



PCPG Newsletter

Communicating Key Information & Concerns
to Geologists and Environmental Professionals

Issue 4 / 2020

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MESSAGE FROM THE PRESIDENT

ADAPTING

A recent PCPG Blast item on core drilling in the [Chicxulub impact crater](#) revealed that a well-developed tiered community of burrowing organisms formed within 700,000 years after the catastrophic mass extinction event. The landscape and ecosystem surrounding Mt. St. Helens has recovered significantly in the 40 years since the cataclysmic eruption as documented in a series of NASA's [Mt. St. Helens Landsat Images](#). As geologists we understand how organisms and environments face many challenges throughout geologic time and know that life adapts in numerous ways to overcome difficulties.

2020 has certainly been a challenge. The year started off fine for most then suddenly became chaotic as many stayed home trying to work, teach school, cook, exercise and keep ourselves entertained. Time seemed to pass slowly as one day blurred into another. We adapted to daily zoom meetings and virtual happy hours; we slowed down and rediscovered simpler entertainment. Virtual communication has been around for a while and most of us used it sparingly for long distance meetings but we quickly learned how much we can do virtually with our coworkers and family living much closer.

PCPG has adapted, too, yet our mission to advance the practice of geology and allied sciences and the success of our members through Advocacy, Education and Networking hasn't changed. PCPG adapted to virtual learning with webinars substituting for in-person events. The schedule is posted on PCPG's [Courses & Events Page](#) with upcoming topics on seasonal high water tables, environmental borehole logging and a longer 4-hour course on the Hydrogeologist as an Expert Witness. Other topics being developed for next year include acid mine drainage, sinkholes and karst, Phase I/II due diligence, field techniques, data validation and a longer format offering on risk management. More info will be available soon for PCPG's revamped virtual PG Review course; a three-week series with evening webinars twice a week. PCPG has also been discussing the possibility of fireside chats or future webinars with several bureaus within PA DEP and working on how to change next year's annual meeting into a virtual offering. If anyone has a webinar topic to present or request, please contact Education chair, [Dan Billman, P.G.](#)

The legislature definitely slowed down during the pandemic but our Government Affairs chair, Tom Wagner, P.G., has not. Tom keeps up with pending legislation that

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UPCOMING PCPG EVENTS

November 17, 2020

[Determining Seasonal High Water Tables
Using Soil Morphology \(60 mins.\)](#)

Webinar: 1:00 - 2:00 PM EST

December 8, 2020

[Introduction to Geophysical Well Logging
& Imaging \(60 mins.\)](#)

Webinar: 1:00 - 2:00 PM EST

December 16, 2020

[Webinar: The Invisible Gorilla in the
Courtroom: Managing Hydrogeologic Risks
in the Wake of the SCOTUS Functional](#)

[Equivalent \(225 mins.\)](#)

Webinar: 8:00 AM - 12:00 PM EST

PCPG is developing webinar topics that we hope to announce in the near future. Notice will be posted in our biweekly eBlast and on our home page calendar when registration is open.

**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.**

PRESIDENT'S MESSAGE *Continued from Page 1*

affects our professions and regularly updates his Government Affairs spreadsheet posted in our [Member-Only](#) section of our website. We try to highlight comment period deadlines for important pending legislation through our bi-weekly blasts. PCPG will also continue to bring you Covid related news that affects our profession like the Licensing Board's announcement during lockdown concerning [Electronic Signatures and Seals](#) and our interview on [Business Recovery](#).

PCPG recently networked with college students during a virtual outreach talk with California University of PA and a virtual career fair with Lafayette College. Read more about the virtual fair and chatting with the students in this newsletter. Outreach talks on careers and interviewing tips for students are planned with Millersville and Shippensburg Universities. If anyone wants to schedule a college outreach talk please contact our Membership Services chair, [Vince Carbone, P.G.](#) We also invite you to follow us and network with other PCPG members on [LinkedIn](#).

PCPG introduced a quarterly photo contest to bring your geology moments into focus for the entire membership. The winning photos with descriptions are included in this newsletter. The winning photos have also been posted on the PCPG website with some additional biographical info on the geologic photographer. We hope that this provides a little networking opportunity for our members in these virtual times.

PCPG has recently produced a podcast on Ricketts Glen State Park. Another on Field Safety Awareness will be available soon. Future podcasts are planned for other geologic features in PA's state parks, interviews with some well-known geologists, along with relevant topics impacting our membership. If you would like to assist with our podcast projects contact board member [Russ Losco, P.G.](#)

Since so much school education is occurring in the home this year, board member [Emily Glick, P.G.](#), highlights an on-line resource to help teach students about geology so you can share your passion with your children or grandchildren. These lessons have age appropriate activities to explain the fascinating world of geology and may spark an interest in a geologic career. We would love to see these lessons in action and invite members to post pictures of their experiments on our [PCPG Facebook Page](#).

So just as nature adapts to changes, PCPG has adapted to virtual events and updated our online content. Many of us can't wait to turn the page on this year and the season of Covid but there's no turning back. PCPG will continue to educate, advocate and network virtually for our members and the geologic community. We hope you will continue to connect with us. [PCPG.org](#).

Very Truly Yours,



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

PCPG SUPPORTS LAFAYETTE COLLEGE VIRTUAL JOB FAIR

Vincent Carbone, P.G., C.P.G.

On October 7, 2020, Lafayette College conducted its first virtual job fair. Lafayette College, located in Easton, PA, has strong undergraduate programs in geology, environmental science and environmental engineering. Approximately 500 people attended the job fair and PCPG had their hands full encouraging and assisting geosciences majors in chat rooms like the one show below. At times we had two or three geosciences students on the line looking for information on career choice and the availability of jobs, and asking general questions about the direction they should take in their geology career choices. PCPG was also able to provide them with information through the virtual platform, including Geoscience job statistics and PCPG's own, "[What does a Professional Geologist \(PG\) Do](#)" job summary series. Graduate and near graduates who are seeking Geology or geoscience jobs were directed to our [Corporate Membership](#) web page to seek open positions.

Overall, the new virtual format does not replace one-on-one interactions with students, but still provides lively discussion and interaction with the next generation of geologists and Professional Geologists.

The screenshot shows a web browser window with a virtual job fair interface. The top navigation bar is red with the text "vFAIRS | CHAT" and a user profile for "Vincent Carbone". The main content area is divided into three sections:

- Direct Messages:** Lists contacts including Constantin Dubischar and Barb Dunst.
- Chatrooms:** Shows a list of chatrooms, with "PA Council of Professional Geologists" selected. It indicates 466 users in the room.
- Booth Visitors:** A section for tracking visitors, currently empty.

The central chat window displays a conversation with the "PA Council of Professional Geologists" chatroom. The messages are as follows:

- Vincent Carbone:** October 07, 6:53 pm
Kate a combination of Geotechnical and Environmental Geology can be very valuable
- Vincent Carbone:** October 07, 6:53 pm
Good evening Maura
- Barb Dunst:** October 07, 6:53 pm
I know firms that had interns in the field helping to collect water samples. Remote work as an intern was difficult and I don't know of many firms that hired.
- Barb Dunst:** October 07, 6:54 pm
Hello Maura, I see that you are a geology major. What type of geology are you most interested in?
- Vincent Carbone:** October 07, 6:54 pm
Oscar I would encourage you to look up some of the renewable energy considerations and resilience programs being adopted by several coastal cities.
- Vincent Carbone:** October 07, 6:55 pm
Many cities are doing up to thirty year plans to improve their coastal infrastructure
- [Redacted User]:** October 07, 6:55 pm
Good evening! I am currently taking hydrogeology and that is probably one of my favorite classes I have taken at Lafayette. I did an internship with an environmental consulting firm this past summer and I love the connections I see between the class and that experience.

At the bottom of the chat window is a text input field labeled "Enter Message" and a send button.

On the right side of the interface, there are two additional sections:

- Booth Reps Online:** Lists online representatives including Barb Dunst, Holly Akers (Gateway Employer Relations), and Vincent Carbone.
- Online Users:** A list of currently online users, represented by small profile icons.

THIRD QUARTER PCPG PHOTO CONTEST WINNERS ANNOUNCED

As you have probably heard, it's back. We're not talking about seasonal favorites such as the Pumpkin Spice Latte or the Gobblerito, but instead the PCPG photo contest!

The photo contest opened on September 4th and closed on October 9th. We were pleased to have received 22 photo entries from nine PCPG members. Thank you to all who submitted photos. For the inaugural contest, three winners were selected by the Photo Committee and are as follows: Mark Eschbacher for a photo taken by Susan K. Brown in 2016 of a reverse fault with drag folding that was exposed at a Hazleton Materials aggregate quarry, Chris Mulry for his photo of an anticline-syncline sequence exposed in a road cut along Route 322 which overlooks the Juniata River near the village of Macedonia, and finally, Andrew J. Zmoda for a photo of pisoids on a boulder from the Epler Formation that was excavated during a construction project near Dickinson, PA. Congratulations!

Winning photos along with descriptions are found throughout the newsletter. Each winner will receive a small piece of PCPG

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Pisoids in the Ordovician Epler Formation

Pisoids in a boulder of Epler Fm excavated from a construction project that Geo-Technology Associates, Inc. (GTA) is consulting on in Cumberland County, near Dickinson, PA. Note the concretionary texture on the left side, where the rock has been fractured.

Photographer: Andrew J. Zmoda, P.G., P.E., works with Geo-Technology Associates, Inc. (GTA). He earned BS at SUNY Cortland, MS at UNC Chapel Hill in 1987. He earned his first PG license in 1991 in Virginia, second PG in 1995 in Pennsylvania, then his PE license in 2006 (Maryland and later in PA). His favorite geologic activities are field mapping and subsurface interpretation of strata.



Reverse fault and drag folding in the Pennsylvanian Llewellyn

Reverse fault with drag folding exposed during the excavation of material at the H&K Group, Inc., Hazleton Materials aggregate quarry. The fault plane that cuts through the Pennsylvanian Llewellyn Formation is highlighted here by the inclusion of coal from the folded and overturned Buck Mountain coal seam located in the footwall approximately 100' below this elevation. This quarry is located one mile east of Eckley Miner's Village, the downdip direction of the fault plane is approximately 170°, and the photo coordinates are: 40.99607, -75.83986. Sadly, the gentleman at the top of the photo is drilling blast holes and the exposure shown here was gone within a week.

Photographers: Susan K. Brown, P.G., and Mark Eschbacher, P.G. Susan Brown earned her BS at Bloomsburg University, then worked 21 years in both geotechnical and quarry mining fields in Pennsylvania after earning her BS at Bloomsburg University. She loves the visual aesthetic and challenge of structural geology. Mark Eschbacher is a project geologist with H&K Group's Engineering & Environmental Services Division with 40 years of experience after earning his BS at University of Missouri – Columbia (and State Fair Community College – Sedalia, Missouri). He credits Professor Rheta Smith at State Fair Community College as one of his inspirations for becoming a geologist. (Isn't it great how we each can become inspirations for others simply by being interested and actively engaged?)

PHOTO CONTEST *Continued from Page 4*

swag. In addition, the winning photos will be posted to the [PCPG website](#), along with a brief bio of each winner. The winning photos were selected because they showcased some amazing geologic features that were discovered on the job or on the road here in Pennsylvania.

Moving ahead, PCPG will hold themed quarterly photo contests, and just one winner will be selected. The theme of the Fourth Quarter 2020 photo contest will be “Geologists on Vacation.” For those of you who already submitted some of your geology-related vacation photos to the previous contest, just send a quick email that you would like for the Photo Committee to keep your photos for consideration in the Fourth Quarter 2020 contest.

So, go ahead and please share your geology-related vacation photos, the contest is open now. We will take submissions through November 22nd. Email your submission to PCPG Board Member [Kurt Frieauf, PhD, P.G.](#), with the subject line: PCPG photo contest. In addition, please include a caption of where the picture was taken (and/or geographic coordinates) and a brief explanation of the geologic feature. 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).

PCPG Photo Committee: Kurt Frieauf, PhD, P.G., Emily Glick, P.G., Russell Losco, P.G., Jackie Reichl, P.G.



Anticline-syncline on Route 322

Anticline-syncline sequence in trace fossil-rich Lower Silurian sandstones exposed at a roadcut along Route 322 in Pennsylvania approximately 39 miles south of State College and approximately two miles northwest of Arch Rock Road. The exposure overlooks the Juniata River near the village of Macedonia.

Photographer: Chris Mulry, P.G., currently works with Groundwater & Environmental Services, Inc. He's been practicing geology for 36 years after completing his BS at University of Delaware (including field camp in the Black Hills and parts of Wyoming and Montana) and then his MS at University of Maine doing field mapping and Appalachian structural synthesis. He likes both structural geology and geomorphology and yearns to return to Beartooth Pass southwest of Red Lodge in Montana.

SITTING FOR THE ASBOG® EXAM IN 2021?

READ ON....

PCPG can help you get ready by attending the PG Review Course for the Practicing Geologist and ASBOG® Exam Candidate. We're planning to offer six, 2.5 hour virtual sessions twice a week, over a three-week period in February 2021 giving exam candidates plenty of time to prepare for the March exam. We're still working out the schedule with over 10 highly credentialed instructors. Please be patient as we embrace this challenge on behalf of our geologic community.

If you are already a P.G., the six virtual sessions offer a total of 18 PDHs for license renewal, or 150 minutes per 2.5 hour webinar.

The six virtual events are scheduled for 6:00 p.m.-8:30 p.m. on the following dates: Monday, February 1; Wednesday, February 3; Monday, February 8; Wednesday, February 10; Monday, February 15; and Wednesday, February 17. Additional details will be announced in our bi-weekly eBlasts, and will appear on our home page event calendar.

Grover Harry Emrich

April 9, 1929 - August 30, 2020

Many of you may have known Grover Emrich, PhD, PG, who peacefully passed away earlier this year. He studied and practiced geology longer than many of us have been on this Earth. He's served as the PA State Groundwater Geologist, helped begin a new section of the PA Department of Health that eventually became the DEP Water Quality Management division, was an integral part in developing the current PG licensing requirements, was a founding charter member of PCPG, our GEOPAC chair, and long-time PCPG Governmental Affairs chair. It's only befitting that his license plate said "ROC DOC".

We are grateful to board member Kurt Frieauf for having written a wonderful article last year chronicling the life of Grover and providing a window into the person he was and the contributions he made to the science in his lifetime. You can re-visit or learn for the first time what an amazing person he was in the PCPG newsletter article, *Grover Emrich – 90 Years of Adapting and Geologizing*, reprinted in this newsletter.

GROVER EMRICH – 90 YEARS OF ADAPTING AND GEOLOGIZING

By Kurt Frieauf, Ph.D., P.G.

Birth of a geologist

The year 1929 – the year of the great Wall Street Crash and beginning of the Great Depression – a time when millions of Americans learned first-hand the connection between the economy and our day-to-day lives.

In Europe, Mussolini's fascists took control of Italy, Germany's economy collapsed to pave the way for the rise of fascism there, and the French began work on the Maginot Line in preparation for potential war.

1929 was also the year that professional geologist Grover Emrich was born into this world of tremendous uncertainty.

Raised in a world of uncertainty

Grover grew up in small town in New Jersey with <4,000 people, but unlike many small towns, his was located near Columbia University. He notes, "there were always geniuses around (including several Nobel Prize winners)." His little hometown was relatively sheltered, but the world was continuing to experience major changes. By the time Grover started primary school, the unemployment rate had climbed from 3.14% to 24.75%. During Grover's elementary school years, America struggled through the Great Depression, then when he entered middle school, Germany invaded France and began bombing London. The uncertainty of Grover's world continued to grow.

Grover graduated from high school in 1947 – two years after World War II ended, just as the Cold War began heating up in earnest. The U.S. government formed the Central Intelligence Agency, the Voice of America began transmitting radio broadcasts into Eastern Europe and the Soviet Union, and the House Un-American Activities Committee began its investigations into communism in Hollywood. Looking ahead at college, Grover didn't know what to major in so he took an aptitude test which recommended either mining engineering or geology.

Grover's advice to college students:

- Take a business class
- Don't skimp on your public communications course – that's important.
- A master's degree will open doors
- "Have fun – enjoy what you're doing. Even when I retired at age 86, I looked forward to getting up most mornings. You'll find a lot of people who dread mornings – they live for the weekends."
- Keep your mind open about people – Creative people come in all shapes and sizes.
- The worst thing is to have a closed mind about **anything**.



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Young Grover Emrich

EMRICH *Continued from Page 6*

Becoming a geologist

The useful practicality of geology appealed to Grover, so he enrolled at Franklin and Marshal College, Lancaster, PA, in 1948. He perceived biology class as preparation for paleontology, his chemistry class as mineralogy, math a prelude to geostatistics, and physics the fundamental basis for applied geophysics. One might imagine his college graduation in 1952 to be a bellwether for smooth sailing into his career as a geologist, but life is neither linear nor full of certainty, so Grover's path did not settle down into a calm routine.

Upon graduation, Grover got married, and he and his wife had their first set of twins, delaying graduate school. Instead, he worked and saved, feeding his hunger to learn by subscribing to multiple geology publications. Long-term employment in New York required more than a bachelor's degree, so he moved his family to Florida to study sedimentary facies where he earned his master's degree.

Keen to become a petroleum geologist, Grover moved to Illinois to go to Northwestern University, but his quest for a PhD was delayed by birth of his third child. Instead, Grover got a job with the Illinois Geological Survey – his first hard-core geology job, starting in the stratigraphy department, then moving into hydrogeology. After several years working with the Survey, Grover entered the PhD program at the University of Illinois.

Finding his specialty

During his time with the Illinois Survey and University of Illinois (1956-1961), hydrogeology was an evolving science. Initially, they focused on water as a resource targeted for exploration, but finding and characterizing environmental contamination became an issue when events like the Haverford radium-222 contamination caused a cancer cluster, motivating concern at the Fermi lab near Chicago. People were panicking because contamination of groundwater was an invisible threat and we didn't know our exposure. Grover and his colleagues looked at the geology and dispersion pattern to find a relationship between the rock formations and groundwater age and flow path.

The radioactive waste led Grover to an interest in solid waste disposal because people were just dumping junk in holes wherever they found one. He worried that maybe solids could start releasing leachate into the groundwater.

In 1961, with his newly-minted PhD in hand, Grover traveled from the freezing Illinois winter to the warmth of Mobile Labs in Texas, interviewing to get his long-dreamt-of job in the petroleum industry, but the oil guys he'd talk to all said that he sounded like he liked groundwater more than oil. Sometimes it takes us each quite a while to learn what we really want rather than what we just thought we might want. Enlightened by this realization, Grover talked with his wife about moving to someplace with nice hills and trees.

Grover's advice to middle career geologists

- *Always look forward to tomorrow*
- *Embrace the challenge of boom/bust cycles and make sure work you do is valuable and appreciated by your clients*
- *Compliment people sincerely when they do a good job*



“Ask for a lot and you’ll get a little. Ask for just a little and you’ll get nothing.”
– Grover Emrich (learned at the Illinois Geological Survey)

Coming home to Pennsylvania

In 1963, they moved to Harrisburg to work for the state Health Department in the Sanitary Engineering division, designing a set of criteria for determining where it was safe to put solid waste ground in different settings. They had three types of settings to investigate: 1) carbonate bedrock near Penn State, 2) Chester County deep soils on metamorphic rocks near Drexel University, and 3) coal mines of the anthracite region. They constructed 6'x6'x8'deep lysimeters (8' is the height of a cell of solid waste), and filled them with trash. They monitored the temperature, water balance, and captured the leachate to determine if the waste cells might self-combust due to heat during decomposition (answer: it did not).

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EMRICH *Continued from Page 7*

Working for the Health Department, Grover found that engineers would submit forms for permits, claiming they knew geology, but they did not. This “unwisdom” motivated Grover to work with Dick Wright and Ron Landon to get the bill requiring licensing of professional geologists into consideration by the legislature. Whether it be through obstinance or perseverance, it took 21 years for that bill to pass.

The PCPG was originally about two dozen people trying to get the licensing bill passed, mostly hydrogeologists and environmental geologists. Grover served as board member for three terms, eventually earning the first Emrich Award.

In 1971, Grover started looking for an industry job instead of government work and landed with SMC-Martin doing groundwater work. Nine years later, Grover was president of the company. Finally, in 1988, Grover started Emrich Associates because a friend had observed that he seemed so much happier when working on his own.

Grover has let his six kids be the big determining factor in where he and his wife chose to live – choosing places based on the quality of the educational system after thoroughly interviewing/vetting each candidate. Our lives are more than our jobs and he tries to maintain a good work-life balance.

Why I wrote this

I met Grover in 2000 when touring the Cornwall iron deposit in Lebanon County, PA. He was only 70 years old back then and just as full of good geological insight and observation as he is today. I was brand new to Pennsylvania and knew no one. Grover very generously helped connect me over the following years with many local industries where my Kutztown University undergraduate students could do independent research projects on hydrogeology and structural geology problems, as well as get invaluable work experience through internships. The tremendous positive impact on the lives of those students is difficult to fathom - most of them have become professional geologists and all of them had life-changing experiences due to Grover's altruism. I started writing this piece because I believe his commitment to helping others in the geologic community is admirable, and in writing this piece, I learned that we all have good lessons to learn from his rich life experience. Thank you, Grover.



Grover Emrich 2019

Things Learned from Grover's Story

- *There will never be certainty in life – there will always be unplanned and unexpected events in life. These are not obstacles, rather they are the forces that help us discover what we value and love.*
- *Be open-minded to the probability that we may believe we want one thing, but actually may be happier with another.*
- *Connect with people to form lasting friendships and collaborations.*
- *Be resilient.*

KIDS' GEOLOGY EDUCATION

Emily Glick, P.G.

Did you know what a geologist was as a child? What are some of your earliest memories of learning about the Earth? Who took you fossil collecting for the first time, or simply took you for a hike in the woods? As a new board member in 2020, as a mother and someone who just really loves exploring outside, I'd like to share some geology resources to encourage the budding scientists in your lives.

I know that I am not alone when I say that my kids have been home more in the last 7 months than...well, probably ever. And it's not just my kids, the whole neighborhood gang is spending time here at some point on most days. If you are a grandparent, maybe you are helping your grandchildren with virtual school. Maybe you are video chatting frequently with young family members. Children are our future so let's encourage a passion for the world of geology.

Last spring the United States Geological Survey compiled a 12 week ["Learning from Home"](#) series with age-level appropriate activities for a geology related topic each week during the pandemic. The weekly topics covered are listed below.

- Week 1: Celebrate Spring
- Week 2: Change Over Time
- Week 3: Exploring the Solar System
- Week 4: Water Science
- Week 5: Fossils and Geologic Time
- Week 6: Geology and Ecology of National Parks
- Week 7: Amphibians and Ecosystems
- Week 8: Floods and Hurricanes
- Week 9: Plate Tectonics
- Week 10: Volcanoes and the 40th anniversary of Mt. St. Helens Eruption
- Week 11: Invasive Species
- Week 12: Rocks and Minerals



Trilobite 3D Paper Model.
(Credit: Annie Scott, USGS. Public domain.)

For example, in the Week 5 activity, Fossils and Geologic Time, younger kids can make 3-D models of prehistoric life from paper. The patterns are available for download (does your 4-year-old know what a trilobite is yet?).

For intermediate students, the concepts of relative geologic time and index fossils are introduced by encouraging kids to make a timeline of their own life and think about habits or activities that dominated a certain phase of their lives (hmm, virtual school and teleworking?). For high schoolers, the activity is focused on absolute geologic time and encouraging reflection on the age of the earth with some simple math. There is also a link for a pretty nifty Geologic Timescale Bookmark and Geologic Map of the USA.

We hope that you will select a few of these topics and activities to share with the children in your lives. Show the kids and remind yourself how cool geology and our Earth are. Please share your activities and experiments (photos and/or words) on [PCPG's Facebook](#) page or your own social media account and tag PCPG (and the USGS) on Facebook, Twitter, or LinkedIn. We can't wait to see and hear what your kids or curious grown-ups thought about the activities!

SMART Visualization Platform Prize Challenge

The U.S. Department of Energy's (DOE) Office of Fossil Energy (FE) will award up to \$1.5 million to winning innovators in a prize challenge to support FE's SMART (**S**cience-informed **M**achine Learning to **A**ccelerate **R**eal **T**ime Decisions in the Subsurface) initiative.

[Click here](#) to watch a short video about the SMART Visualization Platform Prize Challenge and learn how to register to take part in this unique software development contest.

[SMART](#) leverages the expertise of seven national laboratories, as well as industry partners, universities, unconventional field laboratories and carbon storage regional initiatives to realize breakthroughs in understanding the subsurface environment through machine learning. A thorough understanding of the subsurface is necessary to reduce risks and increase the efficiency of enhanced and unconventional oil and natural gas recovery, geothermal energy technologies, geological carbon storage and other operations.

Currently, approaches to analyze subsurface data are extremely rigorous, require expert training and are time-consuming and costly. New experiential visualization tools are sought to allow non-experts and experts alike to interact directly with subsurface data to enhance analysis, interpretation and communication necessary for decision-making in various subsurface applications. The tool to be developed should help users visually answer important subsurface questions about reservoir behavior, reservoir composition, injection patterns, uncertainty in measurements and other critical issues.

This challenge will take place in two phases, both of which will be managed by NETL.

- Competitors will register for Phase 1 and work over a four- to five-month period to design a prototype visualization system that meets defined challenges faced by subsurface researchers. Up to five prizes with a total value of up to \$600,000 will be awarded in the initial phase.
- Winners selected from Phase 1 will work with SMART scientists and engineers over a 10-month collaborative effort to fully develop their concepts in Phase 2. The winner of Phase 2 will receive the Grand Prize (worth up to \$900,000) and may be granted the opportunity to work on future software development projects for the SMART initiative.

Registration deadline to participate in the challenge is **11:59 p.m. EDT Friday, Jan 22, 2021**. To register for the competition, visit the [SMART Visualization Platform Challenge website](#).



NOMINATIONS BEING ACCEPTED FOR UPCOMING PCPG BOARD OF DIRECTORS ELECTION

PCPG is accepting nominations for candidates to serve on the PCPG board of directors to a three-year term ending December 31, 2023.

To be considered for the ballot you must be a PCPG member in good standing with an Individual/Academic, Government, or Corporate membership, and complete and return a [Board Candidate Interest Form](#) by 5:00 PM on December 3.

Questions? Email [Tiffani Doerr, P.G.](#), PCPG's President Elect, or contact anyone currently serving on the [PCPG board](#).

DEADLINE FOR OUR NEXT NEWSLETTER IS JANUARY 15, 2020

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.

2020 PCPG MEMBER SPONSORSHIP RATE

(Rates are listed as amount per issue)

Size	Commitment:	1x	4x
1/2 Page (8" x 5")		\$225	\$150
1/4 Page (3.875" x 5")		\$140	\$95
Business Card (H or V)		\$75	\$50

2020 PCPG NON-MEMBER SPONSORSHIP RATES

(Rates are listed as amount per issue)

Size	Commitment:	1x	4x
1/2 Page (8" x 5")		\$300	\$240
1/4 Page (3.875" x 5")		\$185	\$150
Business Card (H or V)		\$100	\$80

SPONSORS: Please remit payment to PCPG, 116 Forest Drive, Camp Hill, PA 17011

NEW PCPG CORPORATE MEMBER

Please join us in welcoming our newest

[PCPG Corporate Member:](#)

Land Recycling Solutions, LLC

Interested in becoming a PCPG Corporate Member? Visit our [About](#) 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.

PCPG's ASSOCIATE MEMBERS FOR 2020-2021



Elk Environmental
Contact: Jestyn Newswanger
Phone: (610) 372-4760



SUBURBAN
TESTING LABS

Suburban Testing Labs
Contact: John Weisman
Phone: (610) 207-8154



Please consider the environment before printing this newsletter.