

Fall Newsletter

2024

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Wisconsin Section - AIPG



President's Message

Happy Autumn, Wisconsin AIPG members!

I hope you were able to join us on the joint IL/IN - Wisconsin AIPG Sections Field Trip to Baraboo, Wisconsin. If not, take a look at some of the photos included in this newsletter. We'd love to hear your location suggestions for our next field trip. You can reach out to any of the WI-AIPG Executive Board members with your suggestions.

We hope to have a joint field trip with the Wisconsin Soil Scientists during Spring 2025. We are also jointly working with the MN AIPG Section to host a virtual field trip for elementary students at RiverEdge Nature Center next March/April 2025. We will be recording that trip so others can use it at their local schools.

Also in the hopper are discussions with the Natural Resource Foundation (NRF) Student Internship coordinators. We are hoping to build on our success with the Wisconsin Geologic and Natural History Survey (WGNHS) with support for a geology student intern through NRF in the near future. *(Check out the recently published white paper by [Itai Bojdak-Yates](#) and the geologic map by [Shayla Barrera-Skibinski](#), past WGNHS interns whose internships were sponsored in part by Wisconsin-AIPG.)*

Please reach out to me with any ideas or recommendations you have for our Section, and we would love to have you serve on the Wisconsin-AIPG Executive Committee

Sincerely
Chris Lilek

2024 Wisconsin Section Officers

President

Christine Lilek, P.G., C.P.G.
clilek5959@gmail.com

Vice President

Micheal Travis, PhD, MEM
Travis@oakridgeeng.com

Secretary / Government Affairs

Heather Hallett, P.G., C.P.G.
Heather.Hallett@foth.com

Treasurer

Andrew Graham, P.G., C.P.G., P.E.
agraham@trccompanies.com

Member Screening

Steve Sletten P.G., C.P.G.
steve.sletten@gmail.com

Education Committee

Annalie Peterson, ECP
annalie.peterson2@wsp.com

Newsletter Editor

Paula Leier-Engelhardt, P.G., C.P.G.
paula@hydrogeosolutionswi.com

Chris Lilek – Reflections on her time as a member of AIPG

Chris Lilek is the current President of the AIPG WI-Section and will be stepping down in 2024. She has been a member since October 1997 (27 years), initially joining AIPG to become a Certified Professional Geologist and to network with other geologists across the nation.

Chris said that at that time, her position at the Wisconsin Department of Natural Resources was involved in setting groundwater contaminant standards. Being networked with geologists in the United States helped her with that work and many other projects. Throughout her career with the State of Wisconsin, she valued the opportunities AIPG provided to learn from, and share research with, other geologists on remediation techniques, groundwater modeling, emerging contaminants, and sampling and analysis alternatives. AIPG continues to provide opportunities to network and share current information in easy-to-access ways.

Since 2009 she has been a member of the AIPG WI-Section Executive Board in one position or another. During that time, she organized field trips; helped start an AIPG student chapter at UW-Whitewater; organized and ran seminars on topics ranging from the lifecycle of frac sand mines, to PFAS, to emerging contaminants; and developed a webinar for the public on, “How to Read a Water Analytical Report”. In 2015 Chris was recognized with a Wisconsin Section Leadership Award.

Her skills and dedication to AIPG have also been recognized at the national level. Chris was an Advisory Board Representative to the National AIPG Executive Committee in 2014, 2015, and 2018, and was Vice President in 2021. In 2023 she co-chaired the 60th National AIPG conference in Covington, Kentucky.

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paula@hydrogeosolutionswi.com

Chris Lilek (cont.)

Her recognition by National AIPG includes:

- 2013, 2018, 2019, and 2021 -- Presidential Certificate of Merit for outstanding contribution to the Institute.
- 2020 -- John T. Galey, Sr., Memorial Public Service Award for service to the public by providing geological expertise where it was needed by the public at large.
- 2022 -- Martin Van Couvering Memorial Service to the Institute Award. In honoring the first President of AIPG, recipients are recognized for their contributions to AIPG.

When asked what the highlights of her work with AIPG have been, it was clear that there were many:

"Learning how to network with others and learning how to be a leader have been invaluable to me as a professional. Attending field trips and conferences in different states broaden my understanding of geology across our nation. Being involved in the AIPG WI-Section and the National Executive Committee taught me leadership and organizational skills. I applied these skills in my professional and volunteer positions, helping people and solving complex problems. I enjoyed learning how to host workshops, seminars and conferences with so many interesting partners, such as state surveys, universities, and other professional organizations. The last couple years on the AIPG Diversity, Equity and Inclusion subcommittee has been eye opening and humbling. I have learned more on how to respect and incorporate values and perspectives from so many different walks of life, and it's made me more appreciative for everything in my life."

WHY DOES SHE BELIEVE TODAY'S GEOLOGISTS SHOULD JOIN AIPG? "DEVELOPING A NETWORK OF AIPG GEOLOGISTS ACROSS OUR NATION AND THE WORLD WILL HELP TODAY'S GEOLOGISTS FIND, OBTAIN, AND GROW IN JOBS THAT WILL BE MEANINGFUL AND BENEFICIAL. THEY WILL ALSO HAVE FUN! THERE IS SO MUCH TO SEE AND EXPERIENCE ON AIPG FIELD TRIPS AND PROGRAMS. NOT ONLY ROCKS AND RESOURCES, BUT GREAT FOOD, DRINKS AND RECREATION."

Wisconsin Regulatory Updates

Legislative and Regulatory Update

Heather Hallet

Wisconsin Regulatory Updates

The Wisconsin Department of Natural Resources (DNR) is seeking comments on two draft items related to Wisconsin's water management, conservation and efficiency efforts under the Great Lakes Compact:

- Wisconsin's 2024 Draft Water Management and Water Conservation and Efficiency Program Review
- Wisconsin's Water Conservation and Water Use Efficiency Goals and Objectives

Both the water conservation goals and objectives and the draft water management review are available on the DNR's Great Lakes Compact and Diversion webpage. Written comments are being accepted through November 15, 2024.

<https://dnr.wisconsin.gov/topic/WaterUse/Compact.html>

The Wisconsin Natural Resource Board met on September 26-27. Among other items, the agenda included the following action items:

Adoption:

- Proposed rules affecting chapter NR 428 related to revisions to nitrogen compound emissions regulations
- Proposed rules affecting chapters NR 102, 103, 106, 207, 212 and 216 related to updating Wisconsin's water quality antidegradation policy and procedures

Proposed Scope Statements for Approval:

- Proposed rules affecting Subchapter III of Chapter NR 812, to update, correct and clarify existing code requirements and add requirements for new pump installations and water treatment and other specified code requirements within chapter NR 812
- Proposed rules affecting chapter NR 146 related to water well driller, heat exchange driller, and pump installer licensing and registration, and drilling rig operator registration

In other state news:

Michigan EGLE recently released a general sampling guidance document for PFAS.

<https://www.michigan.gov/-/media/Project/Websites/PFAS-Response/Sampling-Guidance/General.pdf?rev=6217442052bf4fedb89bbf786560d645>

Federal Updates

Federal Updates

In October 2024, EPA completed a series of enforcement actions to protect communities from exposure to coal ash pollution.

<https://www.epa.gov/newsreleases/epa-completes-series-enforcement-actions-protect-communities-exposure-coal-ash>

Also during October 2024, EPA issued a final rule requiring replacement of lead pipes within 10 years and announced funding to provide clean water to schools and homes.

<https://www.epa.gov/newsreleases/biden-harris-administration-issues-final-rule-requiring-replacement-lead-pipes-within>

In February 2024, EPA announced two separate funding opportunities for U.S. ports—a Zero-Emission Technology Deployment Competition to directly fund zero-emission equipment and infrastructure to reduce mobile source emissions, and a Climate and Air Quality Planning Competition to fund climate and air quality planning activities. The agency anticipates making awards once all legal, statutory, and administrative requirements are satisfied. Selectees will work with EPA over the coming months to finalize project plans before receiving final awards and moving into the implementation phase. Project implementation will occur over the next three to four years depending on the scope of each project. In November 2024, federal, state, and local partners celebrated that Gateway Terminal in partnership with the New Haven Port Authority, and the Connecticut Port Authority have been selected to receive nearly \$40 million in total through EPA's Clean Ports Program to support the deployment of zero-emission port equipment and infrastructure.

<https://www.epa.gov/newsreleases/biden-harris-administration-announces-nearly-40-million-clean-ports-investments>

From the Precambrian to the Pleistocene

Geology of the Baraboo/Devils Lake Area

October 26, 2024

1st Stop – Lower Narrows State Natural Area. This is one of the few locations where the Baraboo Quartzite can be observed in unconformable contact with rhyolite.

Man Mound National Historic Landmark is a rare, man-shaped effigy mound measuring about 214 ft. long by 48 ft. wide. The legs were partially destroyed by the construction of Man Mound Road in the 1800s, and the feet were destroyed by agricultural land use.

Wisconsin and Illinois/Indiana AIPG Sections Field Trip

Paula Leier-Engelhardt

AIPG members and guests from Wisconsin, Illinois, and Minnesota had a perfect fall day to visit Sauk and Columbia counties in Wisconsin and see the textbook geology of the Baraboo Hills and the area near Devils Lake State Park.

Recent work by the Wisconsin Geologic and Natural History Survey has divided the Baraboo Quartzite into four informal members. The first stop, Lower Narrows State Natural Area, is partially located in a former quarry on the north limb of the Baraboo Syncline. Three members can be recognized here, with the lowest member unconformably deposited on 1.75 bya rhyolite, the sediment source for the Baraboo Quartzite. The depositional environment of the two lowermost units is interpreted to be fluvial braided streams emptying into a marine setting. The third member, and the unit most easily observed at Lower Narrows, records a gradual regression seaward.



Lower Narrows State Natural Area. Ripple marks on the quarry face indicate the top of a bedding surface - a useful tool when working in the steeply dipping north limb of the Baraboo Syncline. *Photo: Steve Engelhardt*

Bonus stop – Man Mound National Historic Landmark and the Man Mound effigy.



Photo: Chris Lilek

2nd Stop – Point of Rocks.

Little known fact: because of the efforts of Dr. Robert Dott and colleagues at UW-Madison, these outcrops were preserved when the bypass for Highway 12 was constructed.

Point of Rocks on the south limb of the Baraboo Syncline was the second stop. The outcrops here preserve the uppermost member of the Baraboo Quartzite, with a depositional environment of tide- and wave-influenced delta front. As a scavenger hunt began for convoluted bedding, reactivation surfaces, bidirectional cross-stratification, quartzite boudins, and folding in the phyllite, we thanked Dr. Robert Dott and the Wisconsin DOT for preserving these important outcrops.



Point of Rocks -- Let the scavenger hunt begin! *Photo: Steve Engelhardt*

Parfrey's Glen State Natural Area was the third stop as we moved from Precambrian time and into the encroachment of the Cambrian ocean. The flat-lying layers of sandstone and conglomerate that make up the walls of the gorge are the Parfrey's Glen Formation. At the time of deposition, the Baraboo Hills were islands in a shallow, tropical sea. Sand formed beach deposits around the islands. The quartzite cobbles in the conglomerate were derived from the Baraboo islands, and only moved during storms when big waves, maybe as high as 25 feet, crashed against the islands.

3rd Stop – Parfrey's Glen State Natural Area.

The bridges and wooden trails known to hikers in the 1980s and early 1990s are now gone after a decade of regular '100 year' floods.



Parfrey's Glen – it is a scramble to get to the head of the gorge, but worth it. *Photo: Steve Engelhardt*



Parfrey's Glen formed during the catastrophic drainage of Glacial Lake Wisconsin. Evidence of a giant pothole (do you see it now!?) formed during that time and is still visible in the upper part of the east wall of the gorge. *Photo: Steve Engelhardt*

The fourth and final stop was Roznos Meadow on the Ice Age Trail to view the Johnstown Moraine.



Roznos Meadows, looking northeast. The low spot behind field trip participants is the Johnstown Moraine. *Photo: Steve Engelhardt*

The Johnstown terminal moraine blocks the south end of Devils Lake. The Green Bay ice lobe covered the eastern half of the Baraboo Hills. Once the ice retreated, the terminal moraine provided dams for both the north and south ends of an old river valley creating Devils Lake.

References used for the field trip guide include:

- Stewart, E.K., Brengman, L., and Stewart, E., 2021, Revised provenance, depositional environment, and maximum depositional age for the Baraboo (<ca. 1714 Ma) and Dake (<ca. 1630 Ma) Quartzites, Baraboo Hills. *Journal of Geology*, 129, p. 1-31.
- Stewart, E.K. and Stewart, E., 2021, Geologic Map of the Baraboo 7.5-minute quadrangle, Sauk County, Wisconsin, Wisconsin Geologic and Natural History Survey, plate 1.
- Stewart, E.K. and Stewart, E., 2020, Geologic Map of the North Freedom 7.5-minute quadrangle, Sauk County, Wisconsin, Wisconsin Geologic and Natural History Survey, plate 1.

4th Stop -- Roznos Meadow, and the reason Devils Lake is even here.

Geology in the News

Geology in the News

Swifties Shake it Off

Taylor Swift's concerts at Lumen Field in Seattle, Washington, USA, in July 2023 were detected by an accelerometer located proximally to the stadium. The synchronized motion of 72,000 fans created sustained energy that exceeded the iconic "Beast Quake" in 2011.

https://www.geosociety.org/GSA/Publications/GSA_Today/GSA/GSAToday/science/G589A/article.aspx

Geology of Surfing

The American Association of Petroleum Geologists Women's Network in association with the [Midwest GeoSciences Group](#) has produced several webinars on such topics as *Geology of Wine and Cheese* (complete with cheese/wine recommendations), *Geology of Beer* (have some fun and learn at the same time), and the *Geology of Coffee*. The latest one, *Geology of Surfing*, can be streamed on the [AAPG YouTube channel](#). Hang ten!

Iceland

[Yes, it's still erupting.](#)

In the Permian Basin, the ground is swelling and buckling

In America's largest oil field, the impact of oil and gas drilling, including earthquakes and increases in pressure, have local communities worried.

https://flip.it/tT_tsz

The first geologists?

Increasingly complex communication among hominins in East Africa would have led to expressions for relevant rock properties and distributions, eventually leading to exchanges of knowledge crudely resembling discussions among geologists.

https://www.geosociety.org/GSA/Publications/GSA_Today/GSA/GSAToday/science/G581A/article.aspx

". . .car-size, millipede-like creature. . ."

We should be grateful *not* to have been around to see this [bad boy](#).

Dark oxygen

Polymetallic nodules + seawater electrolysis = oxygen production at the abyssal seafloor.

<https://www.nature.com/articles/s41561-024-01480-8>

AIPG Wisconsin 2025 Officer Ballot

Watch for your ballot in
your inbox

AIPG Wisconsin 2025 Officer Ballot

Ballots will be accepted until December 31, 2024. Ballots can be saved as a pdf and emailed to Christine Lilek at clilek5959@gmail.com or voting can be done through National AIPG's email link, which you should receive by December 1, 2024. The slate of candidates includes:

- President -- **Micheal Travis** PhD, MEM

Senior Scientist at Oakridge Engineering, Inc. where he provides geotechnical and hydrogeological expertise to landfill, agricultural waste, and other environmental management projects. His experience spans over 35 years with a broad range of environmental roles in consulting, industry, research, and education.

- Vice President -- **Heather Hallett** P.G., C.P.G.

Hydrogeologist at Foth Infrastructure & Environment in Green Bay. She leads the hydrology/geology discipline at Foth and provides support to a range of projects from landfill and mine project permitting/compliance to environmental remediation. She previously served as president of WGWA after moving to Appleton from Albany, NY where she worked for CDM Smith.

- Secretary -- **Matthew C. Michalski** P.G., MEM

Hydrogeologist with REI Engineering, Inc in Wausau. He is part of REI's Environmental Team and acts as a project manager for multiple projects including site investigations, remediation, and case closure. Matt is a Wisconsin Registered Tank System Site Assessor, a Wisconsin Small Water System Certified Operator and part of REI's Emergency Spill Response Team. Matt currently serves on the board for the United Way of Marathon County Emerging Leaders affinity group.

- Treasurer – **Andrew Graham** P.G., C.P.G., P.E.

Project Manager at TRC Companies, Inc., with over 35 years of experience. Currently, Andrew specializes in electrical utility T & D and design-build renewable energy projects. Previous positions: Realtime Utility Engineers, Inc, IEA/RMT, Vierbicher Associates.

(cont.)

AIPG Wisconsin 2025 Officer Ballot

- Government Affairs Chair -- **Lanette Altenbach** MEM

Hydrogeologist who, as a consultant, has project experience that began with emergency response and progressed to environmental due diligence, investigations and remediation of contaminated sites. Lanette has managed projects with active involvement in each project from initial site identification through redevelopment of properties into productive use. She has worked with private clients as well as local, state and federal government on various projects and takes an active interest in the regulatory processes that guide this work and currently participates in many of the public input opportunities offered by the Wisconsin Department of Natural Resources.

- Member Screening Chair – **Steve Sletten** P.G., C.P.G.

Steve has a professional background addressing hydrogeology, planning, renewable energy, and air transportation decarbonization topics. His 30 plus years of experience includes addressing environmental science issues in a consulting, industry, and regulatory capacity.

- Education Committee Chair – **Annalie Peterson** MEM

Environmental Consultant with WSP USA in Madison, Wisconsin. Annalie is an assistant environmental consultant with WSP with interests in water flow and contaminant migration through soil and sediment.

- WI-AIPG Newsletter Editor – **Paula Leier-Engelhardt** P.G., C.P.G.

Principal Geologist and owner of HydroGeo Solutions LLC, with over 35 years of experience as a consulting geologist. Experience includes soil and groundwater contamination assessment, landfill permitting and design, and statistical analyses and interpretation of agency-required groundwater monitoring data.

AIPG National Conference Durango, CO

**New life goal -- When I
grow up, I want to be just
like Rick Trujillo. . .**

AIPG 61st Annual National Conference – Durango, Colorado

Come for the meeting, but stay for the field trips

Paula Leier-Engelhardt

AIPG held the 61st National Conference in the foothills of the San Juan Mountains on the campus of Fort Lewis College in Durango. The theme of the conference was “Resources of the West” and included two days of field trips and a day of technical presentations.

The theme was certainly appropriate, given the mining history of the area, both past and present. The [topics from the technical session](#) ranged from water resources, to mining remediation, to resource and environmental characterization. The presentations on geoscience education and DEI were interesting and thought-provoking. [Abstracts](#) from all the presentations can be accessed on the AIPG website.

I attended the annual meeting not only to take part as a member of the Executive Committee meeting on Saturday, but mostly to be on field trips. Although I have been to Colorado and have seen the geology along the Front Range and experienced field trips all along the Book Cliffs, I had not been to this part of the state. I was not disappointed.

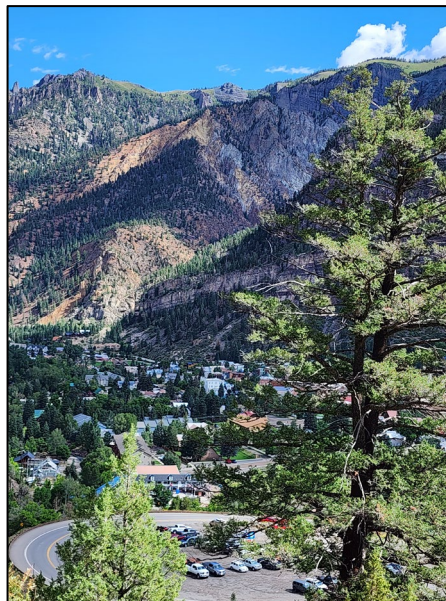
The field trip on Sunday was a great summary of the geologic highlights of Animas Valley, which is where the city of Durango is located. We touched on everything from the Precambrian Baker’s Ridge Granite; the early Mississippian Leadville Limestone capped with spectacular hematitic paleokarst; viewed from afar the Pennsylvanian Hermosa Group; and saw the onlapping unconformity of the Early Cenozoic Animas Formation over the Late Cretaceous formations, which constrains the timing of the Laramide Orogeny in this area.

Whew! This was only to be topped by the two-day field trip on Tuesday/Wednesday to Ouray, which bills itself as the “Switzerland of the U.S.”

They are not lying.

The town was named for Chief Ouray who was leader of the Ute Tribe around 1875. The town was first settled by prospectors in 1875 and was incorporated in October 1876. It was the hub of the Ouray mining district for nearly 100 years. During this time mining in this district produced 2,007,872 ounces of gold, 49,110,490 ounces of silver, 26,609 short tons of copper, 148,253 short tons of lead, and 78,391 short tons of zinc. Today, the economy of Ouray is based mostly on tourism with mining providing a smaller component in the past 10 years.

The town is located in a glacial valley



Ouray, CO. You cannot take a bad picture here. In the background, the orange exposure of rock is called The Blowout. These altered rocks are a highly mineralized intrusion. *Photo: Paula Leier-Engelhardt*

In the base of the canyon, we saw outcrops of quartzite and phyllite of the Precambrian Uncompahgre Formation, correlative to the Tyler Formation outcropping along the Wisconsin/Upper Michigan border (well hello, old friend!). The steep canyon walls are composed of the Pennsylvanian Hermosa Group and Permian Cutler Formation, and the type sections are here.

Our most excellent dinner outside on the deck at the Brickhouse 737 Restaurant in Ouray. It was hard to stop staring at the Hermosa Group long enough to eat.

Photo: Paula Leier-Engelhardt



I have no idea how someone climbed these cliffs to measure and describe any of these sections. Well, maybe I kind of know, at least the climbing part.

We were fortunate to have Rick Trujillo along on this trip as a local guide. Seventy-six years young, Rick grew up in Ouray, scrambled all over these cliffs as a child, and went on to get his degree in geology from the University of Colorado-Boulder. He came back to Ouray to work in the Camp Bird Mine and went on to a successful career in mining geology in the western United States, Central and South America. However, in Colorado he is best known for his mountain running, winning the Pikes Peak Ascent and Marathon six times.

This would explain how he would be clipping along at the front of the group, regaling us with story after story of the mines around Ouray, while the rest of us pathetic flatlanders attempted to stay close enough to hear him and prayed our lungs did not burst.

His best story?

Finding a dinosaur trackway as a child on the cliffs he explored above town, then as an adult, working with the local landowner and the U.S. Forest Service to preserve the site for the public as the [West Gold Hill Dinosaur Trackway](#). (Go see it. Bring oxygen. It will be worth it).

I have decided that when I grow up, I want to be Rick.

And my advice regarding AIPG meetings:

Come for the meeting but stay for the field trips.
