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Can you identify this picture?  
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## Message from the President

### Behind the Scenes

Hello and I hope everyone is having an enjoyable summer! In between field work and family vacations, our dedicated Board of Directors has been busy. PCPG's mission statement is to "advance the practice of geology and allied sciences and the success of our members through **advocacy**, **education**, and **networking**." You are likely familiar with PCPG's efforts in the education and networking arenas, but there has also been a lot of advocacy going on behind the scenes that I'd like to share with you.



There is a great deal of legislative activity in Harrisburg these days that can directly affect our business and profession. Director and Government Affairs Committee Chair Don Wagner has been instrumental in keeping PCPG apprised of what is ongoing while also spearheading the compilation of PCPG's comments to draft legislation. In July, Directors Dick Wright, Don Wagner, Gary Kribbs, and I met with several key members of the PA Soil Scientists community to discuss House Bill Number 997, which is pending legislation for professional soil scientist registration. It was a productive meeting and revisions were made to the draft bill to ensure overlap in our practice areas would be incidental and not infringe on the work of licensed professional geologists or the practice of geology.

In April, Director Jim LaRegina provided oral testimony on behalf of PCPG to the House of Representatives Committee on Environmental Resources and Energy in Harrisburg in support of House Bill Number 343, which is pending legislation on water well construction standards. Pennsylvania has long needed private water well construction standards to be protective of human health and the environment, as well as the Commonwealth's valuable water resources. Pennsylvania is one of only two states (Alaska is the other) that do not have statewide regulations concerning private well location, construction, testing, and treatment, yet PA ranks #2 in the United States for population size serviced by private water supplies (Michigan ranks #1).

*continued on Page 5*

## Calculating a Site-Specific Standard under Act 2 for MTBE in Groundwater

-- Donald R. Wagner, P.G., PCPG Government Affairs Chairperson

The policy behind the Land Recycling and Environmental Remediation Standards Act ("Act 2") is clear – cleanups should be based on the *actual risk* to public health and the environment taking into account a site's current and future use and the degree to which a regulated substance can expose the public or the environment to risk, not on cleanup policies requiring every site to be returned to a pristine condition.<sup>1</sup> Statewide Health Standards ("SHS") under Act 2 are meant to achieve a uniform Statewide *health-based* level so that any *substantial present or probable future risk* to human health or the environment is eliminated.<sup>2</sup> Where the U.S. Environmental Protection Agency ("EPA") has established a maximum contaminant level ("MCL") or a health advisory level ("HAL") for drinking water, Act 2 requires use of the MCL or HAL as the groundwater medium specific concentration ("MSC") for used aquifers.<sup>3</sup> In the absence of an established MCL or HAL, Act 2 requires that the Pennsylvania Department of Environmental Protection ("DEP") calculate an MSC *using valid scientific methods* that are no more stringent than the default exposure factors established by the EPA based on a level of risk that represents an upper bound lifetime cancer target risk of between  $1 \times 10^{-4}$  and  $1 \times 10^{-6}$  for carcinogens and, for systemic toxicants, the concentration to which humans can be exposed by direct ingestion or inhalation on a daily basis without appreciable risk of deleterious effects (commonly expressed as a unit risk factor of 1.0).<sup>4</sup>

As of the time of this writing, the EPA has not established either an MCL or a HAL for MTBE in drinking water. Rather, the EPA has established a taste threshold of 40 µg/L and an odor threshold of 20 µg/L in what it terms a "Drinking Water Advisory Table".<sup>5</sup> Therefore, one would assume that DEP, in accordance with Act 2, would calculate the MSC for MTBE *using valid scientific methods that are no more stringent than the health-based criteria set forth in Section 303 of Act 2*. However, to date, rather than calculate a risk-based SHS MSC for MTBE, the DEP has set the residential used-aquifer SHS for MTBE at 20 µg/L, which is based on an aesthetic criteria (the odor threshold). This unique treatment of MTBE as compared to any other regulated substance appears to be in direct conflict with Act 2's legislative mandate to set health based criteria based on sound scientific principles.

Given the DEP's reluctance to calculate an MSC for MTBE in groundwater in accordance with Act 2, it seems to me that one option for a remediator is to calculate a Site-Specific Standard ("SSS") for MTBE consistent with the risk-based criteria set forth in the Act. To keep it simple, I'll assume that the remediator is interested in calculating a SSS for MTBE under residential use assumptions. By using residential use assumptions, theoretically, if one meets the calculated SSS, no activity and use limitations should be required to demonstrate or maintain attainment of the standard. Also, to keep things simple, I'll assume that MTBE is the only compound in groundwater that exceeds the SHS at the point of compliance and that there is no associated vapor intrusion risk.

To calculate a SSS for MTBE, one uses the formulae in Sections 306 and 307 of 25 Pa. Code Chapter 250. Since the California Environmental Protection Agency considers MTBE to be a potential or probable human carcinogen<sup>6</sup>, the remediator is required to calculate a number using the formulae under 25 Pa. Code Chapter 250, Sections 306(a) and 306(b)(1) for ingestion and under 307(f) and 307(g)(1) for inhalation and then use the limiting number of those four results.

To perform the required calculations, one refers to the toxicology data published by the DEP in Table 5(A) of Appendix A of 25 Pa Code Chapter 250. Note, the current Table 5(A) does not have an oral reference dose value (RfDo) for MTBE. Because there is no RfDo value for MTBE in the current Table 5(A) one can't calculate a number for MTBE under Section 306(a). Therefore, you only need to calculate it under the other formulae

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and then select the lowest of the three values. Intuitively, this makes sense, since the carcinogen equation in Section 306(b)(1) should result in a lower number than the systemic toxicant calculation in Section 306(a).

Using the above methodology, the calculated values are as follows: (a) for the inhalation route, the Section 307(f) (systemic toxicants) value is 6,257 µg/L and the Section 307(g)(1) (carcinogens, non-mutagenic) value is 187 µg/L; (b) for the ingestion route, the Section 306(a) (systemic toxicants) value is not calculated because there is no published RfDo value in Table 5(A) and the Section 306(b)(1) (carcinogens, non-mutagenic) value is 369 µg/L. Comparing the three values, 187 µg/L is the lowest and is therefore theoretically at least, a SSS value for groundwater that should be protective of human health and safety within the risk criteria established under Act 2 and therefore, shouldn't require any activity and use limitations if attainment of the SSS value is demonstrated.

For reference, PCPG members can find a link to download an example spreadsheet with the calculations for determining a SSS value from PCPG's web site via the following link: [PCPG Government Affairs Page](#)

As for demonstrating attainment with a SSS for MTBE, keep in mind that you can't use the ad hoc rule of 75%/10x (on-site) on eight quarters of data. Subchapter G of Chapter 250 (Section 250.701 *et seq.*) provides the Act 2 attainment requirements; Section 704 deals with general attainment requirements for groundwater and Section 704 provides requirements for statistical tests.

The above discussion is intended for illustrative purposes only as a potential option for consideration by remediators with respect to calculating a SSS for MTBE in groundwater; is not intended or provided as legal advice and remediators should consult with qualified risk assessors when attempting to calculate numerical Site Specific Standards for any regulated substances under Act 2. All other requirements of Act 2 need to be met and if there are multiple regulated substances for which you are calculating an SSS, the risk assessment will need to consider cumulative risk.

<sup>1</sup> 35 P.S. § 6026.102(6)

<sup>4</sup> 35 P.S. § 6026.303(c)

<sup>2</sup> 35 P.S. § 6026.301

<sup>5</sup> <http://water.epa.gov/action/advisories/drinking/upload/dwstandards2012.pdf>

<sup>3</sup> 35 P.S. § 6026.303(b)(3)

<sup>6</sup> Which I understand is qualified by, "at very high doses."



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## Associate Member Spotlight: Eichelbergers, Inc.

Recognized throughout mid-state Pennsylvania as a household name in water well drilling and water systems, Eichelbergers, Inc. has provided residential and commercial customers with ground water services for 67 years.



Eichelbergers Well Drilling was founded by William P. Eichelberger in 1946. Cable tool drilling rigs were the backbone of the well drilling industry in these early days. His son Charles H. Eichelberger Sr. further expanded the business with the addition of an air rotary drilling rig in 1960. This milestone investment represented the presence of the first air rotary drilling rig in south central Pennsylvania. Charles H. Eichelberger Jr. and Robert D. Eichelberger, grandsons of the founder, continued the growth and expansion of services to create a successful enterprise that is still thriving today.

As the environmental market began to develop during the 1980's the company expanded into remediation construction services. The company name was changed to Eichelbergers, Inc. to reflect this broader range of non-drilling services that may be overlooked by potential clients seeing the words "well drilling" in the company's original name.

In 1994 Eichelbergers acquired John Thran Well Drilling in Dillsburg, PA. This contiguous market added to the local residential service area. In 2001 the company acquired Michael Kohler Well Drilling, and 2 years later also purchased James P. Kohler Well Drilling, both located near York, PA. The addition of these 2 companies expanded the residential service area in southern Pennsylvania and into northern Maryland. During this decade the geothermal market continued to evolve and grow. Many residential well drilling projects began to include several boreholes for the installation of a geothermal system. The extensive assets of the company allowed it to expand into the commercial geothermal market, where multiple drilling rigs could be provided for large scale projects such as schools and office buildings.

In 2003 the company was purchased by the incumbent President Jerry A. Rice. As the company entered into the 21<sup>st</sup> century, Mr. Rice, who serves as President and CEO continued to build the organization into what is has become today - the foremost ground water contracting firm in mid-state Pennsylvania. Eichelbergers is based on the principles of honesty, integrity and excellence, and has become a corporation with the overarching vision to develop and protect the earth's water supply.

In 2007 the company expanded westward with the acquisition of Somerset Well Drilling in Friedens, PA. This satellite office provided a cost effective means to service western Pennsylvania, West Virginia and Ohio. In March 2008, Eichelbergers recognized the potential development of the Marcellus shale play and immediately became involved in the new market. The company was able to utilize the skills and experience from several of its departments to provide services ranging from water supply wells to monitoring wells and conductor pipe installations. This market expanded throughout Pennsylvania and West Virginia.

Today, Eichelbergers, Inc. remains a family-owned private company dedicated to providing quality products and services to its customers and committed to both its employees and the community. The management team is guided by the principals of integrity, teamwork, accountability and quality. The company that begin with a single cable tool drilling rig now employees over 115 employees who are supported by a full complement of air rotary drilling rigs, hollow stem auger rigs, Geoprobe® units, and still maintains 2 cable tool rigs for specialty work.

continued on next page





*Photograph Above: Eichelbergers Drill Rigs hard at work on the Hotel Hershey job site.*

The name Eichelbergers continues to be associated with a variety of drilling and water systems projects with service areas expanding throughout Pennsylvania, Maryland, New Jersey, District of Columbia, New York, Delaware, Virginia, West Virginia, Ohio, and occasionally beyond. Hershey Entertainment & Resort Co. Inc., Cadbury Beverages and Harrisburg International Airport are a few of the commercial clients who have called on Eichelbergers to assist with their individual needs.

To learn more about Eichelbergers, Inc. please visit:

[www.eichelbergers.com](http://www.eichelbergers.com)

### **PCPG Now Accepting Scholarship Applications**

PCPG is again offering scholarships to students pursuing a degree in geology or earth resources. This year's topic is: *Where do you think the most job opportunities for geologists and earth resource professionals will be found when you graduate: the Public Sector or the Private Sector and why?*

You may be asking yourself, "How am I supposed to predict what the job market will be like in the future?" That's a fair question, so consider this. Being able to see beyond the technical or scientific aspects of your first job is important in helping determine the direction of your career. Equally important is understanding the types of employment opportunities that are available. For example although they may all rely on the same science you studied in college, the mission of private sector and public sector organizations can and do vary. Your first employer will likely be hiring you for a specific position, but they will also be looking at your potential to grow to the next level within their organization. So take the next step toward your career development and submit your essay by the December 6, 2013 deadline.

To learn more about how to submit your essay, view: <http://pcpg.org/Admin/default.aspx>

PRESIDENT'S MESSAGE -- continued from Page 1

The transcript of PCPG's testimony can be found by following this hyperlink -- [transcript link](#)

PCPG is also involved in draft proposed regulations being considered by the State Registration Board for Professional Engineers, Land Surveyors and Geologists on professional seals to include electronic seals and signatures as an option in lieu of embossed seals and hand-written signatures. Please stay tuned for more to come on this.

I welcome your feedback and comments on these subjects or other topics. Is there an area or issue affecting our profession in need of some advocacy? Please feel free to send me an email ([jen o'reilly email](#)).

Very Truly Yours,

  
Jennifer L. O'Reilly, P.G.  
PCPG President



## Panning for Gold...in Pennsylvania???

--Kelly Lee Kinkaid, P.G., PCPG Communications Chairperson

While working as a geologic intern at the Pennsylvania Geological Survey during the summer of 1984, I had the pleasure of spending a day in the field with (now retired) geologists Sam Berkheiser and Bob Smith. The main goal of that excursion was to investigate high silica quartz veins in Cumberland County (read about it in *Pennsylvania Geology*, V. 16, No. 1, p. 2-4). However, we also stopped by a small stream and an overgrown, dilapidated mine entrance to look for malachite and azurite in/near the stream. The location was the Hunterstown Mine, in Adams County (Smith and Hoff, 1985). Here, Bob told me placer gold had also been found in this stream and could also be found in other parts of Pennsylvania. Not enough to be commercially viable, but enough to keep hobby enthusiasts interested.



I had forgotten about this conversation until I was trying to plan an interesting excursion to take my niece and nephew on this summer. I started doing some internet research to try to locate the stream that we had visited back in the summer of 1984. While I haven't yet ventured out to find this stream with my niece and nephew, I did find some interesting information about gold in Pennsylvania that I thought I would share.

The earliest known authenticated discoveries of gold in our Commonwealth date from the mid- to late 1800s, and fall into three general categories: occurrences related to diabase; granites; or placer deposits (Corbin, 1923). Small quantities of gold associated with diabase intrusions were reported in New Britain, Bucks County (Ibid). There are reports of gold associated with iron ores, including deposits near Rittenhouse Gap, Longswamp Township, Berks County (Ibid). The former Cornwall iron mine in Lebanon County is known to have produced approximately 67,000 ounces of gold during the 1908-1973 period (Smith et al., 1988). Proceedings of the American Philosophical Society from the 1850s noted that gold was reportedly found in sand and gravel from the Delaware River at Bridesburg (about five miles above Philadelphia) (Corbin, 1923). There is even a report of gold obtained long ago from a clay deposit excavated from beneath 11<sup>th</sup> and Market Streets in Philadelphia (Lapham, 1972).

No commercial occurrences of placer gold have ever been reported in Pennsylvania.

Some internet research turns up a few more reports of potentially golden Pennsylvania locales:

- PAGS research data from reconnaissance sampling of early Mesozoic Newark and Gettysburg basins copper occurrences in Pennsylvania suggested a possible association of occurrences containing moderate amounts of gold with multiple diabase intrusions, and that the northeastern Adams County area is a "somewhat favorable" locale for gold exploration (Smith et al., 1988).
- York County is said to contain a number of areas where gold can be found, including streams in the borough of Delta (southeastern York County), abandoned slate quarries, the Pigeon Hills (western York County), highland areas in central York County, and streams draining metabasaltic rocks in Spring Valley County Park, 15 miles south of the city of York. It has been hypothesized that the gold originates as finely disseminated particles throughout quartz associated with those basalts (Jones, 1997). Placer gold is supposedly associated with streams and rivers draining diabase ridges in York County;
- Peters Creek, located east of Quarryville in Lancaster County (Jones, 1997);

*continued on page 10*



## UPCOMING PCPG EVENTS

September 11, 2013

**SOLD OUT**  
Act 2 Toolkit:  
Technical Writing  
State College, PA

September 17, 2013

**Structural & Hydro-  
Structural Geology**  
Monroeville, PA

October 23, 2011

**PCPG Luncheon/  
PM Education Sessions**  
Coatesville, PA  
(Topics to be announced)

November 6, 2013

**Groundwater Sampling**  
Eastern Pennsylvania

January 23, 2014

**PCPG Annual Meeting &  
25<sup>th</sup> Anniversary  
Celebration**  
Harrisburg, PA

## OTHER EVENTS

Sept 26 – 28, 2013

**SOLD OUT**  
Field Conference of  
Pennsylvania Geologists  
The Mittenose Valley and  
Route 15 Corridor  
Williamsport, PA  
[www.fcopg.org](http://www.fcopg.org)

Don't forget to check the  
"Courses & Events" link on  
PCPG's [home page](#)  
frequently for up to date  
information on upcoming  
educational opportunities.

## PCPG Education Committee Update

-- Sean M. Chelius, P.G. (PCPG Education Committee Chairperson)

The PCPG Education Committee is rapidly approaching the end of 2013 having provided a schedule of events including courses that have grown to become a popular part of our repertoire along with some new courses geared towards the ever-expanding facets of our profession. As we move into the next license renewal cycle starting October 1, 2013, we plan to continue expanding our variety of technical seminars and new topics to the schedule for next year. Watch future newsletters, e-mail updates and our website for more details as we work towards our list of topics for the 2014 education schedule.

Looking forward to the end of our third quarter and end of the 2011-13 licensing period, we are repeating our Act 2 Toolkit: Technical Writing course on September 11<sup>th</sup> in State College and offering our very popular Structural & Hydro-Structural Geology course on September 17<sup>th</sup> in Monroeville. But if you are looking for PDHs, the Technical Writing course is sold out and the Structural course is near capacity, so register soon if you are planning to attend.

We'll be also be offering afternoon education sessions following our 4<sup>th</sup> quarter luncheon at the Chester County Emergency Preparedness Building in Coatesville on October 23<sup>rd</sup>. In addition, we are planning a repeat of our Groundwater Sampling Course on November 6<sup>th</sup> at an eastern-Pennsylvania location to be announced.

Don't forget to mark your calendar: On Tuesday, January 21, 2014, PCPG will hold its Annual Membership Meeting and 25<sup>th</sup> Anniversary Celebration at Holiday Inn East, Harrisburg.

We hope to see you at one of our upcoming seminars. If you have any questions or suggestions for courses or events, please feel free to email me ([Sean Chelius E-mail](#)). For more information or to register for upcoming courses, please link on the "Courses and Events" tab of our [home page](#).

### GUESS THE FEATURE

Were you able to guess the feature on Page 1? It's Resica Falls, located at the intersection of PA Route 402 and Bushkill in Monroe County. Featured on the cover of the October 1983 edition of *Pennsylvania Geology* (Vol. 14/5), "the steam cascades 40 feet over a succession of green and red sandstones and shales of the Devonian age Catskill Formation." The photograph was published courtesy of William Bolles (Penna. Dept of Education).

This edition of *Pennsylvania Geology* featured an article by Alan R. Geyer and Donna M. Snyder that provides a list of waterfalls in Pennsylvania.

To view this article, link [HERE](#)



## SPRING SCIENCE FAIR REPORTS

### **Delaware Valley Science Fair** (Grover Emrich, Ph.D, P.G., Emrich & Associates, Inc.)

The Delaware Valley Science Fair (DVSF) was held this past April in Philadelphia with nearly 1,100 exhibitors, and the earth/space/environmental sciences field was represented with more than 125 entries. This was the 65<sup>rd</sup> year for the DVSF competition, which was designed to be a vehicle for stimulating interest in science, technology, engineering and mathematics among students in middle and high schools in the tri-state area. To be eligible to compete in the DVSF, students must first compete in one of many regional fairs in southeastern Pennsylvania. Selected students from the regional fairs then go on and compete in the DVSF.

The judging for PCPG was done by Gary Kribbs, P.G. and Grover Emrich, Ph.D., P.G. The overall quality of the exhibits was the best we had ever judged and for a change, there were numerous exhibits from high school students. We reviewed all of the exhibits and considered 10 for the PCPG award. After interviewing these students, we selected a 6<sup>th</sup> grader, Jacqueline Hritzo of the Seton School for her project titled *The Effects of Weathering on the Durability of Different Species of Rocks and Minerals*.

We had never selected a 6<sup>th</sup> grader before, but after the interview it was obvious that this was exceptional student. With a title like that, it sounded that an adult was deeply involved. The interview showed that she had done most of the work. She had correctly identified almost 200 rock and mineral samples. Four rock samples of each type were tested as unaltered, chipped with a chisel, placed in water, and chipped and placed in water. Chipping simulated mechanical weathering and the water simulated rain. The samples were put through 15 cycles of 3 hours in a -20 degree C freezer, 3 hours at room temperature, and 3 hours at 93 degrees C in an oven. She had 48 samples as controls. She determined the metamorphic rocks would be best for building materials because, "they are rocks changed.....by intense heat or pressure within the earth".

Wow, what a 6<sup>th</sup> grader! She is planning for next year's project, and we look forward to seeing what she will have. She is not only an excellent scientist already but is well spoken.

You can view the full list of winners at: <http://www.drexel.edu/dvsf/winners.htm>

### **North Museum Science & Engineering Fair** (Kelly Lee Kinkaid, P.G., PCPG Communications Chairperson)

The 60<sup>th</sup> North Museum Science & Engineering Fair was held this past March on the campus of Franklin and Marshall College in Lancaster, Pennsylvania. Twenty-one public and private schools in Lancaster County were represented by 371 middle school and high school students, who displayed finished projects in 23 categories. In addition to the category awards, 46 organizations sent representatives to judge and present auxiliary awards. Elizabeth Cushman from member company Liberty Environmental, Inc. represented PCPG and judged the auxiliary award sponsored by PCPG.

Although there were a limited number of geology-related submissions at the high school level, geology was well represented at the middle school level. The middle school entries covered a wide range of geological and environmental issues. The PCPG award was split, with one high school division winner and one middle school division winner, and each recipient receiving \$200. The high school recipient of the PCPG Auxiliary award was Erik Hornberger for his entry entitled, *The Amino Acid Content of Micrometeorites*. This entry detailed his two-fold investigation, to determine if micrometeorites contain amino acids and to determine if micrometeorites could be a potential source for life on Earth.

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Erik was a 10<sup>th</sup> grader at Warwick High School in Lititz at the time of this competition.

At the middle school level, Lilly Delle-Levine was select to receive the PCPG auxiliary award for her entry entitled, "Measuring Indoor Air Quality: Do Enclosed Skating Rinks Have Elevated Levels of CO and NO<sub>2</sub>." This project evaluated whether ice resurfacing equipment has a negative impact on air quality in seven indoor ice rinks in Pennsylvania. A total of 194 air samples that measured Carbon Monoxide and Nitrogen Dioxide levels were taken before ice resurfacing, immediately after ice resurfacing, and 20 minutes after



*Photograph Above: PCPG Board Member Kelly Lee Kinkaid, P.G., presents the PCPG North Museum Science & Engineering Fair Auxiliary award to Lilly Delle-Levine.*

ice resurfacing. Air samples demonstrated that levels increase greatly immediately after ice resurfacing and that propane ice re-surfacers produced greater emissions than battery operated equipment. Lilly was an 8<sup>th</sup> grader at Lancaster Country Day School at the time of this competition.

Although this entry related more to environmental studies than geology, it showed a tremendous amount of critical thinking. Lilly also showed herself to be very poised and well-spoken in her interview. Her efforts did not go unnoticed by others, as she was selected as the Junior Reserve Champion and was also selected to be one of 15 Pennsylvania entries (from a pool of over 300) to compete in the national Broadcom Masters science and engineering competition for middle-schoolers.

To learn more about the North Museum Science & Engineering fair, check out: <http://www.northmuseum.org/ScienceFair>

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- Berks County, where gold has been reported associated with sulfides from South Mountain near Reading, and also in chalcopyrite from Grace Mine, Morgantown (Lapham, 1972). Actual assays for gold at the Grace Mine are found in USGS Bulletin 1776;
- Sulfides at the Ecton and Perkiomen mines; river gravels at Hendricks Station and Franconia Twp., quartz and pyrite in Douglas Twp.; copper sulfide veinlets in diabase at Congo NE and Congo NW; and from the Yoder farm; all in Montgomery County (Lapham, 1972); and
- The lead-zinc mines near Phoenixville, Chester County (Ibid).

I found a number of internet mentions of placer gold being generally associated with glacial deposits of northern Pennsylvania, but no documented discoveries or other specifics.

Bear in mind, most of these gold occurrences were reported at least 50 to 100+ years ago, have not necessarily been authenticated, and there is subsequent urbanization and private land ownership to consider. However, there are a number of websites on the internet that provide information on how and where to find gold in Pennsylvania. So, it would appear that gold prospecting in Pennsylvania can at least be an enjoyable hobby, if not an economically viable business proposition – don't quit your day job!

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[With special thanks to Valerie Holiday, P.G. for her assistance in writing this article and to Robert C. Smith for his review of this article in draft.]



# News of the Pennsylvania Bureau of Topographic and Geologic Survey



-- George Love, P.G. (Pennsylvania State Geologist)

**The Bureau of Topographic and Geologic Survey** (aka BTGS or PA Geologic Survey) continues its activities to serve the citizens of Pennsylvania by collecting, preserving, and disseminating impartial information on the Commonwealth's geology, geologic resources, and topography in order to contribute to the understanding, wise use, and conservation of its land and included resources.

Our recent activities include:

- Geothermal Database – This data is available at <http://geothermaldata.org/>, but broken links and “page not found” errors are common. Once the website is up and running efficiently, data from all 50 states will be available, and will include more than just “geothermal” themed topics. The BTGS work on this project continues. The current goal is to obtain data from a 9,000-foot deep well drilled in southcentral Pennsylvania. The project’s funding expires in Jan 2014..
- PAMAP Data – While the program is no longer collecting new data, DCNR has renewed its contract with PSU to provide support to users and resolve issues with the voluminous LIDAR data files, and archive the data. All of the images collected and all of the processed LIDAR data are available through the PASDA website at: [www.pasda.psu.edu](http://www.pasda.psu.edu). An index to the data and download tool is available on the DCNR website at: <http://www.pamap.dcnr.state.pa.us/pamap/>
- Geologic Mapping – Under the STATEMAP cooperative geologic mapping grant from the USGS, BTGS is completing bedrock geologic mapping in the Laporte and Mingoville quadrangles, and surficial mapping in the East Troy and Ulster quadrangles. In addition, BTGS recently received notification of the 2013/2014 grant (just under \$130,000) to map the Trout Run Quadrangle, Lycoming County and the Fannettsberg Quadrangle, Franklin County.
- On-line Database updates – BTGS and DCNR’s Bureau of Information Technology are working together on updates to Pennsylvania Ground Water Information System (PAGWIS) and the Pennsylvania Internet Record Imaging System (PAIRIS). These systems provide data on both groundwater wells in the Commonwealth and the activities of the hydrocarbon industry in Pennsylvania, and are heavily used by the public, academia, industry and other government agencies, both state and federal.
- Sullivan County Water Resources – This water resources project has been completed and is under review. Then anticipated publication date for this report is late September 2013.
- *Pennsylvania Geology* Publication – You may not have noticed, but back-issues of *Pennsylvania Geology* are now available on the BTGS website, dating back to 1969. *Pennsylvania Geology* is a free on-line magazine published by the BTGS. It includes articles on the geology of Pennsylvania, earth science education, and topographic mapping, along with announcements of new publications, conferences, and other geologic and topographic items of interest. In August 1969, the magazine began as a two-color, printed, bimonthly publication. In 1992, it became a quarterly publication, and with the Spring 2009 issue, it became a full-color, on-line publication. All of the issues can be accessed at:

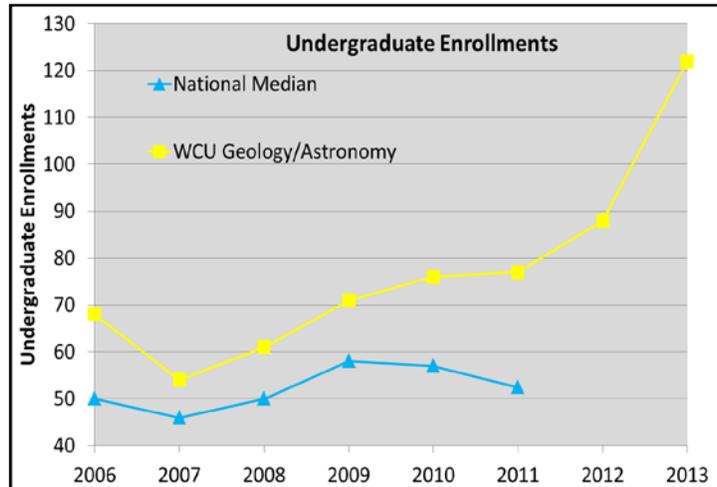
<http://www.dcnr.state.pa.us/topogeo/publications/pageonline/index.htm>



## Colleges & Universities Spotlight: West Chester University

--Dr. LeeAnn Srogi, WCU, Geology and Astronomy Department Chair

The West Chester University (WCU) Department of Geology and Astronomy is a friendly and exciting place for students and faculty. The Department has twelve full-time tenured and tenure-track faculty members, one regular part-time faculty member, and three long-term temporary faculty members who are skilled teachers and specialists in geology, astronomy, meteorology, science education, and interdisciplinary biogeochemistry. Our flexible curriculum provides a solid foundation whether students take a B.S., B.S.Ed., or M.A. degree.



Since 1996, our enrollments have exceeded the national median in geoscience departments (see graph at left, median data courtesy of American Geological Institute). And career opportunities in geoscience are great, with U.S. geoscience jobs predicted to increase by more than 20% through 2020 with competitive salaries (American Geological Institute and Bureau of Labor Statistics data). Within the Greater Philadelphia Area employment and advancement opportunities are excellent due to the hundreds of environmental firms, government agencies, and school districts.

Each faculty member is an active scholar who involves students in basic, applied, and/or education research. Department faculty have brought in \$600,000 in research grants over five years. Example projects include:

- Dr. Marc Gagné has a \$116,000 grant to analyze X-ray emissions from massive stars to understand stellar evolution.
- Dr. Daria Nikitina is part of an international collaboration investigating global salt marsh deposits for evidence of superstorms and sea-level changes in the geologic record.
- Dr. Howell Bosbyshell is unraveling the tectonic and metamorphic development of the ancient Appalachian mountains.
- Dr. Cynthia Hall is analyzing Pb and other heavy metals in Philadelphia soils and engaging community groups to build public understanding of geoscience and healthy soils.
- Dr. Martin Helmke focuses on characterizing urban soils and their hydrologic properties.
- Dr. Karen Vanlandingham has established the first Project Astro program in the region, linking area teachers with professional astronomers to improve K-12 science education.
- Dr. Joby Hilliker specializes in weather forecasting and oversees the weather station in Merion Science Center.
- Dr. Richard Busch is editor of the most widely-used lab manual for introductory geology courses in the U.S., published by Pearson Prentice-Hall.

Our geoscience degree programs were developed in consultation with the PCPG and based on competencies from the National Science Teachers Association and ASBOG. All undergraduate majors take a common core emphasizing earth materials and history, geologic structures, geomorphology and

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geochemistry. Our B.S. Geoscience coursework meets the education requirements of the Registered Professional Geologist license and prepares students for entry-level positions in the environmental and earth resources industries. About 10-20% of our graduates pursue advanced degrees at institutions such as Temple, the University of Alberta (Canada), New Mexico Tech, and the Universities of Arizona, Montana, and West Virginia. The B.S. Ed. in Earth and Space Science is a professional degree program leading to certification in secondary earth and space science. The certification program meets all guidelines established by the National Council for Accreditation of Teacher Education and the Pennsylvania Department of Education.

Our 36-credit Master's degree in geoscience is designed for the professional development of geologists and pre-college teachers. Students with or without an undergraduate degree in geology are eligible for this non-thesis Master's program, which currently includes 41 students. Graduate requirements are 12 courses, the Department seminar, and a final research or teaching project. Evening and weekend courses help accommodate the schedules of working professionals. Graduate students conduct research, publish in peer-reviewed journals, present at meetings, develop unit plans, and write professional reports. Many of our graduates seek licensure as Professional Geologists, or obtain Pennsylvania teaching certification.

What makes our program successful and special?

- Upper-level courses emphasize problem-based learning in small cooperative teams. Field work, laboratory work, computer modeling, and hands-on use of scientific equipment (such as specialized light and electron microscopes, x-ray fluorescence spectrometers, and x-ray diffractometers) give our students cutting-edge training in courses. Several courses engage students in applied research and service-learning projects.



*Photograph Above: Student using scanning electron microscope.*



*Photograph Above: Dr. Daria Nikitina (right) with students in the Russian Arctic, Summer 2012.*

- A unique summer field course in the Russian Arctic is taught by Dr. Daria Nikitina in partnership with Moscow State University (Figure 4, summer 2012). Other field courses visit the geology of U.S. National Parks, or the Amazon Center for Environmental Education and Research in Peru.
- Each fall the Department Seminar brings almost everyone together to hear outside speakers and to learn from our successful alumni who facilitate careers workshops.
- Students are strongly encouraged to conduct research projects with faculty for course credit and/or as paid research assistants. The Department supports students who present research at professional conferences, and our majors have won national awards for best student posters.

- Scholarships and graduate stipends are available each semester. There is an active Earth-Space Science Club and a chapter of the Sigma Gamma Epsilon national honor society.

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## CONGRATULATIONS TO OUR NEW P.G.'S AND G.I.T.'S!

PCPG would like to extend congratulations to the following geologists that were granted their professional geologist license between May 4, 2012 and August 7, 2013.

|                             |                             |                            |
|-----------------------------|-----------------------------|----------------------------|
| Stefan Bagnato              | Heather Lacey Hallett       | Nathan Scott Ober          |
| Daniel Kwasi Bansah         | Kaleb Kyler Hammond         | Connor Hughes O'loughlin   |
| Peggy Stonier Bissett       | Michael Albert Haney        | Angela Marion Paolucci     |
| Anthony J. Bonasera         | Kenneth M Hayes             | John Michael Penzone       |
| Matthew Wilson Botzler      | Adam Russell Haydt          | Erik Lars Person           |
| Jason Russell Bukeavich     | Martin F. Helmke            | Paul G. Probasco           |
| Rachel Ann Burkart          | Todd M. Higby               | James Keith Prohonic       |
| Ryan Joseph Carr            | Elise Juers                 | Brian Anthony Rafferty     |
| Eric Hafen Chase            | Tovah M. Karl               | Eric Michael Rooney        |
| Thakur Chaturgan            | Jason Andrew Keener         | Alexander Samuel Ross      |
| William Vincent Craft       | Kevin Francis Kelly         | Mark Alan Schaeffer        |
| Nicholas C. Cramer          | Amanda Lee Kohn             | Katherine Walden Schmid    |
| Patrick Robin Cummings      | Steven Michael Ladavat, Jr. | James W. Schuetz           |
| Nathan Joseph Crowther      | Michael Brian Lambert       | Ryan Scott Sheaffer        |
| Jenny Kell DeBoer           | William R. Laton            | Ralph Thomas Simon         |
| Steven Paul DeBenedetto     | Erin Marie Letrick          | William Daniel Snyder      |
| Daniel Jerali Drommerhausen | Juan Gabriel Luna           | John Lee Springer II       |
| Timothy Jon Emerick, Jr.    | Ronald Thomal Malec         | P. Terrance Stanley        |
| Richard Carl Firely, Jr.    | Shawn Cameron Malin         | Eric Daniel Stephens       |
| Micah Jamin Forbes          | Michael Lewis Maloy         | Bryan Joseph Teschke       |
| Robert Courtney Garcia II   | Todd L. Marsh               | Frederick John Tenbus      |
| Lori Ann Girvan             | Bryce Jude McKee            | Brandon Michael Trate      |
| Erik M. Goldman             | Charles Meyn                | Cristine Marie Vinciguerra |
| Jennifer Beth Good          | Joseph Bradley Mikula       | Jesse Joshua Vollick       |
| Joshua Smith Gowan          | Paul J. Miller              | Zachary David Weaver       |
| Eric Andrew Hackenberg      | Charles Bruce Minturn III   | Donald Whalen              |
| Sarah Ruth Hale             | Andrea Mullen               | Garnett Bruce Williams     |
| Lori Ann Smith-Hall         | Michael L. Newton           | Jon J. Williams            |

PCPG would also like to congratulate the following geologist-in-training certifications granted between May 4, 2012 and August 7, 2013.

|                            |                             |                         |
|----------------------------|-----------------------------|-------------------------|
| Maggie Hinchman Beird      | Kara E. Emmert              | David Robert Plas       |
| Kathleen Brousseau         | Matthew John Gentoso        | Catherine Mary Port     |
| Jeremy Bennett Byler       | Emily Victoria Glick        | Dimitri Quafisi         |
| Matthew Caldwell           | Gregory Greenfield          | Diane M. Roskos         |
| Eric D. Castonguay         | Brianne Spence Jacoby       | Matthew Sabetta         |
| Michael Anthony Ciccone    | Amanda Lee Kohn             | Joseph Matthew Sassaman |
| Krysta Marie Cione         | William James Larrison, Jr. | Benjamin Francis Schupp |
| Christopher John Colabaugh | Paul Joseph Martin          | Richard William Starke  |
| Kirstin Noel Dorshimer     | Katheen Sue McKinley        | Michael John Stefanic   |
| Benjamin Joel Dwyer        | Dustin Lee Moore            | Carrie Anne Stem        |
|                            |                             | Tom William Wagner      |



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WCU is offering some new and exciting initiatives this year:

- The University Planetarium received a significant donation from Dr. Sandra Pritchard Mather, WCU alumna and professor emerita, and is undergoing renovation to a new dome and digital projector. The grand opening is scheduled for October 2013, after which Dr. Karen Vanlandingham's monthly public programs on Friday evenings will resume.
- The Department received University funding to purchase a state-of-the-art Trillium broadband seismometer to be installed in the Gordon Natural Area. We will join the regional earthquake-monitoring network administered at the Lamont-Doherty Earth Observatory (Columbia University), giving us access to international seismic data.

For more information about WCU, please contact:

Dr. LeeAnn Srogi, Department chair:

[lsrogi@wcupa.edu](mailto:lsrogi@wcupa.edu)

Dr. Martin Helmke, Graduate coordinator:

[mhelmke@wcupa.edu](mailto:mhelmke@wcupa.edu)

And visit our website at:

[http://www.wcupa.edu/ACADEMICS/sch\\_cas.esc/](http://www.wcupa.edu/ACADEMICS/sch_cas.esc/)

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Don't forget to complete your PDH  
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Each licensee must complete 24 PDHs of professional competency activities during the preceding biennial period (October 1, 2011 to September 30, 2013) as a prerequisite for renewal.

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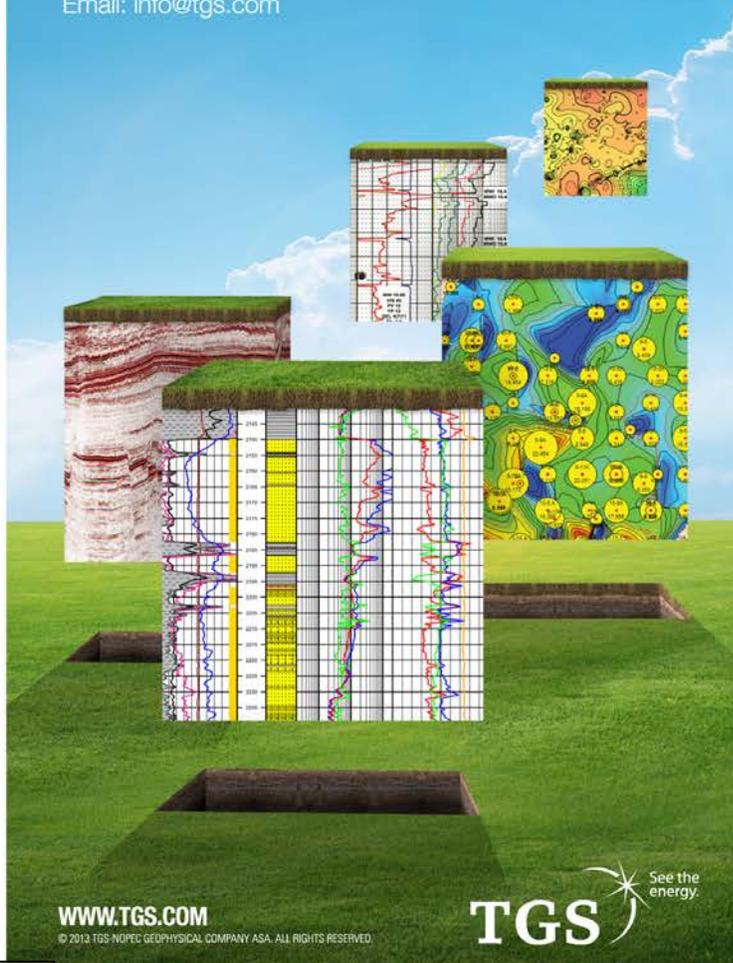
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Through PA GEOPAC, the official political action committee (PAC) of PCPG, you have an effective way to lend financial support to candidates and legislators who support the legislative goals of our organization, or who are willing to lend an ear to our members. More than 200 trade and professional organizations in the state have formed PACs including doctors, dentists, lawyers, bankers, and builders.

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Contributions may be made by personal check or company check only if from a sole proprietorship or partnership. Otherwise, no corporate or business checks may be accepted.

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For more information, contact our PCPG Newsletter Editor and Communications Committee Chairperson,  
Kelly Lee Kinkaid, P.G., by [E-mail](#) or by telephone at 610-375-9301.

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