daniel Harris, PhD, an Associate Professor of Geology at California University of Pennsylvania, will be providing a 150 minute review of **Structural Geology and Tectonics**. Daniel teaches a number of courses with a heavy emphasis on field work, including Mineralogy, Petrology, Structural Geology, Tectonics, Field Methods in Geology, Field Camp, Computer Applications in Geology, Earth Resources, Introductory Geology, Geochemistry, and Petroleum Geology.

Chris Mulry, P.G., Vice President and Principal Hydrogeologist for Groundwater and Environmental Services, Inc., and Kyle Fredrick, PhD, Professor of Geology at California University of PA, will be reviewing principles of **Hydrogeology and Geochemistry**. Chris has a diverse background in environmental investigations, risk management and the design, operation and maintenance of soil and groundwater remediation and management programs and Kyle is a Professor of Geology at California University of PA, who is also the Treasurer of the Pittsburgh Geological Society for which he has also served as Vice President.

Engineering Geology will be reviewed by Gary MB Kribbs, P.G., with AEON Geoscience, Inc., and Matthew Morris, P.G., with Gannett Fleming, Inc. Gary is a structural geologist with 33 years of experience. He has conducted numerous watershed evaluations and landslide/slope failure investigations, has provided technical expertise geologic hazard mitigations of sink holes and karst features, and has conducted deep mine investigations among other experience. Matt is the Geotechnical Practice Leader with Gannett Fleming and is Past President of the Association of Environmental and Engineering Geologists.

Kristin M. Carter, P.G. serves as Assistant State Geologist of the Pennsylvania Geological Survey (PAGS) and manages the Survey's Economic Geology Division. Kristin will be reviewing **Economic and Resources Geology: Petroleum and Coal**.

Visit PCPG's Upcoming Events tab and scroll through to identify specific dates and topics, or enroll in the six-webinar package.

PRESIDENT *Continued from Page 1*

site in a few months, check it out. One of the requests we've had over the years is to provide networking opportunities through the website. We now have a Private Member Directory accessible under our Members Only tab on the website, and a public Corporate searchable directory that is available to anyone. The Corporate directory lists name of the primary corporate contact and up to four specialty areas for the company (chosen by the primary contact). Members can also choose up to four specialties to list in their member-only profiles. All members should review their profile and adjust their privacy settings to choose what information to share with other PCPG members. To navigate these expanded member permissions, log-in, click the "Person" art icon at top right of page, select View Profile > Edit Profile > Privacy > and navigate the radio buttons to make changes. Don't forget to Save the changes.

Our Virtual PG Review course is being run again starting July 26 ahead of the next ASBOG® exam in October. The highly praised six-webinar series (18 PDHs) is taught by an experienced team of ten industry experts. As part of our goal to provide refresher skills to experienced geologists, one can also choose to attend an individual session or two in order to brush up on specific geologic topics. Read more about the review course later in this newsletter.

So, if you would like to keep score and see how many boxes we are checking off on our 2021 Targeted Momentum goals, then listen to the replay of my annual talk, available for free on the Webinar Recordings sub-menu under the Courses and Events tab of our website. One last thing, PCPG is starting to plan an in-person educational event for some time in late fall. Be on the lookout for more information as we firm up the details and I hope to see many of you in person soon!

Very Truly Yours,

Barbara J. Dunst, P.G., C.P.G.

New PCPG Corporate Member

Please join us in welcoming our newest PCPG Corporate Member:

GHD

Interested in becoming a PCPG Corporate Member? Visit our Join PCPG page, then download the Corporate Membership application. Bundling multiple Individual Memberships into a single Corporate Membership provides up to 25% discount for each professional enrolled. Telephone PCPG by dialing (717) 730-9745 for more information.

What does a Professional Geologist do for

Visit our
What Does a Professional Geologist Do
web page for more in this series.

PA SOIL INVESTIGATIONS

A Professional Geologist (PG) works on soil investigations to determine suitability for various uses and to investigate potential environmental issues.

- A soil investigation may be a standalone project such as a geotechnical evaluation for a road/structure construction or part of a larger job for a landfill design, stormwater management, wetland mitigation, wastewater recycling or contamination event.
- The PG uses two distinct soil classification systems that are appropriate for different purposes. The United States Department of Agriculture (USDA) system is suitable for environmental and agricultural purposes while the Unified Soil Classification system (USCS) is for engineering and geotechnical uses.
- The PG defines the soil investigation area which may include the surrounding watershed drainage area or adjacent facilities and uses the Web Soil Survey to find the soil series mapped for the site.
- For a geotechnical investigation, the PG is responsible for appropriate soil sampling through soil probes, test pits or drilling, takes samples and classifies the soils using the USCS standard designations to describe grain size as sand, silt, or clay, the percent of each component and its angularity or roundness.
- The PG coordinates with a Geotechnical Engineer when needed and determines if geotechnical testing, whether in situ or laboratory, for load bearing, shear strength, compaction, or permeability is required based on the type of project.
- The PG interprets the results of all field soil tests based on the particular end use; for example, soil load-bearing properties for a building or infiltration amounts for an earthen dam.
- The PG provides oversight during design and construction of a stormwater or wastewater infiltration system to be certain that conditions on the site have not changed and that design parameters are met.

A thorough soils investigation uses the right tools for the job including a Munsell color chart, spray bottle and a gps receiver; used here to describe soil developed in loess overlying fluvial deposits.

Soil descriptions are best done in situ to maintain context, such as here examining recent pyroclastic deposits now in the process of becoming soil.

- The PG supervises soil permeability tests and profile descriptions using the USDA system which includes factors such as particle size distribution, structure, consistence, parent material, organic content, drainage classification and infiltration conditions.
- Based upon the results obtained, the PG may need to calculate the appropriate long-term application rates (LTAR) of stormwater or wastewater to avoid hydraulic overload. An understanding of permeability and groundwater mounding is valuable in this process.
- For a wetland investigation, the PG first reviews published data for wetland locations and does a field inspection to delineate the wetland boundaries.

- The PG determines if a Certified Professional Soil Scientist or a Wetland Scientist should be involved. The PG oversees a wetland scientist's delineations in accordance with Army Corps of Engineers methodology.
- Prior to any disturbance the PG obtains permits from the Pennsylvania Department of Environmental Protection (PADEP) and/or the Army Corps of Engineers depending on the size and nature of the project.
- The PG oversees any disturbances to the wetland to make sure the work is done properly to limit any impacts. When a wetland can't be avoided and needs partially or completely removed for the planned activity, the PG works to design and create another wetland in a nearby area as a habitat replacement.
- When a former industrial site is redeveloped for a new purpose, the PG conducts a Phase I Environmental Site Assessment which is a review of the current and past uses at the site to identify if there are any potential Contaminants of Concern (COC) that must be characterized.
- The PG reviews historical aerial photographs for previous site uses that may have impacted the soil.
- If COCs are identified the PG develops, implements and provides a Phase II Environmental Assessment to further characterize the site.
- The PG determines the appropriate areas for additional investigation and communicates with regulatory agencies (i.e. municipality, multi-municipal, county agency or PADEP) to determine the suitable testing.
- The PG collects soil, sediment, or soil gas samples to quantify the levels of COCs in the soil.
- The PG prepares a full report of the soil investigation and applies their professional seal to show they are responsible for the collected data, analysis and conclusions. The report is sent to the appropriate regulatory agency for review.
- If contamination is discovered, the PG communicates with the PADEP to plan, develop and coordinate a remediation plan including the Planning Modules required to be submitted.
- The PG oversees any soil clean-up during the remediation which may include removal and disposal at an approved facility, treatment through biological or other additives, or by extracting the soil vapor which pulls contaminates out of the soil matrix.

The PG typically works with geotechnical engineers, soil scientists, wetland scientists, construction contractors, drilling contractors, biologists, remediation specialists, permitting professionals, PADEP and Sewage Enforcement Officers.

Work Resources:
Computers, AutoCAD/GIS, modeling and analysis software, historical reports, aerial photography.

Work Environment:
Office and field work. Field work may entail irregular or evening/weekend hours depending on the type of project and working in varying outdoor conditions throughout the year.

Helpful Skills & Experience:
Field soil testing methods, research skills, drilling techniques, ability to read engineering and construction drawings, an understanding of engineering design, construction equipment and methods, and negotiations with DEP.

Tools of the Trade:
Cone penetrometers, soil probes, chain of custody documentation, hand auger, soil sampling drill rig, permeameters, and Munsell color charts.

"Just Do It"
Second Quarter 2021 Photo Contest

By Emily Glick, P.G.

"Just do it." I know that many of you reading this likely share a similar level of confusion when it comes to retail and marketing, but I must admit that Nike's slogan is total genius.

Usually "Just do it" comes easily to me. I am a fairly action orientated and active individual. To give you an idea, here are some highlights from my 4th of July weekend: installed a flag holder on our home (woot!), earned the Audubon's Backyard Habitat Certification (major win), baked muffins, cornbread, and made beef jerky on our smoker grill (totally worth it!), failed at replacing a sink faucet (didn't have the right tool), and while at the pool I swam laps, played "alligator" with my kids, and got in some practice on the diving board. I could go on, but I'll save that for the nearly blank journal that I've had for years…

PCPG recently concluded the Second Quarter photo contest. Due to dwindling participation during the First Quarter 2021 photo contest, we kept the theme of the contest very general to encourage entries, "Geology from around the World"…but alas, we received zero entries from our membership! PCPG had started the quarterly photo contest last fall to provide an additional means of networking while everyone was cooped up at home. Seeing the amazing places that you've been and your smiling faces, learning of the geologic histories, and collecting the short stories from the photographers has been a very enriching experience for the Photo Committee, and we assume for many of our members as well. Since the Second Quarter Photo Contest was a bust, PCPG's very active Board of Directors decided to pivot and make it a "contest" amongst ourselves, rather than scrap it all together.

Tiffani Doerr, PCPG president elect, submitted a photo of a glacial erratic in Acadia National Park. (This photo makes me smile and takes me back to OSU's field camp in 2003, when my class was completely obsessed with rolling boulders!) Tiffani explains that the glacial erratic was deposited at the top of a granite peak called "south Bubble" in Acadia National Park, which is part of Mount Desert Island in Maine. After ancient glaciers eroded the mountains and cut broad U-shaped valleys in the region, they receded and deposited material that had been carried by the glacier. Boulders that had been carried some 20 miles or more were left behind in valleys and on mountain tops by the melting ice. Tiffani works in the petroleum industry managing environmental remediation projects. She likes to sneak in geology lessons for the family while on vacation. Tiffani also included a fun fact: Florence Bascom was the first professional female geologist to survey Mount Desert Island, publishing "The Geology of Mount Desert Island" in 1919.

Submitted by:
Tiffani Doerr, P.G.
(Evergreen Resources Management Operations)

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PHOTO CONTEST *Continued from Page 7*

The next photos were submitted by yours truly. They are not of fantastic geologic phenomena, but instead photos of Earth Day displays that I created at my kids' elementary school this past April. The 2020-2021 school year was hard for everyone. "Just do it" was at an all-time low, even for me! Usually the bulletin boards might be decorated by a PTO committee, or the teachers, but with the constant adaptations and restrictions, they lay barren until late April. Through a series of fortunate events - hearing a need, seeing an opportunity, and having the means - I was able to brighten the halls and share geology and nature with over 600 kids and 100 teachers and staff. It brings tears to my eyes to remember the reactions from the young students while assembling the boards and display case: "ohh", "ahh", "COOL!", "wow!" I even enjoyed seeing some of the kids get drawn in so much so that their teachers had to ask them to, "Pay attention, keep walking, we can come to look at these later."

Submitted by Emily Glick, P.G. (Tetra Tech, Inc.)

I was also surprised that more than a few students asked me, "Why are you doing this?" In the moment, my short answer was something like, "so you have something to look at!" or "Because it is Earth Day." But really, I did it because I want to inspire future geologists and scientists.

Sometimes we just need to get out there, just show up, and "Just do it!" That could mean planning the vacation of your dreams, resolving to take the next step in your career, abstaining from your vice, eating better, journaling, supporting a friend or family member, preparing for a big presentation, submitting a photo to the PCPG photo contest, or practicing dives and flips until you get it just right (even if you do end up with a bruised thigh ☺).

We will go ahead with a Third Quarter Photo Contest, if submissions are still low, the Photo Committee will regroup and back down the frequency. The theme of the Third Quarter Photo Contest is "Geological Inspiration and Achievements." What inspires you, what might inspire others, what are you proud of? The contest is now open, and we will take submissions until Friday, September 10. We will remind you in the eBlasts. Don't forget to include the submission form (describe what it is that we are looking at, and also share a sentence or two about yourself). Please send photos and submission forms to: PCPG Board Member Kurt Friehauf, PhD, P.G., with the subject line: PCPG photo contest.

Note that by submitting a photo you are giving PCPG permission to use the photo in the PCPG Newsletter, PCPG website, or other PCPG media (proper credit will be given).

Just do it! You've got this, and PCPG has your back!

Kids' Geology Education

Adapted from Edible Metamorphic Rock Activity

Last quarter we shared an activity to help explain igneous rocks in a fun and delicious way. In this issue we include another tasty recipe to help our future geologists understand the formation of metamorphic rocks.

Metamorphic rocks are rocks that have become changed by intense heat and/or pressure while forming. Both sedimentary and igneous rocks (that we learned about in the last two newsletters) can be changed into metamorphic rock. In certain conditions these rocks cool and crystallize showing bands of minerals. One way to think about metamorphism is to consider something that changes when it's heated and again when it's cooled…like chocolate!

This simple slow cooker fudge recipe is an easy way to show how metamorphic rocks form. We start with chocolate chips and pieces of chocolate representing the sedimentary rock layers. Adding in cranberries and walnuts (or similar) representing the fossils that were once a part of the sedimentary rock. Sometimes fossils can be found in metamorphic rocks but more often they are squished and unrecognizable; shown when we cut the fudge into cubes. The heat from the slow cooker and stirring represents the heat and pressure changes that occur to form metamorphic rocks. The takeaway is that the end product, the fudge, does not resemble the beginning chocolate pieces and once the material has changed, it cannot be changed back to its original form.

Edible Metamorphic Rocks

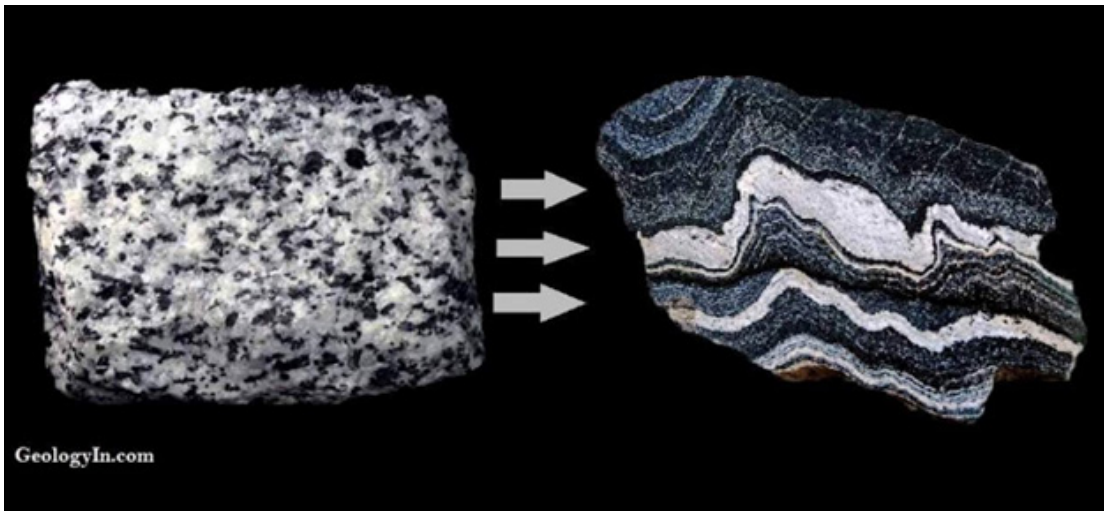
- 500 g of chocolate chips or chocolate pieces (you can choose your type of chocolate - milk, white, or dark)
- 1 tablespoon of unsalted butter
- 1 tablespoon of vanilla extract
- 1 can of sweetened condensed milk
- Cranberries, raisins, any dried fruit of your choosing
- Chose a type of nut: walnut, pecan, etc.

Instructions

1. Add the chocolate, butter, vanilla extract, and sweetened condensed milk to your slow cooker/crockpot.
2. Add in fruit and nuts of your choice.
3. Heat on low for two hours stirring every 15 minutes.
4. Line a square baking dish with parchment paper.
5. Pour melted fudge into the lined baking sheet.
6. Refrigerate until set.
7. Cut into cubes and store in a sealed container in the fridge.

> See page 10 for an Example of metamorphosis.

Example of metamorphosis:



On the right is a photo of an igneous rock. After temperature and pressure is applied under the earth's surface, the crystals line up in pale and dark layers to give the rock a banded texture. The resulting rock on the right is classified as metamorphic.

DEADLINE FOR OUR NEXT NEWSLETTER IS OCT. 10, 2021

For more information, contact our PCPG Newsletter Editor and Communications Committee Co-Chair - Tiffani Doerr, P.G., by eMail or telephone at 302-477-1305.

2021 PCPG ASSOCIATE AND CORPORATE MEMBER SPONSORSHIP RATE

(Rates are listed as amount per issue)

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FILE FORMATS ACCEPTED: .PDF, .TIF, .JPG, OR .PNG

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