

WISCONSIN AIPG SECTION UPDATE

Winter 2023



Wisconsin

President's Message



Happy 2023 to all! It has been an interesting year. Is anyone else tired of saying that again and again? It does feel as if finally, we have dealt with, accepted, and are even thriving with the changes in business and life that the pandemic brought forth or hastened. Embrace the new normal because we aren't going back!

One lesson I have learned in the past year is that organizations should consider partnering on larger projects that are getting more difficult for them to complete on their own for a variety of reasons. In 2022 Wisconsin AIPG co-sponsored a fall meeting with the Minnesota AIPG section. Both sections were pleased with the turnout and enjoyed providing opportunities for students to present their research and network with professionals.

The planning is well along for the second year of sponsorship of an undergraduate summer internship with the Wisconsin Geological and Natural History Survey. The first year was more successful than we could have hoped, with the intern working with WGNHS staff on a mapping project in the Wisconsin Dells area and presenting their research at the fall AIPG meeting and the National GSA meeting. This is another example of a partnership that had not been done before and reaped huge benefits.

I encourage you and organizations you are a part of to explore potential partnerships. I am confident that the outcomes will be positive and surprising.

Now, off to the next Zoom meeting. . .

Regards,
Paula Leier-Engelhardt

2022 Wisconsin Section Officers

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Far from Boring, And Not Even Thinking About Staying Close to Home

By Paula Leier-Engelhardt, P.G., C.P.G.

After 40 years of marriage to a geologist and unwittingly becoming the best sample Sherpa ever, my husband knows there is no hope in dissuading me from any geology-related project I cook up. So, when I announced that as a long-term goal, I was going to collect a rock from each Wisconsin county (there are 72, in case you were wondering), he put his head in his hands and said, “When do you want to start?”

What neither of us counted on was finding hidden treasures that the average Wisconsinite may not realize exist in the state. So, allow me to introduce you to some of the places we have discovered, and some of the people we have met along the way.

Waushara County – A bit of normalcy never to be taken for granite

“Paula, my folks said I can have a bonfire and potluck. Want to come?”

It is August 2022, and although we had been to Sudbury, Ontario earlier in the year and had avoided COVID, we were still being a bit cautious about gatherings, especially with unfamiliar groups. This invite came from our friend Leah, who had attended college where we had volunteered as rowing coaches. We had not seen her or her parents in years. An outdoor potluck around a fire seemed a lower hazard, and besides, Leah’s hometown of Redgranite is in a county we had yet to visit.

At first glance, Waushara County appears to be one of the flat and soggy south-central Wisconsin counties where you constantly swat mosquitos once the temperature gets above 45°F and you curse the glaciers for creating this terrain. A dive into its geology will have you coming up with adventures along the Ice Age Trail, hikes along interesting wetlands, and Precambrian granites so perfect they were used to build cities and

monuments. It was decided a weekend was in order.

Our base of operation was the village of Redgranite, which comes by its name honestly. From our hotel window we could see remains of the Redgranite Quarry which started operation in the late 1890s and was active until 1920.



Redgranite Quarry. The abandoned quarry is located beside Highway 21 in a small park within the village of Redgranite. Photo: Paula Leier-Engelhardt

The dark and rusty-red granophyric granite here and in the quarries south of Redgranite near the village of Lohrville was used for paving blocks on the streets of Milwaukee and Chicago. By the early 1920s, the use of asphalt and concrete took over and paving blocks became a thing of the past. The granite here is Proterozoic, 1.75 Ga, younger than the Penokean orogeny (1.85-1.9 Ga) but older than the Wolf River Batholith (1.5 Ga). The scattered granites found in south-central Wisconsin from Baraboo northeast into the Fox River valley are chemically related to volcanic and plutonic rocks of the Penokean orogeny but were likely emplaced during the waning stages of that event. These granites document the conclusion of that mighty mountain building event, and the beginnings of the use of manmade materials to build the cities of the Midwest.

The potluck was slated for Saturday night, so we decided to spend the day quasi aimlessly driving all over the county. When an oddly shaped, somewhat isolated pond presented itself, the first inclination was to assume it was an abandoned quarry that had been flooded. . . until we stumbled across the Bass Lake Fen State Natural Area.

First, I will say thank you to the State of Wisconsin for saving and preserving wild areas such as this. Second, what the heck is a fen?!

As described on the U.S. Forest Service website (https://www.fs.usda.gov/wildflowers/beauty/California_Fens/what.shtml) fens are a unique wetland type, in that they rely on groundwater input. They take thousands of years to develop and cannot easily be restored once destroyed. They are hotspots of diversity and are often home to rare plants, insects, and small mammals.

Because their water source is groundwater, fens are an excellent indicator of shallow groundwater quality. Bass Lake is defined as a calcareous fen, meaning it is fed by carbonate-enriched groundwater. The glacial geology of the western portion of Waushara County documents the furthest advances of the Green Bay Lobe with the well-developed Hancock and Almond Moraines (cue the ghosts of woolly mammoths on the Ice Age Trail), as well as the irregular and discontinuous ridges of the younger Elderon Moraine. The Bass Lake fen formed on the pitted outwash east of the Elderon Moraine.

No motorized access is allowed into Bass Lake, but it is an easy 1.5-mile hike into the area. The trail starts on a broad and sandy upland area, with tall pines on either side. A flock of turkeys fed in the adjacent field and kept a wary eye on us as we walked. A pileated woodpecker called and made sure to let all know when we passed by him. The trail came down off the ridge into an oak savannah, vibrating with bees and heavy with the scent of milkweed.



Bee taking in breakfast on a goldenrod.
Photo: Paula Leier-Engelhardt

As we looked down the trail toward the lake, we saw something coming up toward us.

Bass Lake is five acres in size and has some good fishing. Four young men from the local Amish community had their boat on a small trailer and were pushing it out. They said they didn't have any luck, but the look on their faces told the real story. They were friends, and going fishing was just an excuse to get out and get together.

They were leaving to beat the rain we could see and smell as we reached the shore of Bass Lake. In the stillness you feel before the rain falls, we sat down to watch a water bug regatta <https://youtu.be/9fLIXvmSHOg> listened to a blue jay bawl us out and waited. . . <https://youtu.be/Kf65xP9gNhg> .

One of things I always must remind myself to do when exploring a new area is to look down. I find that as a geologist I am always looking for the big picture, looking up and outward to see how structures and outcrops tie together, only to miss some interesting plant or fossil at my feet. Luckily, I did look down to see this weird grass stalk with a big flower at the tip.



Grass of Parnassus. Not a grass at all; rather think of it as an honorary grass. Photo: Steve Engelhardt

I pulled out my trusty smartphone and fired up Google Lens to have it tell me it wasn't a grass at all, but rather is called bog-star or grass of Parnassus. Digging through vegetation to get to its base, I found sort of heart-shaped leaves clustered at the base of the stalk. Indeed, it was not a grass, and indeed it needed a place like a fen to grow.

So, what else did we find in Waushara County:

- A great breakfast in Redgranite at the Curve-In Café.
- A winery with live music <http://www.lunchcreek.com/> (technically, it is in Marquette County, but just barely).
- The Spring Lake Country Store, an Amish country store full of picture-perfect produce, bulk goods and spices, and great sandwiches on freshly baked bread.

Saturday night found us at the bonfire. Leah introduced us to everyone, and we got a tour of her parents' hobby farm where she grew up. We met the lady-like ewes and Buck the smelly ram; admired the chickens and their coop; tried to convince the dogs we were trustworthy; and watched migrating nighthawks catch insects over the nearby hay fields. We gorged ourselves on BBQ pork and fresh corn on the cob, and Leah's parents gave us the tour of the farmhouse they are remodeling and restoring, bit by loving bit.

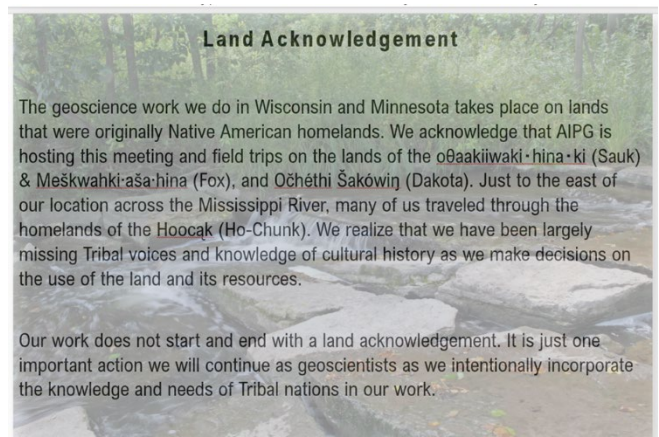
When we left after an evening of laughing, visiting, and storytelling with friends old and new, we knew that we had been given a gift. That, although the pandemic was probably not quite in the rearview mirror, we would be OK.

Highlights of the AIPG MN/WI Geology & Remediation Weekend – September 30 – October 2



Sixty-five professional geologists, students and their guests gathered from September 30 – October 2, 2022, to visit the unique natural and human areas of the SE Minnesota and SW corners of our States.

We started Friday evening by acknowledging the first peoples in this area with a land acknowledgement presented throughout the evening.



The geoscience work we do in Wisconsin and Minnesota takes place on lands that were originally Native American homelands. We acknowledge that AIPG is hosting this meeting and field trips on the lands of the

oθaakiiwaki·hina·ki (Sauk), Meškwahki·aša·hina (Fox), and Očhéthi Šakówiŋ (Dakota).

Just to the east of our location across the Mississippi River, many of us traveled through the homelands of the Hoocąk (Ho-Chunk). We realize that we have been largely missing Tribal voices and knowledge of cultural history as we make decisions on the use of the land and its resources.

Our work does not start and end with a land acknowledgement. It is just one important action we will continue as geoscientists as we intentionally incorporate the knowledge and needs of Tribal nations in our work.



Photo Credit: September 30, 2022 -Networking Welcome Reception taken by Chris Lilek

On Saturday October 1, 2022, we started the day with four speakers.

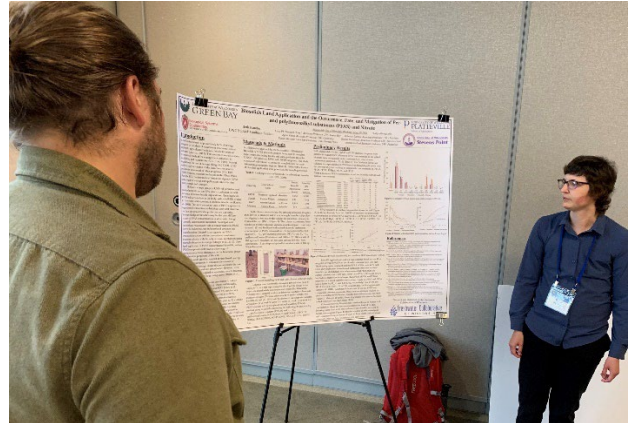
Future PFAS Regulations presented by Shalene Thomas from Wood (now WPS).

Discovery Square 2-Subterranean Karst Voids and Construction Impacts presented by Jacob Heimdahl from AET.

Climate Changes Affecting our Wetlands and the Groundwater Quality Beneath Them presented by Daniel De Joode, SWCA

Mapping the Lithology and Paleocurrent Indicators of the Cambrian Units and Facies in the Dells of Wisconsin River presented by Itai Bojdak-Yates, Lawrence University.

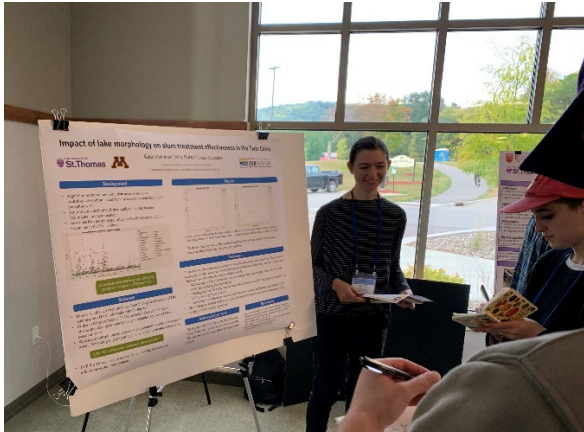
Mid-morning, we took time to visit the student posters from **University of St Thomas, Minnesota, University of Wisconsin – Madison and University of Wisconsin – Green Bay.**



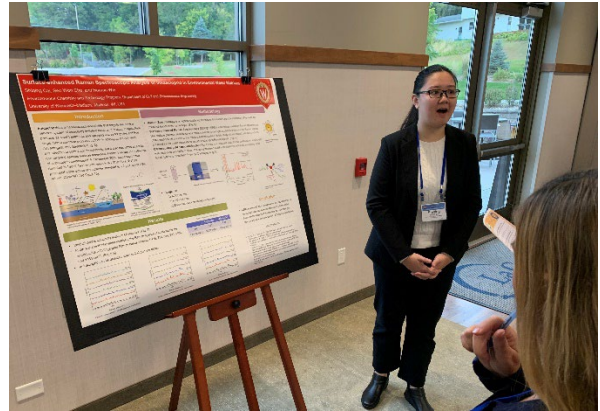
Beth Kondro from UW Green Bay presenting **Biosolids Land Application and The Occurrence, Fate, and Mitigation of Per- And Polyfluoroalkyl Substances and Nitrate**



Seo Won Cho from UW Madison presenting **Identifying PFAS with Raman Spectroscopy.**



Katie McGinnis from University of St. Thomas, MN presenting **Impact of Lake Morphology on Alum Treatment Effectiveness in the Twin Cities**



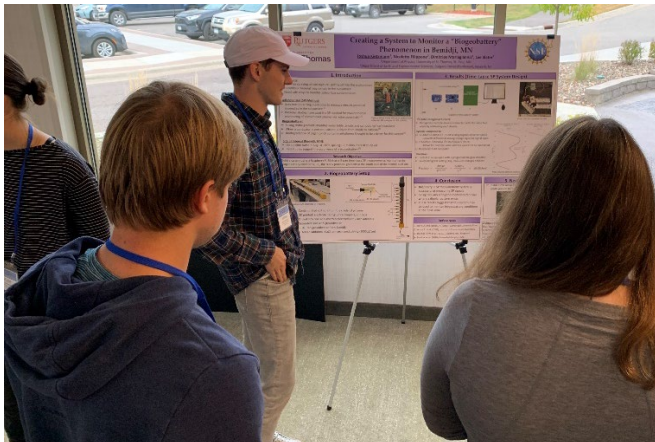
Shiqing Cai from UW Madison presenting **Surface-enhanced Raman Spectroscopy Analysis of Imidacloprid Pesticide in Environmental Water Matrices**

In the afternoon, event participants had a choice between two field trips.

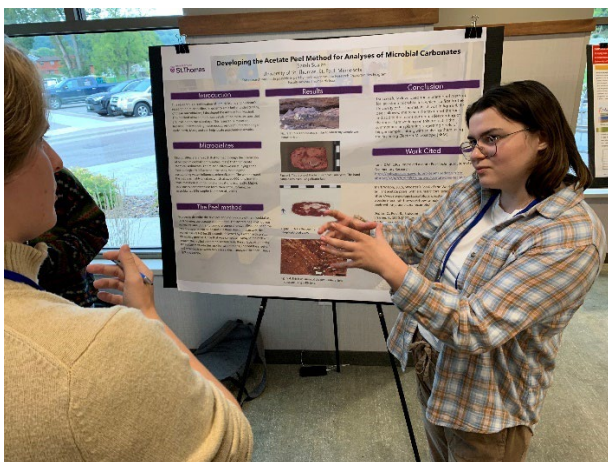
Eagle Bluff Learning Center

Upon arrival at the Center, we listened to a presentation on Balancing Bluff Country: Higher Stakes & Closer Ties and then we explored the Center trails.

<https://eaglebluffmn.org/resources/driftless>



Joshua Kietzmann from University of St. Thomas, MN Presenting **Creating a System to Monitor a “Biogeochemistry” Phenomenon in Bemidji, MN**



Sarah Scalzo from University of St Thomas, MN presenting **Using Acetate Peel Techniques to Study Microbialites**

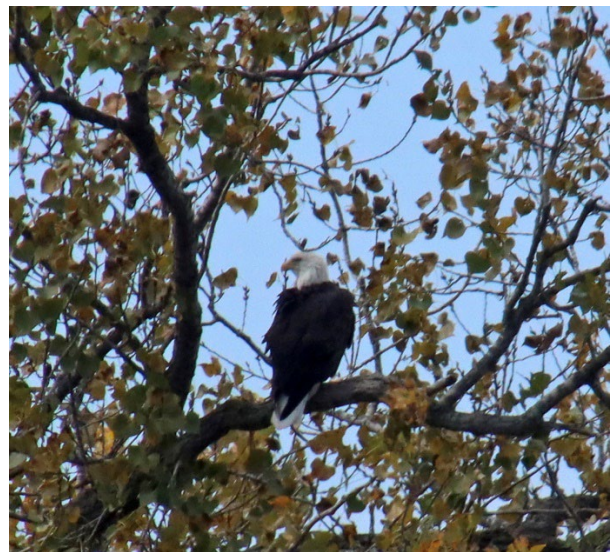


Photo Credit: Steve Engelhardt

This field trip also included a short stop to on the way to the Center to visit Southwind farm store offering seasonal produce and gifts.



Photo Credit: Chris Lilek

Karst Field Trip

This field trip focused on surface and groundwater quality concerns in the "driftless" area of southeastern Minnesota, where the surface water-groundwater system is particularly sensitive to anthropogenic impacts because of karstic and fractured bedrock conditions.



Photo Credit: MN Survey

The field trip stops focused on research dedicated to improving our understanding of contaminant transport throughout the surface water-groundwater system. This research has important implications for regulatory, management, and planning efforts devoted to improved strategies for protecting groundwater quality.

The field trip stops included the area of Fountain, Minnesota, which has been named the Sinkhole Capitol of the USA.

<https://www.mnopedia.org/place/karst-topography-fillmore-county>

On Sunday, October 2, 2022, we enjoyed the rock outcrops and colored leaves along the Mississippi River as we joined the La Crosse Queen Cruise - Captain's Sunday Brunch Tour to Lock and Dam No. 7. After brunch we listened to the presentation **Wisconsin Waters: Ancient Histories of the Mississippi River** by Scott Spoolman



Photo Credit: Steve Engelhardt

We want to thank all our event sponsors. Without them this educational and enjoyable event would not have been possible.



Thank you, Sponsors!

Additional event photos can be found at:
[2022 Geology Weekend Photos](#)

Regulatory Updates

by Heather Hallett



Photo Credit: Heather Hallett

Wisconsin Regulatory Update

Wisconsin was one of the first states in the nation to apply for and receive delegation to implement the Clean Water Act's National Pollutant Discharge Elimination System (NPDES) program. Read more about the history of the Clean Water Act at:

<https://dnr.wisconsin.gov/topic/SurfaceWater/CWA50th>

Wisconsin DNR PFAS Interactive Tool

The Wisconsin Department of Natural Resources announced a new interactive PFAS data tool that includes locations with known contamination, PFAS-related fish and game consumption advisories and waterbodies throughout Wisconsin sampled during targeted or routine monitoring. Data from the DNR's recent voluntary municipal drinking water system sampling program is also included.

<https://experience.arcgis.com/experience/d4d131e169ba428384c5ac85c858bd0c>

New PFAS Drinking Water Monitoring Requirements

Under drinking water standards for PFOA and PFOS that went into effect in August under NR 809, all drinking water systems will now be

required to sample and monitor for PFAS beginning as early as next month. Data from the required sampling will be incorporated into the WDNR interactive PFAS data tool as it becomes available.

The MCL standards for PFOS and PFOA are based on the EPA PFOA and PFOS Health Advisory Level (HAL) and are set at 0.000070 mg/L (70 parts per trillion (ppt)) for PFOA and PFOS individually and a combined standard of 0.000027 mg/L (70 ppt).

<https://dnr.wisconsin.gov/newsroom/release/61301>

https://docs.legis.wisconsin.gov/code/register/2022/799B/register/final/cr_21_088_rule_text/cr_21_088_rule_text

Collection and Disposal Program Started for PFAS Firefighting Foam

The Wisconsin DNR celebrated the start of a [collection and disposal program for PFAS-containing firefighting foam waste](#). The 2021-23 biennium budget provided \$1 million to the DNR and DATCP for administration of this program. North Shore Environmental Construction, Inc., a Wisconsin-based company, will be collecting and disposing of at least 25,000 gallons of PFAS-containing firefighting foam waste from fire departments throughout Wisconsin.

<https://dnr.wisconsin.gov/newsroom/release/63701>

WisPAC Action Plan Progress Report Released

The Wisconsin DNR announced the [Wisconsin PFAS Action Council \(WisPAC\)](#) released its PFAS Action Plan Progress Report. The Progress Report outlines steps taken by state agencies to address PFAS contamination since December 2020, when the Wisconsin PFAS Action Plan was released.

Progress report highlights include:

- Investing \$1 million to collect more than 25,000 gallons of PFAS-containing firefighting foam waste from across more than 60 counties in Wisconsin.

- Sampling more than 125 municipal drinking water systems, 100 waste water treatment plants and hundreds of private drinking water wells.
- Establishing the Office of Environmental Justice.
- Initiating legal action against 18 major chemical companies.

<https://dnr.wisconsin.gov/newsroom/release/61941>

Safe Drinking Water Loan Program Applicants – Public Comments Solicited

The Wisconsin DNR announced that several Wisconsin cities are applicants for funding through the Safe Drinking Water Loan Program (SDWLP) to address deficiencies in its public drinking water system. The public is encouraged to submit comments regarding this decision and the potential environmental impacts of these projects. Cities include Kaukauna, Jefferson, Westby, Fennimore, Dodgeville, Denmark, Cross Plains, Spenser, Winneconne, Bruce, Blue Mounds, Blanchardville, Antigo, Abbotsford, New Glarus, Thorp, and Cobb, among others.

<https://dnr.wisconsin.gov/newsroom/release/64391>

New ARPA Well Compensation and Abandonment Grant Programs

With \$10 million in funding from the American Rescue Plan Act (ARPA), the DNR has expanded the eligibility requirements for the Well Compensation and Well Abandonment Grant Programs. These programs provide financial assistance to owners of private or non-community public wells to address contamination in their wells by awarding grants for the replacement, reconstruction, treatment, or abandonment of their well.

Learn more about the ARPA Well Grant Programs on the [Well Compensation Grant Program webpage](#) and the [Well Abandonment Grant Program webpage](#).

Federal Updates

United States Environmental Protection Agency (EPA) Proposes to Strengthen Air Quality Standards to Protect the Public from Harmful Effects of Soot

EPA is announcing a proposal to strengthen a key national ambient air quality standard (NAAQS) for fine particle pollution, also known as PM2.5. EPA's proposal will specifically take comment on strengthening the primary (health-based) annual PM2.5 standard from a level of 12 micrograms per cubic meter to a level between 9 and 10 micrograms per cubic meter, reflecting the latest health data and scientific evidence; the Agency is also taking comment on the full range (between 8 and 11 micrograms per cubic meter) included in the Clean Air Scientific Advisory Committee's (CASAC) latest report.

<https://www.epa.gov/newsreleases/epa-proposes-strengthen-air-quality-standards-protect-public-harmful-effects-soot>

EPA announced the automatic addition of nine PFAS to the Toxics Release Inventory (TRI) list

EPA chose the following PFAS because they were either no longer considered confidential business information or they have recently been assigned final toxicity values:

- Alcohols, C8-16, γ - ω -perfluoro, reaction products with 1,6-diisocyanatohexane, glycidol and stearyl alc. (2728655-42-1)
- Acetamide, N-[3-(dimethylamino)propyl]-, 2-[(γ - ω -perfluoro-C4-20-alkyl)thio] derivs. (2738952-61-7)
- Acetic acid, 2-[(γ - ω -perfluoro-C4-20-alkyl)thio] derivs., 2-hydroxypropyl esters (2744262-09-5)
- Acetamide, N-(2-aminoethyl)-, 2-[(γ - ω -perfluoro-C4-20-alkyl)thio] derivs., polymers with N1,N1-dimethyl-1,3-propanediamine, epichlorohydrin and ethylenediamine, oxidized (2742694-36-4)
- PFBA (375-22-4)
- Perfluorobutanoate (45048-62-2)
- Ammonium perfluorobutanoate (10495-86-0)

- Potassium perfluorobutanoate (2966-54-3)
- Sodium perfluorobutanoate (2218-54-4)

<https://www.epa.gov/newsreleases/epa-requires-reporting-releases-and-other-waste-management-nine-additional-pfas>

EPA Releases New PFAS Analytic Tools

The EPA has released a new interactive webpage, called the “[PFAS Analytic Tools](#),” which provides information about PFAS across the country. The PFAS Analytic Tools bring together multiple sources of information in one spot with mapping, charting, and filtering functions, allowing the public to see where testing has been done and what level of detections were measured. [See the new PFAS Analytic Tools](#).

EPA Issues Next Test Order Under National Testing Strategy for PFAS Used in Plastics, Chemical Manufacturing

EPA issued the next Toxic Substances Control Act (TSCA) test order requiring testing on PFAS under EPA’s the [National PFAS Testing Strategy](#). Today’s action orders companies to conduct and submit testing on trifluoro(trifluoromethyl)oxirane (HFPO), a perfluoroalkyl substance used in making plastics. This is the second test order under the strategy and the latest action taken under EPA’s [PFAS Strategic Roadmap](#) to confront contamination from forever chemicals nationwide.

<https://www.epa.gov/newsreleases/epa-issues-next-test-order-under-national-testing-strategy-pfas-used-plastics-chemical>

EPA and Army Corps of Engineers Updates Definition of Waters of the United States

EPA and the U.S. Department of the Army (the agencies) announced a final rule establishing a durable definition of “waters of the United States” (WOTUS) to reduce uncertainty from changing regulatory definitions, protect people’s health, and support economic opportunity.

More information, including a pre-publication version of the *Federal Register* notice and fact

sheets, is available at [EPA’s “Waters of the United States” website](#).

EPA Issues Guidance to States to Reduce Harmful PFAS Pollution

EPA released a memorandum to states that provides direction on how to use the nation’s bedrock clean water permitting program to protect against PFAS. The guidance outlines how states can monitor PFAS discharges and take steps to reduce them where they are detected.

<https://www.epa.gov/newsreleases/epa-issues-guidance-states-reduce-harmful-pfas-pollution>

Early Career Professional Notes

by Rebecca Butcher



WI AIPG is looking to create new ways to network with our members. Do you have an idea for networking with each other that you’d like to participate in? Some Sections have golf outings, lunch and learns, or visits to significant historical or natural areas.

Please send your ideas to me at:

karina.casey@wsp.com

AIPG Wisconsin 2023 Officer Ballot

Ballots are being accepted until February 28, 2023. 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 February 8, 2023. Candidate bios are listed below and on the AIPG electronic ballots. All positions are open to write in candidates of WI AIPG members in

good standing. The Member Screening Committee Chair needs to be a CPG.

President

Paula Leier-Engelhardt – P.G., C.P.G.: Principal Geologist and owner of HydroGeo Solutions LLC, with 36 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. Previous positions: STS, AECOM.

Vice President

Thomas Kettinger – P. G., C.P.G.: Senior Manager of Global Remediation of Clarios (formerly Johnson Controls Power Solutions). His experience includes brownfield development, industrial site remediation, and enforcement. He has a lead role in implementing many transformation initiatives, including manage a global portfolio of current and former facilities and third-party legacy sites undergoing environmental site remediation. Thomas is a subject matter expert for Clarios working across the company to ensure activities follow all regulations and standards

Secretary

Trevor Nobile P.G., C.P.G: Field Operations Director at Wisconsin Department of Natural Resources (DNR). Previous positions: Geoscientist for Tetra Tech Inc. Technical expertise includes hydrogeologic, geomorphologic, and hydrologic assessment and investigation; soil, sediment, rock classification and field engineering.

Treasurer

Andrew Graham – P.G., C.P.G, P.E.: Project Manager at TRC. Engineering project manager with over 20 years of experience specializing in electrical utility T & D and design-build renewable energy projects. Previous positions: Realtime Utility Engineers, IEA, Vierbicher Associates.

Government Affairs Chair

Heather Hallett, P.G., C.P.G. is a 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.

Member Screening Chair

Christine F Lilek P.G, C.P.G. has a BS in Geology with an emphasis in hydrogeology at the University of Wisconsin – Milwaukee. Christine is an Environmental Training Coordinator for the WI Department of Health Services and Commission Chair for the Lake Sinissippi Improvement District. Her previous positions include Senior Hydrogeologist for DNR, MSA Professional Services, WE Power Company, Board Director for Village of Cottage Grove Sewer, and Water Utility.

Education Committee Chair

Karina Casey P.G. : Technical Professional for WSP in Madison. She provides support on a variety of multi-faceted projects across North America including sediment investigations, environmental remediation, site investigations, industrial hygiene, and conceptual site modeling. Prior to joining WSP, she worked as a Logging Geologist on exploratory oil and gas wells specializing in unconventional carbonate reservoirs. She received a bachelor's degree from UW-Stevens Point with a Geoscience Major.

WI AIPG Newsletter Editor

We are asking for write-in candidates for this position. The entire WI AIPG Executive Committee provides articles, and someone is needed to drop the articles into our newsletter template and then check for spelling, grammar and format improvements. Please consider writing in your own name.

Future Events

Chris Lilek – WI and Shanna Schmidt – MN are both co-chairing the 2023 National AIPG Conference from September 16 – 19, 2023 in Covington, KY (across the river from Cincinnati, OH). It's a Midwest effort and we are inviting you to save the date and make plans to participate in some way!

Submit an abstract for a technical poster or oral presentation, sign-up to be a sponsor or exhibitor, register for workshops or training, attend a field trip or a day of presentations, visit area attractions, network with other geoscientists. CEUs will be granted!

More information can be found at:

<https://aipg.org/page/202360thAnniversaryConference>

