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THE PROFESSIONAL

EDGE

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President's Message



Kristen Darr, P.Geol.

As we head into autumn, we are nearing the time that a call for nominations for council will be announced.

This year, members will notice there has been a change in the council nomination process. This significant update will make the process more transparent to members, stakeholders and the public. The process will reflect on the needs of council, based on APEGS strategic plan, identify any gaps on council and ensure those who can successfully fulfil its needs are voted on by the members.

Going forward, anyone can be considered for the process, which will take each candidate through the same evaluation and interviews to ultimately put forward candidates for members to vote on.

The change was to ensure good governance practices and will result in a sound process that is fair and equitable to members seeking a nomination. It also helps promote diversity among the members on council.

In this issue, you will find a few examples of how our many members benefit our economy and make the province better.

The positive contributions made by geoscientists and engineers through projects they participate in or lead helps Saskatchewan address significant concerns of humanity.

Take energy. It is important to showcase a company that has claimed a piece of the energy pie to benefit our power production in an environmentally-conscious way. DEEP, which is led by Kirsten Marcia, P.Geol., is a leader in geothermal energy production in Canada, showing the rest of the country that we in Saskatchewan have the technical skill, but also the business knowledge and relationships necessary for innovative ideas to become producing enterprises.

Then there is the need to feed the world, which people in Saskatchewan know we have a vital role to play and that our people are among the best in the world at doing it. The vital contributions of engineers to this endeavour transforms a commodity into a food source for people and livestock. Through their dedication to improvements, members such as Amanpal Bilkhu, P.Eng., Wayne Goranson, P.Eng., and Heather Quale, P.Eng., P.Geol., can develop new technology, optimize processes and maximize the crops being grown by our local producers, delivering greater value to the stakeholders in the food chain. The story of Goranson and Quale's business shows how the connections we make in our careers can support fresh and creative thinking in order to deliver original solutions.

Looking at all three feature stories in this issue of *The Professional Edge*, we can see the significance of new processes and technology to transform what we have today into something better. By highlighting projects such as these as well as tracking announcements of major investments in Saskatchewan that have depended on engineers and geoscientists, such as the \$7.5 billion Jansen S1 mine that BHP is moving ahead in the Humboldt area, we hope to renew your sense of excitement about the value of your work in your chosen area of engineering or geoscience.

Making it as easy as one, two, three

BY MARTIN CHARLTON COMMUNICATIONS



Kirsten Marcia is the president and CEO of DEEP, Canada's first geothermal power facility located near Torquay, Sask.

Kirsten Marcia has learned many lessons since starting DEEP in 2010 to explore the potential of geothermal power production.

Kirsten Marcia, P.Geo., is going full steam ahead to develop the first geothermal power facility in Canada.

"There isn't any geothermal production in Canada and I thought, why not?" said Marcia.

"We knew the hot water existed (in southeast Saskatchewan.) We knew it had a good shot at being a great resource. If we can put all three legs on the stool, we've got a successful project."

Proving that those three legs – the resource, a customer and a supportive regulatory environment – are in place would take nearly 10 years. But the company Marcia co-founded and the \$50 million project it undertook near Torquay can now point to having the front-end engineering and design (FEED) with a corresponding feasibility study and report completed.

"It was a different world ten years ago," said Marcia, who serves as DEEP'S president and CEO.

"There was a lot less interest in developing renewable energy resources."

Starting out in geothermal

Marcia became the founder of DEEP at a time when she was ready to do something new in her career, but it has taken far more than this geologist first anticipated to get to this point.

"I came to this project not specifically with a renewable energy background but as a resource entrepreneur," said Marcia, whose experience included being a wellsite oilfield geologist as well as exploring northern Saskatchewan for gold, base metals, diamonds and coal. She has served as a vice-president of exploration, a director of investor relations and an exploration manager for other resource companies.

That experience in the resource sector taught her what it took to develop a business case to develop a resource. She had the connections in oil and gas to bring the expertise needed to the fluid-moving project.

Energy transformed

Essentially, the project involves production wells bringing hot brine from the Deadwood and Winnipeg Formations of the Williston Basin to the surface.

"If you think of the Williston Basin as a stack of pancakes. We are developing the very bottom pancake," said Marcia.

"It's a real blend of heat mining and typical oilfield fluid production in a sedimentary basin."



DEEP Corp.

DEEP drilling rig on site of geothermal project.

“We’re mining this inexhaustible supply of heat out of the ground, but using standard oilfield technology and expertise (to do it).”

The geothermal energy in that hot water and steam is converted into electricity in a plant on the surface.

That plant uses Organic Rankine Cycle (ORC) technology. ORC technology is used in other industries that generate heat, including paper mills, gas compressor stations, cement factories, gas processing plants, oil and gas refineries, incinerators and chemical plants. In Saskatchewan, there are at least four facilities using ORC technology. Those four plants — which are owned by NRGreen Power Limited Partnership — are all built at Alliance Pipeline compressor stations where they recover the exhaust heat from natural gas turbines to make electricity to supply SaskPower.

New to Canada

While there are geothermal plants in others parts of the world, including the U.S., this would be the first in Canada.

Marcia has learned many lessons since starting the company in 2010 to explore the potential of geothermal power production. While the resource was there — giving Marcia the first leg she needed on her three-legged stool/business case — the funding was not and securing it has proven to be her biggest challenge to overcome.

“I’ll be totally honest. It’s been hard,” said Marcia, who founded the company along with Steve Halabura, P.Geo., a former president of APEGs well known by those in potash and helium resource development who has incubated a number of new business projects.

Those she approached early on did not see what she saw.

“The oil and gas companies we approached, which I thought would be a perfect fit for investment, preferred to stay in the business they knew best,” said Marcia.

What they knew was that reservoirs of oil often include water. For them, bringing that water to the surface was an expense because they must appropriately dispose of that water.

“Water in oil and gas is an operational cost. It is not something you look at as offering value,” said Marcia.

Overcoming that objection was not as simple as producing reports like the one she has from 2013/2014 when DEEP received \$2 million from SaskPower and Natural Resources Canada to do a pre-feasibility study.

“It’s a binder that sits on my desk collecting dust. There is one paragraph in there that says this is a viable project. This project has a really great shot,” said Marcia.

“I thought, at that time, with great naivety, that we could finance the project with that.”

Environmental consciousness to the rescue

While investors had little interest in the junior resource sector at that time, other changes in favour of DEEP were

underway, including the Paris Agreement being signed in 2015 and the federal government developing its updated climate plan with a policy goal of net-zero emissions by 2050.

Geothermal has no carbon dioxide emissions and boasts the smallest environmental footprint of the renewable energy sources. It is also very reliable, having an almost continuous baseload supply of electricity available.

These benefits and a growing consciousness around the environment drew in others interested in DEEP's potential. This would contribute to Marcia achieving the second leg of her stool/business case — a customer.

SaskPower signed a power purchase agreement in 2017 in support of its goal of having 50 per cent of its capacity come from renewable power by 2030. The agreement allowed DEEP to continue a proof-of-concept study to determine the feasibility of the project.

Homegrown oil and gas expertise lends support

Not that those in oil and gas didn't encourage the project. In fact, a defining development came from that industry's support and expertise.

"This is a fluid-moving project and no one knows this better than the oil and gas industry," said Marcia.

In late 2018 and early 2019, the company drilled its first well and "it came up beautifully," said Marcia.

But the water it produced came up at 125 C, which, while hotter than expected, was still measuring as a lower temperature resource by those knowledgeable about geothermal energy.

"To be economic at those temperatures, you need to move massive volumes of fluid," said Marcia, who explained that while "people in oil and gas always think we have a decimal point screwed up" because of how much fluid they must move, the principles of managing fluid production are consistent in both industries.

"We were seeing challenges of how to accomplish that in these vertical wells."

"There are similar challenges in the oil and gas industry all the time in managing fluid production rates."

"It didn't take long for the oil and gas industry to tap me on the shoulder and suggest the standard horizontal drilling and completions in order to achieve the volumes."

"That whole well design of drilling horizontally rather than vertically for geothermal could crack the code on some of these lower-temperature resources around the world for sedimentary basins.

"That is based on our world-class engineers and geoscientists here in Western Canada."

Impact on Saskatchewan

"We're excited this very unique new design for developing wells using oil and gas completions could be transformative for the geothermal industry," said Marcia, but right now, the focus for DEEP is to complete this project in Saskatchewan.

"There are not many places in the world where we can get all three legs of the stool to develop a brand-new resource for Canada," said Marcia, who greatly appreciates Saskatchewan for what she describes as having "one of the best regulatory environments in the world for supporting projects" such as hers. That regulatory environment is the third leg of her stool/business case.

The support of the federal government has also been a major boost. It has contributed \$27 million through Natural Resources Canada, first as a ecoENERGY Innovation Initiative for a pre-feasibility study in 2014, then through its Clean Energy Innovation Program (alongside Innovation Saskatchewan's contribution) in 2018 toward test drilling and finally through its Emerging Renewable Power Program to support commercially viable renewable energy sources working to reduce greenhouse gas emissions in the electricity sector. That government funding made the project more appealing to private investors by bringing down DEEP's risk profile, said Marcia.

There are a couple more years of work to get to the point that the facility can produce up to 32 megawatts of clean energy — enough to power about 32,000 houses.

"We're looking at the beginning of 2024," said Marcia, who credits the SaskPower agreement with allowing DEEP to order the long-lead items it needs, such as the power generation equipment.

But the project offers the province more than electricity from a clean, renewable source.

"Below ground and above ground, this is a really exciting Saskatchewan diversification project," said Marcia.

"Seventy per cent of the province is powered by fossil fuels," said Marcia.

"I'm not saying that fossil fuels will go away completely, but projects like this have the opportunity to diversify in a rational way."

They also offer a new opportunity to an existing workforce in the southeast part of the province.

"There is also an opportunity to diversify people. Those who have been working traditionally in oil and gas, that same skillset can be redeployed in the renewable energy industry," said Marcia.

Optimizing a growing opportunity

BY MARTIN CHARLTON COMMUNICATIONS

Canola has been big news in Saskatchewan this year with the announcements of three canola crushing plants that are to be constructed in the province.

Making the most of what he is working with is at the core of Amanpal Bilkhu's work. Today, he uses data to ascertain how to gain improvements. As a kid growing up in southeast Regina, he relied on his personal awareness to determine what he should study at the University of Saskatchewan.

Bilkhu was — and still is — enthusiastic about solving problems and has an aptitude for chemistry and math. Many engineers can say the same about themselves.

"If you put all of that into a blender, you come out with engineering as a career," said Bilkhu, P.Eng., whose knowledge of physical principles, mechanics, and chemistry could help him to design a better blender — if he weren't already hard at work for Cargill.

No blender is required in the work he does for the international provider of food, agriculture and risk management products and services, but Bilkhu has many other types of equipment and processes to consider as the team he is part of extracts an oil the world desires while also producing meal to feed livestock.

Expanding Saskatchewan's capacity

Canola has been big news in Saskatchewan this year with the announcements of three canola crushing plants that are to be constructed in the province.

One of those new canola crushing plants announced for Saskatchewan is to be built by Cargill in the Regina area. The other two are being constructed by Viterra at Regina and Ceres in the southeast.

Canola is one of the country's most widely grown crops with the Canola Council of Canada counting 43,000 farmers

producing about 20 million tonnes of canola a year on approximately 20 million acres of farmland. Saskatchewan accounts for more than half of that production, the provincial explains.

Saskatchewan currently processes about 40 to 45 per cent of the canola it produces at a value of \$3 billion. Processing even more canola transforms the commodity, but also the agricultural economy of the province. Canola processing currently represents the largest portion of Saskatchewan's value-added sector, so expanding that processing capacity offers the province its most significant potential for growth for that sector.

The Saskatchewan government has a goal in its Growth Plan to crush 75 per cent of the canola produced in the province by 2030, which would add an estimated \$2 billion in additional value-added revenue.

To encourage investment in canola processing, the provincial government has promoted its tax environment and credits, access to utilities, export record, agri-food research cluster as well as the province's technical and engineering resources as part of Saskatchewan's valued labour force.

These three plants announced in 2021 would join the four already being operated in Saskatchewan by — from north to south — Bunge at Nipawin, Cargill at Clavet and Louis Dreyfus Company (LDC) as well as Richardson at Yorkton (which announced this year it will be doubling its processing capacity.)

Processing at a crush plant

On a broad scale, every crushing plant extracts the oil in a

very similar way, but each competitor would have its own fine-tuned details of the process.

The canola seed brought to these plants is crushed to release the oil inside. Before it is crushed, the seed is conditioned in preparation for the manual expellers, which release the first two-thirds of the oil content in the seed. The final one-third comes from washing the solids that remain after pressing.

After the oil is extracted, it must be refined. That oil is primarily used for cooking, but can also be a component of biofuel. The meal that remains is turned into high-protein animal feed.



As a cooking oil, canola is considered to be versatile, affordable and healthy, having zero trans-fat and the lowest amount of saturated fat of all common cooking oils, the Canola Council of Canada states.

Maximum team performance

Construction on Cargill's second plant is expected to begin in early 2022 with the plant going into operation in 2024. Bilkhu has been working at its first, located at Clavet just outside of Saskatoon, since 2012. His start with Cargill was as a project engineer, brought on for the commissioning, build and start-up of a refinery for the crude canola oil from the crushing plant.

That experience gave him the basis of design for the refinery, which allows him to recognize how to troubleshoot issues and identify opportunities to improve its performance.

Not everyone — including his own family — understands what he does in his job, so he explains by comparing the plant and refinery to a race car and his role and team to being part of a pit crew.

"I'm responsible for identifying and executing initiatives that help the race car go faster and be safer and more efficient," he said.

As for the team, it includes production supervisors, process engineers, smart manufacturing team members, a plant superintendent and maintenance employees.

"We all leverage our different strengths and bring our different perspectives to table to tackle different issues on site," said Bilkhu.

As for his input to the team, he clearly recognizes his niche and it continues to engage him as he has evolved over nearly 10 years later.

"In terms of process engineering, what I enjoy is identifying an opportunity — be it for efficiency or safety — and executing it," said Bilkhu.

"Being able to solve chronic issues or capture value in ways we haven't been able to do before is my passion."

His work in site processing prepared him for the role that he holds today.

"Now in this smart manufacturing role, I can help to bridge the hands-on everyday plant experience with advanced analytics to merge the worlds together," said Bilkhu.

Those analytics that he analyzes help inform how to optimize the facility.

"What we do is through monitoring and setting goals and monitoring deviations in KPI (key performance indicators), we are able to maintain a high standard of performance," said Bilkhu.

"Our most important key performance indicators would revolve around how much seed we are getting through the facility and how much oil we are removing from that seed."

When there is opportunity for improvement, Bilkhu's experience helps him recognize what he can contribute to the solution and who he needs to consult for the team to fully understand how to proceed.

For example, "if throughput is not where we want it to be one week, that would trigger a deviation. We would do some cause analysis into why we were not able to achieve that week.

"Depending on exactly why we couldn't meet it, we would pull in the appropriate specialties — operations, maintenance, materials technology leadership — to leverage their knowledge and expertise."

As a process engineer, he needs to understand chemistry as well as physical principles, plus have some background in mechanics.



Amanpal Bilkhu, P.Eng.

“It’s a mix of several different things. You need to be pretty agile in your abilities to understand data and induce changes and run trials,” Bilkhu explained.

Engineering greater achievement

Bilkhu’s desire for more is being used to benefit the world. He finds alignment between his own personal values and his employers, which describes its purpose as existing “to nourish the world in a safe, responsible and sustainable way.”

The kid who grew up in the city today supports the efforts of those in rural Saskatchewan who feed the population at home and abroad. With his education and experience, he is seeking to maximize their ability to do that.



“We need to find a way to feed more people, extract more oil out of what we have today. It aligns with a base human need to produce more food for the world.”



New uses within the realm of possibilities

BY MARTIN CHARLTON COMMUNICATIONS

By working across a variety of sectors, fresh solutions are being developed by engineers at the Mera Group of Companies, especially in converting plant proteins for human consumption.

There is a quote that says the definition of insanity is doing the same thing over and over again and expecting a different result.

Wayne Goranson, P.Eng., pursues a different result by looking at what other sectors have done. That interest led him to disruption — before it was commonly recognized — while his wife, Heather Quale, P.Geo., P.Eng., has nurtured her interest in mentoring and professional development.

“My role is managing and growing the engineering team,” said Quale.

Along with those she recruits in engineering, information technology and economics to work at the Mera Group of Companies, they solve the problems of their clients.

“I’m more on the development side,” said Goranson.

“When you are developing something new, you need a variety of resources. Thank goodness, Mera Development has those resources and I can pull on them as I need them.”

Distinctly different

The solutions they devise by working across a variety of sectors are ones that others may not have recognized and definitely didn’t execute. When developing solutions, it is Goranson’s aim to avoid what others have considered for that problem.

“(Some will say) this is how you do it. We look at it differently. I don’t want to know how anyone else is doing it. How would we do it?” said Goranson.

“Early on, before it was a common word, we called ourselves disrupters because we were messing with everyone else’s protocols.”

An example of this was a search for technology to convert plant protein found in grain and pulse crops into something

more digestible and palatable for humans — technology Goranson said has been referred to as a “mechanical cow.” This project by one of the companies in the group, Mera Food Group, has seen a huge evolution that continues to this day.

His pursuit of a mechanical cow began in the Caribbean, where he had connections through his oil and gas experience.

As the region sought to diversify its crops, a delegation from there travelled to Saskatchewan, and during their visit, stopped in at Goranson’s family farm in the Weyburn area. A few years later, they reached out the Goransons about replicating what they saw in Saskatchewan. Particularly, growing plant proteins was seen as a more efficient way for humans to obtain protein than through cows.

So, Goranson, along with some engineers and economists, started to work in the Caribbeans to get the new crops growing by building irrigation and electrical infrastructure as well as grain handling, processing and storage.

That experience exemplifies what Goranson heard one of Mera’s senior engineers once explain to some young, Eastern European students visiting the Mera Group offices in Regina. The engineer had been asked why he liked his job. He said, “Because I get to do things that no one else has done before.”

“There is a bit of adventure in some of us with that problem solving”.

Searching the world for solutions

That attitude can be seen in the solution Mera came up with for processing protein-rich crops in a cost-effective and efficient way.



A search resulted in finding a piece of technology that originated in the former Soviet Union's military complex that could now be used to break down grains and proteins into a beverage or food close to where they were grown.

Animal protein production for human consumption is by far more energy intensive and less efficient in comparison to production of plant proteins. Feeding plant protein to a cow to produce milk is an inefficient use of protein. Plus, a cow uses 10 times the water plants need. Then there are those who are lactose intolerant — which the Canadian Society of Intestinal Research says is about 65 to 70 per cent of the world's population. However, without processing, humans can only digest a small percentage of beans or pulse crops.

In its original life, the Soviet technology had been used in submarines to dispose of garbage.

"In a submarine, if you throw your garbage out, everyone can see where you are. If you grind it up, they can hear where you are. They were using water to break it down into itty-bitty pieces, which is essentially what we do with the plant protein," said Goranson.

Once Mera secured the technology, it was a matter of "taking that fundamental, core technology and using a team of engineers to turn it into a reliable, repeatable commercial process. You put a product in one end and something that a human can consume comes out the other end."

The patented technology developed by Goranson's team is known as a Hydrodynamic Cavitation Reactor. It relies on a process known as cavitation, which uses water and energy to create microscopic explosions to disintegrate the plant material. This generates heat, which cooks the plant matter so most of it can be digested while ensuring it is flavourless and odourless to make it more appealing to

those consuming it. It maintains the nutrition inherent to the plant while addressing a property of it that inhibits an enzyme necessary for the protein of the plant to be digested. This also makes the plant 97 per cent digestible as opposed to 10 per cent without processing.

A Canadian mining company operating in the Dominican Republic had a social obligation in their extraction contract to contribute to a sustainability fund. The company began working with Mera on a project in which local farmers grew soybeans to be processed by Mera into a beverage that would be distributed to local schools. Mera was able to do it utilizing its Hydrodynamic Cavitation Reactor, so a factory in the Dominican Republic was started.

Mera's work there got the attention of the Canadian Embassy and the United Nations, which asked if Goranson's team could distribute their protein beverage to political prisoners in Haiti, which shares an island with the Dominican Republic. Then, when Hurricane Matthew hit in 2007, they were tapped again to help in the crisis to feed people in schools with their protein beverage.



Today plant protein foods are gaining popularity across the world. "There is very high-end premium market, people with disposable income searching for healthy alternatives choose such products for health and environmental reasons," explained Goranson. "Then we have another side of the market, people who choose our products for being a low-cost, efficient delivery (of protein)".

Bringing their best to Saskatchewan

Back home in Saskatchewan, they have been working on a project with Protein Industries Canada to prove this production and package and distribute the product. Mera Foods had also entered into a partnership with Federated Co-operatives to produce an oat-based beverage which is expected to hit the local market in the coming year.

When the pandemic arrived, suddenly, travel to the Dominican Republic was no longer possible. The manager of the plant became very ill.



Wayne Goranson, P.Eng.



Heather Quale, P.Geo., P.Eng.

It was decided the factory needed to come to Saskatchewan. So, it was dismantled, piece by piece, in a process led by Goranson and another engineer in Saskatchewan who were directing the factory's administrative assistant in the Dominican Republic — who spoke no English — through the process.

The young woman led a team that took apart all 10,000 pieces of the factory to send them to Saskatoon.

"Every night, our lead engineer and I would set the tasks for what we need her to do tomorrow," said Goranson.

In the morning, they would use video conferencing to describe to her what pieces needed to be disassembled, what colour to mark them, which container to put them in and how to document it all.

"It arrived with zero errors or omissions or any problems with customs," said Goranson.

The factory could be transported because of its size, which was a solution found by referring to other sectors.



"To put a processing facility that can feed 60,000 people in a day, (produce) 20,000 litres in day, in a sea container, everyone said is impossible. But no, it's not. You go to another sector," said Goranson.

"You go to people from refineries and from aviation and they have to put a lot of complicated pieces in a small physical area and they have figured out how to do it."

It wasn't just the size that mattered. The design did, too. Again, experience in other sectors helped.

"We need to build things and design things with common parts. If you look at our processing machine for the soy, all of the valves are replaceable. ... All of the wires, all of the pumps, all of the bearings are of the same specifications."

"Where did that come from? Our experience in the resource sector where people are drilling oil wells in Siberia and the desert and all over and you need to be self-sufficient."

"That's been one of the blessings in our experience in our company is our customers in so many different sectors."

Links connected

That experience came about because Goranson and Quale recognized how to build on their company's strengths while expanding their connections.

"Before data was cool, we found out we could do a lot if we could get the data in front of people very quickly so they could make informed decisions," said Quale.

"They know their industry. We know how to use data effectively. Together we team up to solve business problems really quickly and efficiently."

But it was more than being able to collect and share timely data. She knows engineers graduate with some skills at a fairly equal level, but she is looking for something specific in someone to become a consulting engineer.

"We know that they will be able to do the technical skills and we continue to train and mentor them to develop their skills into a professional level," said Quale.

"We need people who can communicate and work well with our clients to tease out the information."

They have purposefully built a team unlike many others.

"Quite often in an engineering company, you will have people of the same background working in the same sector," said Goranson.

"Ours is a bit more of a potpourri. The group that Heather has pulled in have very dissimilar backgrounds."

By focusing on collecting and using data, valuing interpersonal skills and building a diverse team, they have been able to push the boundaries of what was possible for their companies. Their approach has taken them and their team from oil and gas into mining, refining, pipelines, power generation, water management and, of course, agriculture and food processing.

“We find it’s really important to start with what we are good at and keep doing that and move that across from industry to industry,” said Quale.

“We recruited people from other industries that helped us to advance capabilities by just applying the same capabilities in one industry into another industry.”

Realizing possibilities

When they don’t have the expertise in their team, they have the connections in the world to find that person who does. Knowing what expertise to seek out is sometimes inspired by ideas their team members aren’t afraid to suggest.



“We love working with young engineers because they come up with new ideas and they don’t know they can’t do certain things. That brings really valuable discussion into the room,” said Quale.

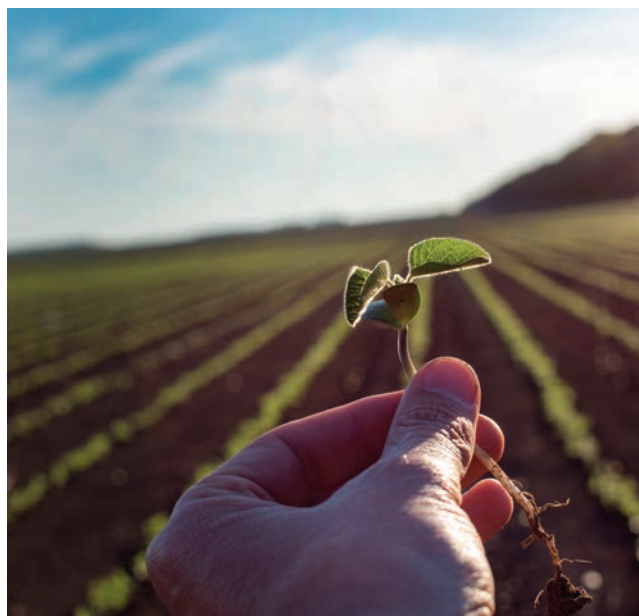
“When you don’t know you can’t do something, it makes so many more things possible,” said Goranson.

A fresh use of existing ideas and practices can be exactly what is needed to create change.

“You pull that industry knowledge across sectors and you can get some good surprises,” said Goranson.

The connections that are formed by an approach like this have taken Goranson and Quale to places and projects they could not have foreseen at the start of their careers and marriage. Before they were wed, while Saskatchewan was in the midst of a drought, the couple visited the Caribbeans as tourists. As they stood on an outlook having a cocktail, Goranson shared a thought on a possible future for them.

“I look out at this beautiful green valley and I offhandedly said to Heather, ‘Wouldn’t it be fun to have a little farm out there?’”



Years later, within 30 miles of the spot he pointed out, he was working on a farm he helped to develop, which would produce the soybeans they processed using the cavitation technology their company found and developed.

“I can’t say that was part of the career plan. It was just a coincidence.”

REMINDER:

Report Continuing Professional Development (CPD) by January 31

Members are required to participate in CPD activities annually. Members must report their CPD credits to APEGS by January 31, 2021.

To report, members log into their online profile at APEGS Central. To learn more, visit apegs.ca under CPD.



APEGS' Office Re-Opening

The APEGS office has been closed to the public since March 23, 2020. The office is tentatively scheduled to re-open after the Thanksgiving long weekend, on Tuesday, Oct. 12.

This date is subject to change depending on the COVID-19 situation in Saskatchewan. To confirm the status of the office re-opening, refer to the homepage at apegs.ca for the most current information.

Information about whether APEGS events are virtual or in-person is also available on the APEGS homepage at apegs.ca.

Regardless of whether the office re-opens to the public, staff members will continue to respond to email and telephone messages to maintain operations as well as possible under the pandemic circumstances.

Contact information for APEGS continues to be:

Email – apegs@apegs.ca Telephone – (306) 525-9547

Toll-free – 1-800-500-9547 (Canada and USA)



APEGS' highest priority is to safeguard the public as well as applicants, members and staff. APEGS asks all in the Saskatchewan engineering and geoscience community to adhere to government regulations and recommended best practices, such as self-isolation and personal distancing to prevent community transmission of COVID-19.

Membership and Licence Fees

2022

Membership and Licence Fees due on or before Dec. 31, 2021



Fees notices will be mailed in mid-November

It is the responsibility of members and the official representative for a Certificate of Authorization to make sure contact information is up to

date, including your email address.

If you do not receive your fees notice, contact APEGS. Fees are due on or before Dec. 31, 2021 regardless of problems with delivery.



Check your contact information in your online profile

To check your contact information, log into your online profile by clicking “Login” in the top right corner on any

page of the APEGS website. (See page 26.)

If you have never used the system before, click on “Forgot your password” and follow the instructions.

Please note that APEGS is introducing a new website at the end of October. If you visit the website after that, you will see the new homepage, but login access will remain located at the top right.

You can also use your profile to make all other fee payments, enter Continuing Professional Development (CPD) credits, renew Permission to Consult, manage your email/mail subscriptions, volunteer for APEGS and change your preferences for receiving information from APEGS.



What happens if I do not renew?

You would no longer have the privilege of practising within Saskatchewan or on properties or facilities located in Saskatchewan.

Use of title in Saskatchewan is also a privilege of membership.

Members who do not retain their membership in APEGS and/or in another Canadian association/order will lose coverage under the National Secondary Professional Liability Insurance Program.

Also, failure to maintain your membership will result in ineligibility for benefits under the group life insurance program offered through Manulife and Engineers Canada if you have subscribed to this insurance.



What if I am not working in Saskatchewan?

Members who are retired or not working (at anything) in Saskatchewan can retain membership and may be eligible for

a waiver of the annual licence fee.

More information can be obtained from the documentation accompanying your fees notice or from the APEGS website under Members.



What if my membership ceases and I need to reinstate?

Memberships that have ceased are subject to a 15 per cent fee to reinstate in the same calendar year.

Members who notify the APEGS office in writing of their intent to resign their membership on or before Jan. 31, 2022 may reinstate their membership and licence during the calendar year without the payment of a reinstatement or application fee.

The late payment penalty for the holder of a Certificate of Authorization is 15 per cent of the annual fee.

For reinstatement procedures for subsequent calendar years, see the APEGS website under Apply.



Eligibility for Life Membership

Members who are 65 years of age and retired are eligible to apply for Life Membership.

An application comes with your fees notice in November.

Notice to Members - Bylaw Changes

At the APEGS 2020 annual meeting held virtually on May 1, 2021, the members present unanimously passed motions to amend *The Engineering and Geoscience Professions Regulatory Bylaws* and *The Engineering and Geoscience Professions Administrative Bylaws*.

As required by *The Engineering and Geoscience Professions Act*, the amendments to the regulatory bylaws have been approved by the minister responsible for the act.

The regulatory and administrative bylaws are now in effect.

The amendments are as follows (added content identified in bold and underlined and repealed content identified in bold and struck through).

Complete versions of the act and accompanying bylaws can be found on the APEGS website under About Us.

The Engineering and Geoscience Regulatory Bylaws

Membership

Member-in-training

4(3) A member-in-training is entitled to the following privileges of membership:

- (d) to be eligible to be elected to council as a ~~representative of members-in-training member-at-large; and~~

Qualifications for Registration

Engineering and Geoscience Licensees

9 To qualify for registration as an engineering or geoscience licensee, a person must, in addition to the requirements set out in subsection 20(2) of the Act:

- (c) meet the minimal combined education and experience requirements as follows:
 - (i) four-year science degree from a university program acceptable to Council and a minimum of five years of acceptable post-degree work experience; or

- (ii) diploma in engineering or geoscience technology from a program acceptable to Council. The program must be at least two years duration (equivalent to technologist, not technician) and a minimum of eight years of acceptable post-diploma work experience; or
- (iii) other education acceptable to Council — successful completion of a minimum of two years of post-secondary bachelor's degree in engineering, geoscience, or related science and a minimum of eight years of acceptable post-study work experience.
- (d) for the experience identified in Section 9(c) above, have a minimum of five years of work experience obtained under the direct supervision of a Professional Engineer, Professional Geoscientist, Engineering Licensee or Geoscience Licensee (or equivalent); and
- (e) have at least five years of acceptable experience within the requested scope of practice.

Licences

Restricted licence

15(1) A restricted licence is available to a ~~limited~~ member whose area of practice is restricted, for any reason, to certain types of work, times or geographical locations.

APPENDIX 1 - Application Form – Certificate of Authorization

A. Registered Business Name & Address

Saskatchewan Office: same as above; ☐ or

.....

.....

Postal/Zip Code:

Tel: (306).....

Fax: (306)

This Application must be accompanied by:

1. the prescribed non-refundable application fee prescribed by sub-section 28(1)(f) of The Engineering and Geoscience Professions ~~Regulatory Administrative~~ Bylaws, 1997 plus the applicable Goods and Services Tax (GST) or Harmonized Sales Tax (HST). GST #106733090; and

Engineering and Geoscience Professions Administrative Bylaws

Definitions

2. In these bylaws:
 - (b) ~~"electoral district" means an electoral district described in Appendix B;~~ Repealed.
 - (c) ~~"electoral group" means an electoral group described in Appendix C;~~ Repealed.
 - (e) ~~"geoscience electoral district" means a geoscience electoral district described in Appendix D.~~ Repealed.

Elected Councillors

Number and composition

- 9 For the purposes of subsection 9(2) of the Act, the total number of councillors to be elected to the Council is ~~7~~ 11, including:
 - (e) ~~one member at large representing each of the three electoral districts described in Appendix B;~~ Repealed.
 - (f) ~~one member from each of the electoral groups listed in Appendix C;~~ Repealed.
 - (g) ~~one member representing members in training;~~ and Repealed.
 - (h) ~~one professional geoscientist representing each of the geoscience electoral districts described in Appendix D.~~ Repealed.
- 9.1 The reduction to 11 elected Councillors will take place through attrition but retaining staggered terms of Councillors by electing a minimum of two member-at-large Councillors each year until Council size is reduced to 11 elected Councillors, beginning with the 2022 Council elections.

Term of office

- 10(1) For the purposes of subsection 9(7) of the Act, each elected councillor holds office for the period of time specified below and until his or her successor is elected:
 - (a) the president, president-elect, immediate past president and vice-president hold office for a term of one year;

- (b) ~~subject to subsection (2),~~ all other councillors hold office for a period of three years.

- (2) ~~In order to continue to provide for staggered terms of office among councillors, of the councillors elected to represent professional geoscientists at the first election after the coming into force of this Act, the one who receives the higher number of votes holds office for three years and the other holds office for two years. In the event of a tie, the Registrar shall, in whatever manner he or she determines, randomly select one of the names of the councillors elected to hold office for three years and the other holds office for two years.~~ Repealed.
- (3) ~~A councillor who is elected to represent an electoral group, electoral district or geoscience electoral district does not cease to hold office by reason only that he or she ceases to be a member of the electoral group or ceases to reside in the electoral district.~~ Repealed.

Procedures for Election

Classification in electoral groups

- ~~11(1) The registrar shall classify each member in an electoral group on the basis of the member's discipline of graduation.~~
- (2) ~~When a member's practice changes, the member may apply to the registrar to change the electoral group in which he or she is classified.~~ Repealed.

Eligibility for nomination

- 12(1) Only members in good standing are eligible for nomination.
- (2) Only a person who has served for at least one full year, from the close of business at one annual meeting to the close of business at the next annual meeting, as a ~~member of Council~~ Councillor prior to the date on which he or she would take office is eligible for nomination to the office of president-elect.
- (3) ~~A person who is nominated to be elected as a representative of an electoral group must be classified with the Association in that electoral group.~~ Repealed.
- (4) ~~A person who is nominated to be elected as a representative of an electoral district must reside within that electoral district, but a member residing in the Cities of Saskatoon or Regina is not eligible for election as a~~

~~member at large representing an electoral district. Repealed.~~

- (5) ~~Repealed.~~
- (6) ~~A person who is nominated to be elected as a representative of a geoscience electoral district must reside within that electoral district. Repealed.~~
- (7) Only members who are compliant with the requirements of the Association's Continuing Professional Development (CPD) Program as specified in the Regulatory Bylaws (Section 23.2 and Appendix 5) and as described in the CPD Program approved by Council are eligible for nomination. Members who are in a CPD remediation position are not eligible.

~~12.1(1) Sections 11 and 12 do not apply to Members in Training.~~

- (2) ~~Only a Member in Training may be nominated to be elected as a representative of Members in Training.~~
- (3) ~~A Member in Training elected as a representative of Members in Training continues in office until the term expires, even if he or she becomes registered as a professional engineer or professional geoscientist. Repealed.~~

12.2(1) Members in Training are only eligible to run for member-at-large positions.

Nominations

- (3) ~~At least 75 days prior to the date fixed by the Council as polling day, the nominating committee shall submit its list of nominations to the Registrar.~~
- (3.1) At least 95 days prior to the date fixed by Council as polling day, applications from members to be considered by the nominating committee shall be submitted.
- (3.2) At least ~~75~~ 45 days prior to the date fixed by the Council as polling day, the nominating committee shall submit its list of ~~nominations~~ nominees to the Registrar.
- (4) ~~At least 60 days prior to the date fixed by the Council as polling day, the Registrar shall give the members of the Association notice of the nominations submitted by the nominating committee and of the right of the members to add to the nominations pursuant to subsection (5). Repealed.~~
- (5) ~~Any five members may nominate an eligible nominee for any elective office, except that of president, by forwarding the nomination over their signatures to the Registrar, to be received~~

~~by him or her, at least 45 days prior to the date fixed by the Council as polling day. Repealed.~~

- (6) ~~All nominations~~ applications must be accompanied by the written consent of the ~~nominees~~ applicants.
- (7) Nominees will be selected by the nominating committee, using procedures approved by Council.

Eligibility to Vote

- 14 (1) All members are entitled to vote for all positions on Council, except for the position of Past President.
- (2) ~~All members are eligible to vote for councillors elected to represent electoral groups, whether or not they are members of the group to be represented. Repealed.~~
- (3) All members are eligible to vote for a councillor elected as a member at large representing an electoral district, whether or not they are resident in that electoral district. Repealed.
- (4) ~~All members are eligible to vote for a councillor representing a geoscience electoral district, whether or not they are professional geoscientists or are resident in that geoscience electoral district. Repealed.~~
- (5) All members are eligible to vote for councillors elected to represent members in training, whether or not they are members in training. Repealed.

Conduct of election

- 15(1) Council shall prescribe the form of the ballot, which shall contain instructions to vote as set out in these bylaws, on which the names, addresses city/town of residence, electoral groups and electoral districts, geoscience electoral district and professional designation status as a member in training, if relevant, of all nominees shall be placed in the alphabetical order of the surnames of the nominees.
- 15.1(2) Any form of electronic ballot shall contain instructions to vote, and the names, city/town of residence addresses, electoral groups and electoral districts, geoscience electoral districts and membership status as a member in training, if relevant, of all nominees shall be placed in the alphabetical order of the surnames of the nominees.
- 15.2 When an engineer or geoscientist is required to be elected to maintain compliance with subsection 9(3) of the Act, the engineer or geoscientist with the highest number of votes, as the case may be, will be elected to Council.

Meetings

Association

21.1 The annual meeting of the Association shall be held in the first six months of each year at a place in Saskatchewan determined by the Council.

- (1.1) Council may, when it determines that exceptional circumstances exist and with the approval of not less than three-quarters of the councillors, set the date, time, format and place in Saskatchewan of the annual meeting at anytime during each calendar year.

~~21.1(1) Notwithstanding section 21(1) of these bylaws, the 2020 annual meeting of the Association shall be held during the year 2020 at a place in Saskatchewan as determined by the Council. Repealed.~~

21(4) When Council sets the date, format and place in Saskatchewan of an annual meeting or special meeting, the format of the meeting may be:

- (a) an in-person meeting of members; or
- (b) a meeting of members held in an electronic format; or
- (c) a combination of (a) and (b) above.

Procedure at meetings

23 ~~Unless otherwise provided, the procedure at all meetings of the Association and of the Council shall be governed by the procedures contained in Appendix E and, in cases not provided for, by the rules set out in Procedures for Meetings and Organizations, third edition, M. Kaye Kerr and Hubert W. King, (Toronto, Canada: Carswell, 1996). Repealed.~~

Proceedings at Virtual meetings

~~23.1(1) Notwithstanding Subsection 23 and the procedures in Appendix E, the following procedures will be followed for the purposes of the 2020 annual meeting:~~

- ~~(2) Only those members who have pre-registered to participate and vote by 11:59 p.m. Central Standard Time on September 4, 2020 and have logged into the secured electronic meeting are eligible to vote during the sessions of the annual meeting.~~
- ~~(3) APEGS staff members shall be appointed at the commencement of the annual meeting to monitor the online, electronic voting proceedings.~~
- ~~(4) Speakers shall follow the Virtual Meeting Engagement Protocols circulated with their log in information.~~

~~(5) All new business motions shall be submitted in writing to the Association office no later than 11:59 p.m. Central Standard Time on Tuesday, September 4, 2020, using the form provided by the Association. New business motions must be signed by the mover and seconder. New business motions may be signed in counterparts and delivered by electronic communications producing a printed or printable copy, each of which is deemed to be an original and such counterparts together shall constitute one and the same motion. Both the mover and the seconder must be present at the virtual meeting to speak to the new business motion, or the new business motion will be void. No new business motions from the floor will be accepted during the virtual meeting.~~

~~(6) Voting shall be conducted electronically by those who have pre-registered and signed into the meeting, via the electronic means determined appropriate by Council. In a situation where the chairperson cannot clearly determine a majority, the chairperson shall call the question again and request those attending to electronically revote. Repealed.~~

23(1) Unless otherwise provided, the procedure at all meetings of the Association and of the Council shall be governed by the procedures as follows:

- (a) or meetings pursuant to subsection 21(4)(a), Appendix E;
- (b) for meetings pursuant to subsection 21(4)(b), Appendix F;
- (c) for meetings pursuant to subsection 21(4)(c), Appendix E for those participating in the meeting in person, and Appendix F for those participating in the meeting in an electronic format; and in cases not provided for, by the rules set out in Procedures for Meetings and Organizations, third edition, M. Kaye Kerr and Hubert W. King, (Toronto Canada: Carswell, 1996) or any subsequent editions.

APPENDIX B - Member-at-Large Electoral District Boundaries

Repealed.

APPENDIX C - Electoral Groups

Repealed.

Appendix F - Procedures at Electronic and In-Person/Electronic Combination Meetings

Parliamentary Authority

Procedures for Meetings and Organizations by M.K. Kerr & H.W. King, Carswell Legal Publications, Toronto, 1984, or later editions, shall govern the organization in all procedural matters not otherwise covered by The Engineering and Geoscience Professions Act, Bylaws or these Rules and Procedures.

Voting Eligibility

Each member of the Association of Professional Engineers and Geoscientists of Saskatchewan is entitled to one vote at the annual meeting or special meeting of members. Only those members who have pre-registered to participate and vote, by a date and time established by Council and have logged into the secured electronic meeting, are eligible to vote at the annual meeting or special meeting of members.

Scrutineers

APEGs staff shall be appointed at the commencement of the annual meeting or special meeting of members to monitor the online electronic voting proceedings.

Rules of Debate

Limitation of Debate

The Chair shall exercise the responsibility of the Chair to limit the debate:

- Consideration of any item of business, whether introduced by motion or resolution shall be limited to 30 minutes;
- The Chair shall warn the assembly that the question will be called within the next five minutes; and
- Debate may be extended with the permission of the assembly.

Speakers

Speakers shall follow the electronic meeting engagement protocols as determined by Council and distributed prior to the annual meeting or special meeting of members.

Motions

All new business motions shall be submitted in writing to the Association office by a date and time established by Council, using the form provided by the Association. New business motions must be signed by the mover and seconder. New business motions may be signed in counterparts and delivered by electronic communications producing a printed or printable copy, each of which is deemed to be an original and such counterparts together

shall constitute one and the same motion. Both the mover and the seconder must be present whether the meeting is held in electronic format (21(4)(b)) or combination in person/electronic (21(4)(c)) or the motion will be void. No new business motions from the floor will be accepted during a meeting held in only an electronic format. Each person except the mover of a motion may speak once to each motion.

Amendments

Amendments must be introduced by motion, in accordance with the rules for motions set out above and be voted on before the main motion is put to a vote. The mover of an amendment may speak only at the time of proposing the amendment. Each person who speaks to an amendment shall be limited to a maximum of two minutes. No more than two amendments may be on the floor at a time.

Resolution and Motions

Resolutions and motions shall be decided by a majority (50%+1) of votes cast, ignoring abstentions. Because abstentions are not “votes” they are not counted in the total votes cast. Therefore, the practical effect of an abstention is an indication of support for the prevailing side on the vote. While it is the duty of members who have an opinion on the question to express it by their vote, persons cannot be compelled to vote. Abstentions shall not be counted or recorded but, in a conflict-of-interest situation, the name of the member who abstained shall be recorded at the member’s request.

Voting Procedure

Voting shall be conducted electronically by those who have pre-registered and signed into the meeting, via the electronic means determined appropriate by Council. In a situation where the chairperson cannot clearly determine a majority, the chairperson shall call the question again and request those attending to electronically revote. If the meeting format is a combination of an in-person meeting and an electronic meeting pursuant to subsection 21.1(2)(c) of these bylaws, the votes from the in-person meeting and from the electronic meeting shall be combined to determine the outcome of the vote.

Council Elections

Will you volunteer for APEGS Council?

Volunteering as an APEGS Councillor is a good way of serving the public and giving back to your profession. You can gain invaluable knowledge, experiences, connections and networks.

APEGS is governed by a council of elected members and public appointees. The Nominating Committee is looking for qualified applicants to nominate for election for the following 2022 council positions:

- President (one-year term) – nominee must be the current president-elect;
- President-Elect (one-year term) – nominee is typically the current vice-president, and may be any member who has completed at least one full year on council;
- Vice-President (one-year term) – two nominees required; and
- Two members-at-large (three-year term, eligible for a second three-year term) — at least two nominees required for each position.

Eligibility

Applicants must be APEGS members, reside in Saskatchewan and be Continuing Professional Development (CPD) compliant [as per *The Engineering and Geoscience Professions Act*, 1997 (Section 9) and Administrative Bylaws (Section 12)].

Selection Process

Further to the Governance Change Project, there have been changes in the way members are nominated for election. The Nominating Committee selects nominees using the following process:

- a gap analysis of continuing council members;
- prioritization of desired skills to add to council;
- solicitation for and recruitment of applicants;
- review of applicants' experience and skills;
- interviews of applicants;
- consideration of the council composition of attributes and competencies tempered by the concepts of inclusivity and representation; and
- nomination of successful applicants.

As a result of the gap analysis for the upcoming year, preference will be given to applicants who demonstrate strengths in strategic planning, risk management and/or financial acumen (accounting).

How to Apply

Individuals wishing to be nominated for election may either apply themselves or they may be recruited by the Nominating Committee to apply. Complete the application and self-evaluation form and email it along with a curriculum vitae (CV) to the Nominating Committee at apecs@apecs.ca by Dec. 1, 2021.

The application and self-evaluation form includes a statement of why you are interested in serving on council and a list of your skills and competencies, such as listening skills, strategic thinking, government relations and volunteer experience. The form, a description of the role and responsibilities, including the time commitment required of council members, frequently asked questions and more can be found at apecs.ca.

For more information about the evaluation criteria and selection process contact Gina McGinn at 306-525-9547 or 1-800-500-9547 toll-free or gmcginn@apecs.ca.



Spotlight on the Role of Public Appointees

Like all self-regulated professions, APEGS' council includes two public appointees. These council members are appointed according to *The Engineering and Geoscience Professions Act* by a Lieutenant Governor Order in Council, upon recommendation of the minister responsible for the Act. They are full members of APEGS' council with voice and vote equal to the elected members of council.

The act requires that one of these appointees sits on the Investigation Committee and the other on the Discipline Committee. Their role is to represent the public in the self-regulation of the professions of engineering and geoscience by bringing an external viewpoint and transparency to the governance and regulation of the professions.

We say farewell to Wendell Patzer, who served as a public appointee from 2017 to 2021, and we welcome Larry Doke as a new public appointee. Stuart Ritchie resigned leaving the second public appointee position vacant at this time.



Wendell Patzer

Wendell Patzer (Outgoing)

What has your experience been like on council?

I have enjoyed my time on APEGS council. At first there was a lot to learn and understand with all the acronyms, committees and more. Having served on numerous committees — first on the discipline committee then on the audit committee, the investigations

committee, the governance change committee and now the audit/risk management committee — there has been a lot of reading to keep up with it all over the last year-and-a-half.

What has it meant to you personally to be a part of APEGS?

I have felt accepted and appreciated right from the start. I have made an effort to get to know other councillors and staff at face-to-face meetings. I appreciate engineers and geoscientists as 'git-er-done' kind of people who seek to do a task correctly. APEGS is fortunate to have an excellent staff.

Why is it important for a public appointee to be on council?

Having two public appointees on a now smaller council brings more representation from the public to bear on matters that come before council. Public appointees bring an unbiased view to the table so to speak.

As a public appointee who sat on the different committees, what is your opinion on the work they do?

I feel that all the committees I have been on have been well managed. There has been a lot of change to committee structure during my tenure, but thanks to a well-thought out change management plan and very capable volunteers and staff, the committees have continued to function well.

In general, what is the best attribute of APEGS?

Council is very diligent to protect public safety by enforcing the regulations laid out by *The Engineering and Geoscience Professions Act*. A good example is the proactive nature of APEGS council initiating the whole governance change process. A new, leaner, more streamlined organization will serve to protect the public well into the future.

Anything else you want to add?

I'd like to thank my colleagues for the time we spent working together these last four years. I will miss working together with you all. To my fellow councilors, please remember when you are discussing matters around the council table, the good Lord gave us two ears and one mouth for a reason. Please be quick to listen and slower to speak. That is not always easy when discussing topics we are passionate about. I'm still working on this one. Also, it's not about what I think, but what is in the best interest of protecting the public.



Larry Doke

Larry Doke (Incoming)

What is your current employment, background, volunteer work, personal interests, etc.?

Before going into politics, I held other roles that introduced me to the work of engineers and geoscientists. I was in road

construction and sand and gravel crushing, having some of my own gravel trucks and working for two North Battleford companies in that industry.

I later became a city councillor in North Battleford and was part of the infrastructure committee. After I sold my business, Fairview Dodge in North Battleford, in 2004, the community where I lived asked me to oversee a rural water system project for three municipalities. I've also worked on other water projects as a mayor and councillor of the resort village where I live, Metinota.

I was MLA for Cut Knife-Turtleford until October 2020. I was first elected as an MLA in 2011. During my time in provincial politics, I have been the legislative secretary for the Ministry of Highways and been a member of Treasury Board and the Public Accounts Committee as well as the Standing Committee on the Economy. I have also been the Minister of Government Relations, the Minister responsible for First Nations, Métis and Northern Affairs, and a member of the SaskBuilds Corporation Board.

I was also a long-time member and one-time president of the Pacific NorthWest Economic Region (PNWER). (PNWER is a statutory public/private non-profit created by the U.S. states of Alaska, Idaho, Oregon, Montana, and Washington and the Canadian provinces of Alberta, British Columbia, and Saskatchewan and the territories of the Northwest Territories and the Yukon.) It was supported by the regulatory associations for engineers and geoscientists in Alberta, B.C. and Saskatchewan.

My wife, Valerie, and I have two children and five grandchildren. I enjoy restoring muscle cars, golfing, fishing and volunteering.

What do you hope to bring to the APEGS Council?

As MLA, I paid close attention to what was happening in the municipalities in my area, including any road construction, to make sure those municipalities are being looked after.

I think what I bring to council is a view of what municipalities and the public expect of engineers and geoscientists and what could be improved by engineers and geoscientists to serve municipalities even better as those who hire them.

What are you looking forward to getting out of the experience of being on the council?

I have had a good working relationship with a number of engineering firms and those relationships and the work of engineers and geoscientists always interested me. Some part of me would like to have a better understanding of what goes on.

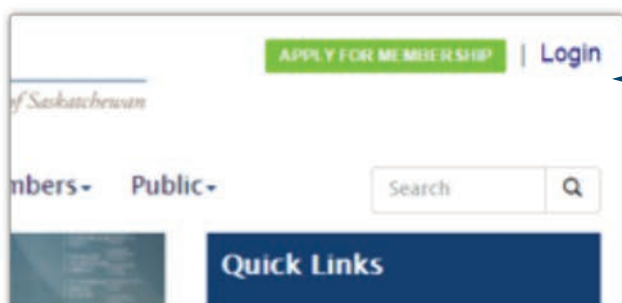
Why is it important for a public appointee to be on council?

I think advertising by APEGS has been good because it helps make the contributions of engineers and geoscientists more visible and helps the public understand why their work is necessary and important.

For example, when a municipality needs a new lagoon, some might be thinking a new set of plans is unnecessary. A hole in the ground is a hole in the ground, you just decide if you want yours bigger or smaller. Some councils may not understand what an engineer does to ensure that lagoon is appropriate for their needs. So, I hope to help improve the relationship between engineers and municipalities.

Update your contact information in APEGS Central

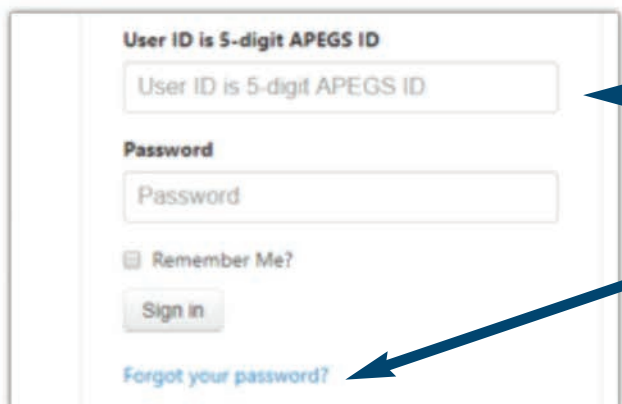
Follow the steps below to log into your online profile with APEGS Central. **Even if you will not be paying your fees online** (for example, your company will be paying for you separately or you are paying by cheque), **you still need to go to your online profile** to review and update your information, indicate in the appropriate screen how payment will be made, and report your continuing professional development (CPD).



STEP 1:

Click **Login** in the top right corner of the APEGS homepage at www.apegs.ca.

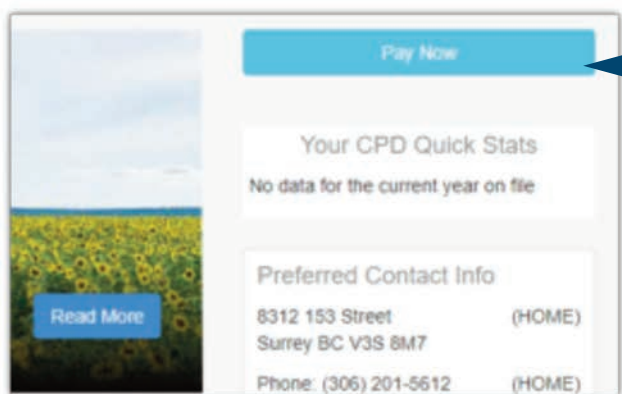
NOTE: APEGS is introducing a new website at the end of October. If you visit the website after that, you will see a new homepage, but login access will remain located at the top right.



STEP 2:

Enter user ID and password. User ID is your 5-digit registration number. Use a preceding zero if it is a 4-digit number.

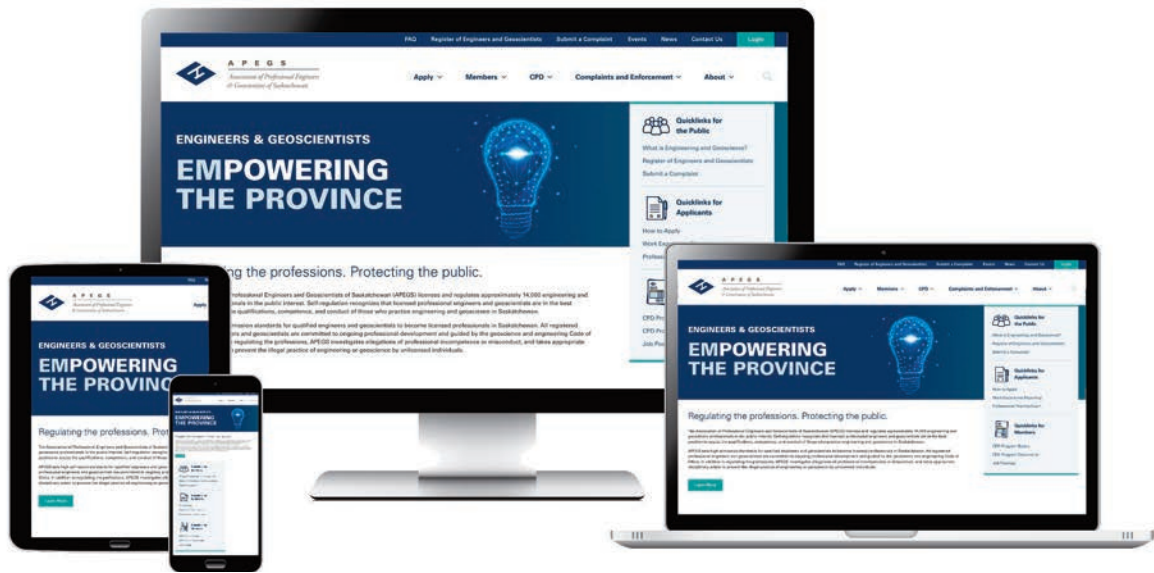
To reset your password, click “Forgot your password?” If you have trouble, check your spam filter before contacting APEGS. You may have to use your home email address rather than your business one to receive emails from APEGS.



STEP 3:

Click **'Pay Now'** to be guided through all the screens you need to see to renew and review/update your information on record with APEGS. This includes CPD reporting, subscriptions, Permission to Consult (if applicable to you) and other information.

APEGS' Website is being Redesigned



The APEGS website is an essential information source for the public, applicants, and members. APEGS is introducing a redesigned website in October 2021 with improvements in three areas:

1.

Design and User Experience

The new website will feature a streamlined navigation and user process, reducing the amount of visual “clutter” and allowing for a more intuitive and user-friendly navigation experience. Using current best practices, the refreshed site will move users seamlessly through the site, ensuring relevant information is easy to find. In addition, the overall design of the refreshed site will be more dynamic and visually appealing, encouraging visitors to browse longer.

2.

Content Optimization

A complete content overhaul of the existing site will ensure that information is concise, relevant, easy to

understand, and consistent in terms of tone, voice, and reading level. Revising all existing content provides the opportunity to better align it with the needs of the user and allows for the incorporation of critical keywords for improved search engine optimization.

3.

Functionality/Development

The refreshed site will be more accessible, with an emphasis on performance and speed, reducing page load and execution time for the user. A modern, semantics-driven HTML and structure, combined with a greater focus on search engine optimization, will enhance usability and visibility. The redesign also incorporates better mobile and tap-based device support, as well as improved readability and usability for high-resolution monitors and devices. In addition, the refreshed site will feature an easy-to-use content management system for quicker, more simplified updates.

Member Profile



Anastasiya Shved, P.Eng., with her partner, William Siguenza

Anastasiya Shved, P.Eng., is a Standards Engineer at SaskPower.

What would you like to share about growing up?

I was born in Ivano-Frankivsk, Ukraine, where I grew up until the age of 16 when our family moved to Canada. Our first home in Canada was Estevan, where my sister and I were welcomed to Estevan Comprehensive High School, which was a very neat experience because the school system in Canada is different than the one in Ukraine. Soon after, our family relocated to Regina and my sister and I attended

Campbell Collegiate (International Baccalaureate program) and later, the University of Regina. We both graduated with Industrial Systems Engineering degrees and joined our parents in the engineering profession.

Why did you choose engineering?

Initially I did not think I would be an engineer. I thought I would do well in a creative profession, such as a fashion designer or an architect. However, I was not set on either option. I remember our parents helped set up meetings with their friends who worked in different professions (dentistry, oil and gas researcher) to help us learn and understand what a job in that profession might look like. I think the deciding factor was a conversation with my dad about different careers and he asked why wouldn't I do engineering. And I thought, "Why not?" It turns out my parents knew more about my likes and abilities at that time than I did. I am fortunate to have strong role models in my life.

What is your area of specialty?

I am an Industrial Systems Engineer, currently working as a Standards Engineer at SaskPower, where my speciality is evaluating materials, resolving material defects and managing service contracts, among other duties. I enjoy solving problems, learning how things and processes work, and "getting my hands dirty" in the field. Besides the day-to-day technical speciality, I think that my speciality is connecting with people and building a bridge between the technical aspects and people and their needs.

What was your experience studying engineering?

I enrolled into Industrial Systems Engineering at the University of Regina after completing high school and completed my degree within the five years. I took advantage of Co-operative Education that the U of R offered and it gave me an opportunity to try out different fields of work and get some hands-on experience while attending university.

The overall experience was great! Some classes were more interesting than others, and some were more applicable, but the program is designed to give a good overview of career streams that an Industrial Systems Engineer can go into. The Co-op program was the highlight of my academic experience as it helped me understand what type of work setting I enjoy so that when I graduated, I knew what to look for.

What jobs/roles have you held as an engineer?

I started my career as a Gradworks student at SaskPower where I helped my manager with capital projects related to the hydro plants. From there, I applied for an Engineer-in-Training position

at the Shand Power Station, which eventually became a permanent position for six years. I had many opportunities during my assignment at the plant, including working on the commissioning team for the Boundary Dam Unit 3 commissioning and overhauls at Poplar River Power Station (Coronach). After that, I moved to my current role of a Standards Engineer in the Distribution Standards and Testing group.

When did you become a registered engineer?

I became a Professional Engineer on July 19, 2015 after I obtained sufficient working experience.

What have you appreciated about your career opportunities and experiences?

I appreciate the hands-on experience the most. I was able to see and learn about the things that many people are not aware of: piping chemical cleans, steam blows, underground distribution system design and construction and much more. I witnessed equipment failures and learned about root causes and methods to prevent failures. I continue to learn about new emerging technologies. I have met many wonderful people and have been to unique places.

Who has inspired or mentored you in your career? What insight or wisdom did they impart?

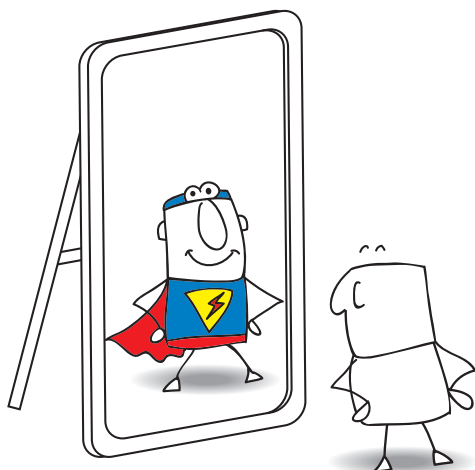
There are many people who inspired me in the past and continue to inspire me — from instructors in the class, my co-workers and peers, my friends and acquaintances that I had a pleasure to meet. Above all, my parents and my family have always inspired me with their work ethics, integrity and eagerness to learn and grow.

What activities or interests do you enjoy outside of work?

Dancing is a big part of my life. I danced with Poltava Ensemble of Song Music and Dance in Regina for 10 years. Now I have moved on to Latin dancing with Regina Salseros, where I started from an adult social class and now enrolled in their performance team. Although dancing takes a lot of time, I still try to attend to my other passions such as powerlifting and outdoor activities, such as hiking and kayaking. I satisfy my creative side and preserve my heritage through painting Ukrainian easter eggs and I offer Ukrainian Easter egg painting classes as well. This summer I picked up vegetable gardening, too. I can only wonder what other hobby I will discover next year!

Something worthy of acknowledgment?

The January-February issue of *The Professional Edge* is all about you!



Our annual Profiles in Achievement issue will profile Saskatchewan-based engineering and geoscience companies and projects.

If you want your company or project profiled or would like to recommend one, let us know.

Please contact: Sheena August, APEGS
Director of Communications:
saugust@apegs.ca.

Gems Of Geoscience



Troy Boisjoli, Geoscience Licensee

Anyone who spends a minute talking with a geoscientist learns that almost all of them have a beloved rock collection. In this regular section of *The Professional Edge*, we learn about geoscientists and their profession through their favourite rocks. In this issue, we talk with Troy Boisjoli, Geoscience Licensee and Vice President of Exploration and Community at NexGen Energy Ltd.

I grew up in the oil and gas area in west central Saskatchewan. The energy industry and resource sector were a part of everyday life, and that's where the interest in geology first started. Throughout high school, I always favoured the maths and sciences and was particularly interested in the applied sciences. After high school, I had the unique opportunity to attend St. Norbert College in Green Bay, Wisconsin on a hockey scholarship. I had a number of friends who were pursuing degrees in geology, and through conversations with them, along with my interest in the applied sciences and my existing understanding of the resource sector, my path was set from an education perspective.

As a summer student, I had a tremendous opportunity to work at Fort à la Corne with what was at that time, Shore Gold. The role afforded me the opportunity to log a lot of drill-core, and see a lot of rocks. At the time, they were progressing with bulk sampling underground which resulted in the opportunity for me to get exposure underground as a beat geologist — mapping faces, backs and walls underground — and my first industry geology experience beyond camps and field schools.

Once I graduated from college, my first job was with Cameco as an exploration geologist.

Working as an exploration geologist was a foundational experience, particularly since when I entered the exploration industry in 2007/2008, we were in a commodities boom.

It was a busy time, resulting in the opportunity for me to take on progressive responsibility for drill programs early on in my career. They also had a well-developed exploration group with a number of experienced people that valued and focused on professional development and skills training.

I was fortunate to personally benefit from my time in exploration, working with individuals like Dave Thomas, P.Geo., and others who were invested in developing young geologists.

From exploration, I transitioned to one of Cameco's three operating mines — Eagle Point Mine. Coming through exploration and going into operations was another foundational opportunity where I experienced the progression from exploration through to production. From a technical perspective, working in operations underground forces you as a geologist to think at multiple scales. In exploration, you are thinking regionally. Underground, you are immersed in the geology, because it is surrounding you, and as a result, you get a different sense of scope and scale of the ore bodies you are looking at and exploring for from surface.

Additionally, you gain an understanding of resource evaluation — namely how the quality of geological interpretation and geostatistical estimation translates in a material way to the safety and profitability of an operation.

In 2016, I had a tremendous opportunity to join NexGen Energy. Everyone in the uranium space was following the news and information coming out of the western Athabasca Basin and the Patterson Lake corridor at that time.

There had been a couple of new discoveries by the time I joined including NexGen which discovered the Arrow deposit in 2014. At the time of NexGen's 2014 discovery, I was working at Cameco's

Eagle Point uranium mine running the geology team, and was keenly interested in the exploration results coming out of the southwestern Athabasca Basin/Patterson Lake corridor. I followed NexGen's story closely from 2014 to 2016, and was thrilled to eventually join the NexGen team. It was a very exciting time for me.

Today, I have the privilege of working across multiple aspects of a world-class uranium deposit as the Vice President of Exploration and Community at NexGen Energy Ltd.

When I joined NexGen in 2016, there was a clear vision to deliver the clean energy of the future while maximizing value for all our stakeholders and creating as much positivity as possible — economically, environmentally and socially. In 2016, the focus was on resource development, expansion and exploration, which naturally progressed and transitioned into project development and to where the company sits today in the final stages of permitting what will be the world leading uranium mine.

I have been involved in NexGen's preliminary economic assessment and pre-feasibility and feasibility level work for the Rook I Project, as well as the resource development, operations development and the environmental assessment work done to date. Wrapped around all of that — and foundational to everything we do — are the important local relationships that we've built with communities close to the project over many years and, in fact, prior to NexGen drilling the very first holes in the area back in 2013.

NexGen is a special company that is advancing a multigenerational global resource project with an elite environmental and social approach — and being part of the journey to date has been a once-in-a-career experience. Arrow will employ hundreds of local people, be a significant contributor to the Saskatchewan economy and be the primary global producer of clean energy fuel, all while setting new standards of excellence in environmental and social stewardship.

Working on a project as transformational as this brings home that what we are doing as geologists is more than just technical work. Deposits like Arrow and operations like the Rook I Project make a material difference in people's lives, and benefit communities close to the project for multiple generations. That positive impact extends beyond the local area and the ripples are felt through the entire province and country.

As more of an economic geologist, I'm more interested in geologic process and ore forming processes as opposed to one particular rock. It's more about what we do as geologists and the value we add to the mining space and to society.

Uranium is such an important commodity because it is an energy metal. Uranium has a high energy density — and as a result a very small amount of uranium can produce an incredible amount of carbon free energy. It is the primary fuel source in nuclear energy which is foundational for our energy future and for achieving national and global objectives related to carbon emissions and climate change.

Progressing to a sustainable energy future that realizes net-zero emissions, in my opinion, comes back to the mineral uraninite — which has the potential to significantly change our energy future globally.

Saskatchewan is extremely well-positioned to be the key player in that energy transition because of the uniqueness of the Athabasca Basin and the geology of northern Saskatchewan where there are multiple mining districts with very high-grade uranium deposits.

When you consider sustainable mining, high-grade deposits have a significant advantage resulting in effective and efficient use of capital resources and highly efficient land use. This means you can mine a significant amount of uranium from a small and localized development area, resulting in these deposits hitting the mark from a triple bottom line perspective: social, environmental and financial.

Because of all of those factors, uranium sets Saskatchewan up to be a key source of energy fuel that powers the global economy for the foreseeable future.

Outside of my employment with NexGen, I have had the opportunity to represent the Saskatchewan mining industry on the Saskatchewan Mining Association Board through the exploration section.

I live about 50 km south of Kindersley on the north shore of the Saskatchewan River at my family's ranch, where we have black Angus cows and quarter-horses.

I have a wonderful wife and four daughters ranging from ages 3 to 9. Having my kids grow up being able to ride, rope and ranch is something that I value.

Outside of that, I like to volunteer my time with kids' sport given the opportunity I had to play sports growing up, in particular, hockey and rodeo.

My favourite “rock” is actually a primary ore-bearing mineral of uranium deposits called uraninite. It's a uranium oxide mineral and I have spent the majority of my career as a geologist thinking about fertile uranium systems, mineralized systems with the ability to localize and accumulate economic concentrations of uranium.

Continuing Professional Development

The Continuing Professional Development (CPD) Program requires APEGS members to complete ongoing professional development activities to maintain and improve their competence. It encourages members to engage in lifelong learning to protect public health, safety and welfare. The program provides tools for members to assess their current skills, knowledge, and abilities, determine activities to maintain or enhance them and report completed activities online to APEGS as professional development credits. For more information, visit the CPD menu at apegs.ca.

Featured Professional Development Opportunities

2021 Fall Professional Development Days

A variety of courses will be offered in the Fall of 2021. Stay tuned for more details.

Upcoming online events will include:

- Writing Proposals and RFPs Course. Four online courses to begin November 15, 2021.

For additional professional development opportunities, please refer to the back cover of this magazine or visit apegs.ca.



4 Seasons of Reconciliation



Coming Soon: Indigenous Awareness Training

This fall, APEGS is introducing 4 Seasons of Reconciliation in partnership with the First Nations University of Canada. This online course provides an education in line with the Truth and Reconciliation Commission's 94 Calls to Action. The intent is to promote a renewed relationship between Indigenous Peoples and Canadian settlers through transformative multi-media learning. More information is forthcoming.

Online Ethics Modules Available to All Members

APEGS has free one-hour online ethics modules available to assist members in obtaining their ethics credit for the year. The modules are not mandatory and are offered as one option available to members.

Current ethics module topics are:

- Module 1 - Professionalism and Ethics
- Module 2 - Conflict of Interest
- Module 3 - Investigation and Discipline

For more information and to access the modules, please visit the CPD menu at apegs.ca.

CPD Variation applications for 2021 CPD requirements reductions are due Sept. 30, 2021

If there are extenuating circumstances that make it difficult for you to obtain your CPD requirements for the year, you can apply to have your requirements reduced via the CPD Variation Program.

Members wishing to apply for a variation must complete a CPD Variation application and submit it to cpd@apegs.ca on or before Sept. 30, 2021. Applications received after this date will not be accepted.

For more information about the Variation Program, please read Section 5 in the CPD Program Document. CPD Variation application forms can be downloaded from the CPD page at apegs.ca.

Attention Licence Waiver Holders!

Members who hold a licence waiver for the entire year in 2021 are reminded of the CPD Program change for 2021.

Members who hold a licence waiver for the entire year require a minimum of 30 credits annually obtained outside of professional practice including one hour of verifiable ethics training, which shall be claimed under Formal Activity as part of the 30 credits.

2020 CPD Reporting Compliance Review Results

On July 7, 2021, APEGS suspended 86 members for failure to meet all of their 2020 CPD requirements. This brings the total number of members who were administratively suspended in 2021 for 2020 CPD non-compliance to 515 members.

As of Aug. 10, 2021, 64 of those members have had their licence reinstated.

As a reminder, an APEGS member who is administratively suspended is not licensed to take professional engineering or professional geoscience responsibility for any projects located in Saskatchewan.

To determine if a member is under an administrative suspension, please refer to the APEGS online register at apegs.ca.

Education Grants for Members

Through the University of Saskatchewan and the University of Regina, APEGS offers six merit-based grants of \$7,500 each to encourage existing APEGS members to further their education.

Eligibility Requirements

Members returning to post-graduation studies at either university in the field of engineering or geoscience or for an MBA program are eligible to apply.

Applicants are evaluated in the following areas:

- Accomplishments in the practice of professional engineering or professional geoscience that indicates exceptional potential.
- Demonstration of leadership, volunteerism and community involvement.
- Service to the professions in public education, understanding the role of professionals in society and/or active participation in engineering/geoscience associations, societies and institutes.
- Reasons for pursuing the post-graduate degree, goals, personal statement and how their studies will contribute to the professions.

How to Apply

Applications may be sent to APEGS any time throughout the year. Applications received by December 31 of each year are considered and awarded early the following year with presentations made at APEGS' annual awards banquet, typically in early May of each year. Visit apegs.ca for the application form and more information.

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Scholarships and Bursaries

Do you know a student who is thinking about entering or already enrolled in engineering or geoscience in Saskatchewan? Encourage them to apply for an applicable APEGS scholarship or bursary noted in the table below. Refer to each university's website for more information. Cut off dates to apply vary by university, award type and field.

Scholarships recognizing leadership and volunteerism among university students currently enrolled.

6 SCHOLARSHIPS OF \$1,875

(three for each university) for current students of any field of engineering.

2 SCHOLARSHIPS OF \$1,875

(one for each university) for current students of any field of geoscience.

Scholarships aimed at female university students who are transferring their field of study to engineering or geoscience.

2 SCHOLARSHIPS OF \$3,200

(one for each university) for women in engineering.

2 SCHOLARSHIPS OF \$3,200

(one for each university) for women in geoscience.

Bursaries aimed at encouraging and assisting high school graduates entering the study of engineering or geoscience.

2 BURSARIES OF \$4,000

(one for each university) to be applied towards first-year tuition in any field of engineering for a self-identified Indigenous student.

2 BURSARIES OF \$4,000

(one for each university) to be applied towards first-year tuition in any field of engineering for a student of any background.

2 BURSARIES OF \$3,000

(one for each university) to be applied towards first-year tuition in any field of geoscience for a self-identified Indigenous student.

Call for Award Nominations

The Awards Committee is seeking nominations for the APEGS Awards as well as other provincial and national awards.

If you have a friend, colleague, employee or client who has done something outstanding, this year or over the course of their career, please make sure we hear about it.

You can even nominate yourself!

Our awards recognize both APEGS members and non-members who have made special contributions to the professions.

There are seven APEGS awards:

- Brian Eckel Distinguished Service Award
- Outstanding Achievement Award
- McCannel Award
- Exceptional Engineering/Geoscience Project Award
- Environmental Excellence Award
- Promising Member Award
- Friend of the Professions Service Award

In addition, the Awards Committee nominates APEGS members for awards presented by both Engineers Canada and Geoscientists Canada and numerous other provincial and national awards.

Nomination is quick and easy!

Complete the form at apegs.ca under Members/APEGS Awards.

Email the form to apegs@apegs.ca.

Submit nominations for 2022 by Nov. 30, 2021.



Celebrating Our Own

2021 Social Responsibility and Education Awards



Debra Shewfelt, P.Geol.

The Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) has awarded Debra Shewfelt, P.Geol., two awards in their Social Responsibility and Education category.

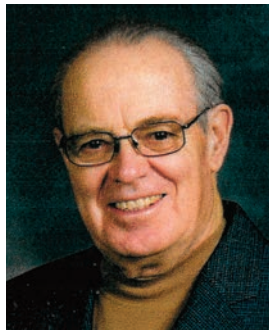
One award was to recognize Shewfelt as one of the "Unsung Heroes" of the mining industry and CIM and the other was for exceptional contribution towards improving diversity and inclusion within the mining industry.

Shewfelt is a senior geologist who is a co-president and board member of RESPEC Consulting Inc., RESPEC's Canadian subsidiary. Over the past two decades, she has grown a diverse team and encouraged girls and young women to consider non-traditional STEM careers in mining and minerals.

She has been recognized for leading STEM educational outreach activities in communities, and advancing the inclusion of underrepresented groups, such as women and Indigenous peoples.

Shewfelt mentors others in projects such as MentorSTEP, an Indigenous female STEM mentorship program. She founded the "Girls In The Classroom — Unearthing Career Opportunities in Mining" K-12 educational outreach program.

2021 Canadian Professional Geoscientist Award



Don Kent, P.Geol., P.Eng., FGC, FEC

Geoscientists Canada named Dr. Donald M. J. Kent, P.Geol., P.Eng., FGC, FEC, a recipient of the 2021 Canadian Professional Geoscientist Award.

"Don richly deserves the award based on superb service to the geoscience profession and academic community, particularly in Saskatchewan. Mentorship of students and young professionals is especially noteworthy. A well-deserved award in recognition of a

fabulous career," said Kevin Ansdell, P.Geol., FGC the President of Geoscientists Canada.

Dr. Kent is currently Professor Emeritus in the Department of Geology at the University of Regina. He is recognized as the leading geological authority on Paleozoic carbonates in the Williston Basin, and Mississippian, Devonian, and Ordovician rocks. He has published over 60 papers on various aspects of the subsurface geology of Saskatchewan.

He has been a member of APEGS since 1959 and was actively involved in adding geoscience to the regulation of professionals in Saskatchewan in 1997 when APES became APEGS.

In 2009, he was listed as one of the 100 influential graduates from the University of Saskatchewan. Dr. Kent holds a Ph.D. (1968) in Geology from the University of Alberta and a M.Sc. in Geology (1959) and B.Sc. (1957) in Geological Engineering from the University of Saskatchewan.

During his career, he has served as a petroleum research geologist with the Saskatchewan provincial government and now provides consulting services, including core analysis and training. He has contributed numerous core workshops at the Canadian Society of Petroleum Geologists conference in Calgary and the Williston Basin Petroleum conference.

Dr. Kent has also volunteered, including as chair of Geoscientists Canada's prestigious Canadian Geosciences Standards Board (now Council) as well as on numerous APEGS boards and committees plus as president of the Saskatchewan Geological Society (SGS).

Dr. Kent received the APEGS Distinguished Service Award (2000), was inducted into the SGS Geoscience Honour Roll (2004) and received the Canadian Society of Petroleum Geologists RJW Douglas Medal in 2015.

The Canadian Professional Geoscientist Award recognizes those who have made an outstanding contribution to the development and practice of professional geoscience and advanced public recognition of the profession in Canada in their capacity as a registered professional geoscientist.

H. Robert Burton Distinguished Service Award



Bruce Belmore, P.Eng.

The Canadian Institute of Transportation Engineers (CITE) has given its most prestigious honour, the H. Robert Burton Distinguished Service Award, to Bruce Belmore, P.Eng. Belmore has specialized in transportation mobility and safety for over 30 years, working on a broad range of projects, involving active modes, traffic calming,

micro mobility, traffic operations and safety engineering. He currently leads the transportation practice at KGS Group as the Transportation Department head.

He also has been an adjunct professor at the University of Regina for six years teaching engineering law & ethics.

Belmore has been a dedicated member of the Institute of Transportation Engineers (ITE), becoming the fourth ITE International President from Canada in the organization's 90-year history.

He also served on the Saskatchewan Section Executive, including as president.

With CITE, which bestowed the award, Belmore has been elected CITE District Executive, serving eight years at the District level, plus three years representing CITE as District Director on the ITE International Board of Direction.

For 15 years, he played the organ for services at Stensrud Lodge Special Care Home. He was also a board member and president of the Saskatoon Board of Trade (now the Saskatoon Chamber of Commerce.)

2020 Saskatchewan Volunteer Medal



Frank McDougall, P.Geo.

Frank McDougall, P.Geo., has made significant contributions to the areas of archeology, geology and paleontology in Saskatchewan as a volunteer, freely providing his knowledge of geology and archeology to the general public.

For this dedication, he was awarded a 2020 Saskatchewan Volunteer Medal.

Frank has been a volunteer and member of the Saskatchewan Archeological Society (SAS) for over 40 years.

During those years, he has been a prolific contributor to SAS's magazine and its Paleo Corner column and spent 1,800 hours digitizing and cataloguing information for SAS.

Frank has also given his time and expertise to the Royal Saskatchewan Museum. He devoted his time and expertise to the excavation of Scotty, the world's largest T-Rex, from Saskatchewan's Frenchman River Valley.

2020 Saskatchewan Volunteer Medal



Richard Strayer, P.Eng.

Richard (Dick) Strayer, P.Eng., has been volunteering for decades, which has earned him a 2020 Saskatchewan Volunteer Medal. These medals were presented in late August at Government House in Regina by the Lieutenant Governor Russ Mirasty.

Strayer — a former APEGS president — been a member of the Saskatoon Nutana

Rotary Club for 50 years.

Through Rotary Club, he collaborated with the City of Saskatoon to develop the Beaver Creek Conservation Area.

He was instrumental in organizing Meals on Wheels and a city-wide marathon in support of the YMCA in Saskatoon.

He was a board member of the Saskatoon Council on Aging for six years where he developed the first guide for caregivers.



Congratulations

TO ALL THE

Winners

News From The Field

MINING

BHP approves Jansen potash mine

BHP/Government of Saskatchewan - The Jansen Stage 1 (Jansen S1) potash project has been approved by BHP.

The resources company, which has its global headquarters in Melbourne, Australia, announced in mid-August it is investing \$7.5 billion to build Jansen S1. The provincial government says it is “the single largest economic investment ever made in Saskatchewan’s history.”

Jansen S1 includes the design, engineering and construction of an underground potash mine and surface infrastructure including a processing facility, a product storage building and a continuous automated rail loading system. About half of all the engineering required for Jansen S1 has been completed, which BHP said significantly de-risked the project.

About \$5.7 billion has been invested so far on engineering and procurement activities as well as work to prepare for the Jansen S1 underground infrastructure. Of that, \$3.8 billion was for constructing two shafts and associated infrastructure at the site. That work is to be completed in 2022.

BHP says Jansen S1 “is located in the world’s best potash basin.” It is expected to produce approximately 4.35 million tonnes of potash a year and has potential for further expansions (subject to studies and approvals).

“Potash provides BHP with increased leverage to key global mega-trends, including rising population, changing diets, decarbonization and improving environmental stewardship,” explains a news release on the investment announcement.

Construction is expected to take six years, followed by a ramp-up period of two years with first ore targeted in the 2027 calendar year. The mine is expected to operate up to 100 years.



Global News

Nutrien confident in potash demand despite BHP's massive Jansen project

Reuters – Nutrien expects global demand for potash to grow by two to three per cent a year until close to 2030.

Canada’s largest potash producer remains confident of this as BHP announced its decision to proceed with the Jansen Stage 1 project.

“It will take another decade for Jansen to have significant production,” Ken Seitz, chief executive of Nutrien Potash said in a statement.

That mine is to produce 4.35 million tonnes of potash per year from 2027, adding millions of tonnes of potash a year to the global supply. Canada produced 21 million tonnes in 2019, accounting for more than 31 per cent of global supply.

Potash is a key element in plant nutrition that also makes crops more drought resistant. Farmers in Asia are expected to use more affecting global demand, which by 2030, is expected to be able to absorb this growing supply, said Morningstar analyst Seth Goldstein.

“Potash has one of the best demand outlooks of any fertilizer out there,” Goldstein said.

Sask. helium company one step closer to production

CTV Regina – Drilling being done in the Climax area in southwest Saskatchewan is intended to bring Royal Helium closer to production.

Drilling at its Climax-4 site began Aug. 7 to target new regality helium in the area.

“The level of resource here is unparalleled in our view to any other jurisdiction in North America,” said the president and CEO of Royal Helium, Andrew Davidson.

Davidson said the first three drill rigs were used for exploration, but Climax 4 is being used to find the best way to get wells into production.

“Once we are done with our work here, we get to come back to this area and hit it hard and get this helium flowing,” Davidson added.

Each site costs Royal Helium about \$1.5 million to build.

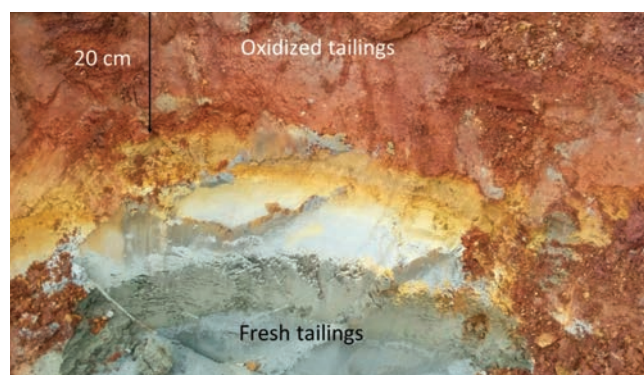
“Once we turn on the wells, we expect to have that \$1.5 million back in about six months and then the wells will last for about 12 years,” Davidson said.

Davidson said the goal is to build a well in the near future to produce the helium needed in variety of industries.

“The largest use in North America is in MRI machines where it is used to cool the magnets and create the imagery that the doctors are looking for,” Davidson said.

“More common place uses would be welding, deep sea diving, manufacturing of high-tech electronics like fibre optic cables, semi conductors, microchips. It’s used in every space launch, every space shuttle that goes up uses helium in the process.”

Tailings study at U of S reveals greater risks



Canadian Mining Journal - The risk that tailings hold for the environment have been found to be greater than previously thought by a group of scientists from Canada, Morocco and Belgium.

Tailings samples were examined by the team using the Canadian Light Source (CLS) at the University of Saskatchewan. The samples were from the Joutel gold mine in northern Quebec, which has been closed since 1994.

Some weathered samples were taken from just below the surface of the tails while some fresh samples were from beneath the water table.

It was determined using the SGM beamline at the CLS and other technologies that there were significant differences between them.

A hardpan layer protected the deeper samples and did not leave them exposed to air or water. They were neutral and pose little risk to the environment.

The sample from beneath the water table was acid-generating and leached harmful amounts of metals into the groundwater.

Years of weathering is necessary to create secondary minerals in tailings, the authors determined. The researchers say these results show that lab testing done

20 years ago to determine the risks of leaving tailings after mine closure were inadequate.

Newcor mine near Creighton under remediation

Toronto Star/The StarPhoenix – Remediation work to mines near Creighton in northeast Saskatchewan is moving ahead with the cost of that work being announced.

Newcor sits on the eastern shore of Douglas Lake, about three kilometres southwest of Creighton. It is one of six non-uranium mines the province has prioritized for cleanup. Two others, the Vista and Western Nuclear sites, are also a stone’s throw away from Creighton.

In April, the province said studying all six sites will cost around \$1.2 million and will likely conclude in 2025.

Newcor is considered the highest-risk site, due to its proximity to Creighton and Douglas Lake, a Ministry of Environment spokeswoman said.

The Government of Saskatchewan is paying two companies roughly \$1.6 million to do the work there. QM Points LP, a joint venture between QM Environmental and Points Athabasca Contracting, will receive \$1,363,000, while SNC-Lavalin will get \$242,000 to remediate the site.

The work at Newcor, which is scheduled to be completed by the end of October, aims to stop contaminants from entering Douglas Lake. It includes a permanent concrete cover over the mine shaft opening. Vegetated soil and an engineered geotextile liner will also cover contaminated waste rock.

Vista is the third-most prioritized site behind Newcor and Western Nuclear, according to the ministry. The province will pay SNC-Lavalin \$200,000 to develop an action plan and determine a long-term timeline for the Vista mine’s remediation, which will cost roughly \$1.7 million to remediate.

Many of the abandoned mine sites were left “in shambles,” said Creighton Mayor Bruce Fidler.

He hopes remediation will bring more economic activity to the community, as the projects rely on contractors and local businesses.

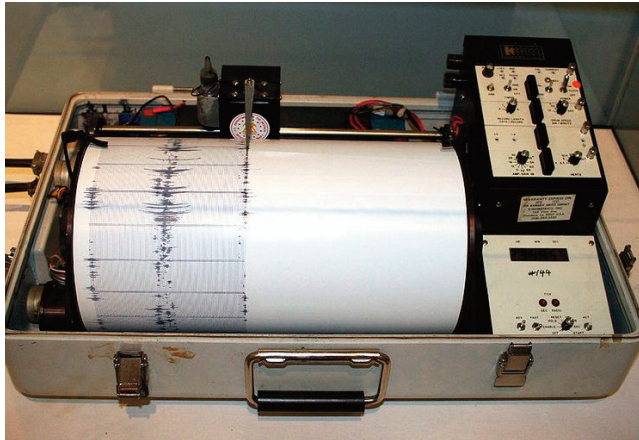
Remediation may also eventually encourage community outdoor recreation, marking a return to the mine site’s natural beauty from “busted up concrete pads,” Fidler said.

“We’re definitely looking forward to having these projects, and improving the environment,” he added.

“We hope it will be (brought) back to nature where people go and walk around and enjoy the area without stumbling over old, broken cement.”

The province is responsible for 33 non-uranium abandoned mines in northern Saskatchewan, ranging from high-priority sites to small exploration shafts and trenches. Since 2019, the province has paid at least \$504,000 to SNC-Lavalin to study underground mine sites.

Magnitude 3.9 earthquake felt in southeast Sask.



CKOM/Global News/Classic 107 – Two earthquakes were recorded in August in the Langenburg area.

Officials with Earthquakes Canada say a 3.9 magnitude tremor was recorded 29 kilometres south-southeast of Langenburg near the Saskatchewan-Manitoba border on Aug. 10. Larry Long, senior vice-president of potash operations for Nutrien, confirmed one with the epicentre north of the Rocanville mine lease was picked up.

No damage was reported, but it was felt by people in the Spy Hill and Tantallon areas.

Then, the United States Geological Survey (USGS) said a 4.0 magnitude tremor took place 28 km south-southeast of Langenburg on Aug. 11.

Dr. Simon Pattison, the Brandon University Chair of the Geology Department, first thought they were the result of potash dissolving in groundwater, but he quickly learned that theory did not check out.

"I started looking at the data so it's like, 'Oh ok, that's kind of pointing towards something potentially something different, much deeper than the potash deposits,'" he said.

Earthquakes are rare in Saskatchewan, but when they do happen, they are commonly the result of the potash movement and are small.

Pattison needed to look 10 km below the surface to discover the cause of these recent ones.

"Basically, these earthquakes were triggered by Precambrian basement fault movement. A classic type of intra-plate earthquake."

"The epicentre-focus of these earthquakes is near coincident with a singular Precambrian basement lineament-structure in the Churchill-Superior Boundary Zone," said Pattison.

The southeast area of Saskatchewan is no stranger to earthquakes. The most recent was a 4.1 magnitude quake recorded in August of 2019.

TECHNOLOGY

Saving fruits and vegetables

The StarPhoenix – Nazanin Charchi, Engineer-In-Training, hopes to save more fruits and vegetables from being wasted after harvest using technology she's working on to regulate ethylene emissions.

"Reducing the waste after harvest, especially in developing countries, can be a sustainable solution to increase food availability, reduce greenhouse gas emission and improve farmers' living conditions," said Charchi.

She is a University of Saskatchewan PhD candidate working with a research team in the Department of Biological and Chemical Engineering. Charchi's work is supervised by Dr. Jafar Soltan, P. Eng., professor of biological and chemical engineering in the U of S College of Engineering, and Dr. Ning Chen, a scientist at the Canadian Light Source (CLS).

Ethylene plays an important role in greenhouses, storage and warehouse facilities. It's used as a plant hormone to speed up the growth and ripening process in greenhouses or growth chambers.

However, after a certain level of exposure, ethylene causes physical and chemical changes in fruits and vegetables that result in quality and production losses before and after harvest.

With the scientific support of the CLS and synchrotron facilities on the U of S campus, Charchi and her team have developed an ethylene-removal unit for installation in fruit and vegetable growth chambers and storage facilities.

A process known as advanced oxidation can convert ethylene emissions into CO₂ and H₂O at room temperature, effectively purifying the air surrounding fresh food. The team estimates their process would reduce air treatment costs by 40 per cent.

They hope to commercialize their ethylene-removal process and operational unit for global use. It is also possible that similar processes could be developed in the future to remove mould, bacteria or other substances from produce storage areas, along with ethylene.

Each year, more than one billion metric tons of fruits and vegetables are harvested globally to feed the world's population of people and animals.

"The annual loss of fresh fruit by ethylene damage is estimated at 30 per cent, and vegetable losses reach as high as 40 to 50 per cent, leading to considerable economic loss," Charchi said.

The research is funded by the U of S and the Natural Sciences and Engineering Research Council.

Nutrien and EXMAR Partner in Building a Vessel Powered by Low-Carbon Ammonia

Business Wire – Nutrien and EXMAR are partnering to build a vessel powered by low-carbon ammonia.

Together, along with others, they will collaborate to select an ammonia engine and a supply system manufacturer, select a shipyard capable of building an ammonia-powered vessel, use Nutrien's existing low-carbon ammonia supply from Geismar, Louisiana as a fuel and deploy an ammonia-fuelled vessel in 2025.

Their aim with this collaboration is to significantly reduce Nutrien's maritime transportation emissions and enable the commercial development of an ammonia-fueled vessel as a clean fuel to be widely adopted by the maritime industry.

The companies anticipate that using Nutrien's existing low-carbon ammonia will reduce greenhouse gas emissions by up to 40 per cent. A reduction of up to 70 per cent can be achieved by developing low-carbon ammonia using proven, scalable, best available technology and permanent sequestration of CO₂.

Nutrien is one of the world's largest producers of low-carbon ammonia. It has approximately 1 million tonnes of production capability through its Redwater and Joffre, Alta. operations, as well as its Geismar facility which has carbon capture and sequestration technology to reduce its ammonia's carbon intensity when used as a maritime fuel.

MUNICIPALITIES

Determining fix for flooding of Albert Street underpass

CJME - Several centimetres of rain that fell overnight in Regina in June raised more than the water level in the Albert Street underpass.

That rain resurfaced questions from 2019 about work that would prevent future incidences of flooding in that underpass where multiple vehicles were submerged in the water. At that time, the City of Regina said that work would begin in 2021 or 2022.

Helene Henning Hill, P.Eng., serves as the City of Regina's sewer and drainage operations manager. She explained to reporters that determining an appropriate fix for the underpass will require patience.

"You can appreciate that we (have) a lot of infrastructure in and around Saskatchewan Drive and Albert (Street).

"In order to try and determine the best engineered solution to how we deal with the water at that point, it takes time for us to look at that," she said.

"That process has already started," she said. "We're trying to figure out what is the best recourse to deal with the water at the underpasses."



theartradio.ca/580

It was estimated between 50 to 60 millimetres (or about 2.4 inches) of rain fell between the night of June 10 to the afternoon of June 11, sending City of Regina crews to deal with 60 different service requests from those needing help to deal with flooding at homes and businesses.

City of Regina tests new bike lane system



CTV News

CBC Saskatchewan - A solution has been found and implemented in Regina to develop more city infrastructure that supports cycling.

Shanie Leugner, P.Eng., the City of Regina's manager of infrastructure engineering, said that the City wanted "a lower-cost solution to install cycling infrastructure on low volume streets."

Reviewing best practices of similar projects in Canada and other parts of the world revealed advisory bike lanes.

Advisory bike lanes were installed on 14th Avenue with testing started in early July. Those travelling 14th Avenue see a centre lane and advisory lanes. The centre lane is used by those driving vehicles. They can be going in either direction.

Cyclists use the advisory lanes. However, when a motorist faces an oncoming vehicle, they move into the advisory lane to pass one another before returning to the centre lane.

The 14th Avenue advisory lane system is the first of three proposed phases in the city's east-west crosstown bike route. The City of Regina says the new lanes will be monitored over the remainder of 2021 and into 2022 before deciding if more advisory bike lanes will be installed.

News Beyond Our Borders



Federal government needs to protect critical minerals industry as China tightens grasp

National Post – The federal government needs to protect Canada’s critical minerals industry, according to a Parliamentary report which details how failing to do so could have major consequences as next-generation technologies take up a growing share of the global economy.

This determination comes as experts push for Canada to outline a framework to develop and protect critical minerals that includes everything from incentives for investment to national security protections aimed at guarding against foreign takeovers of Canadian assets.

Greg Rickford, Ontario’s Minister of Northern Development, Mines, Natural Resources and Forestry, said China’s efforts to control strategic minerals “frequently” comes up in conversations with mining executives and others.

China for decades has invested heavily in acquiring strategic mineral assets in Africa and elsewhere, and now possesses as much as 80 per cent of global processing capacity for rare earths. It also refines around 80 per cent of battery chemicals.

Simon Moores, managing director of Benchmark Mineral Intelligence, told the committee that China is likely to possess

67 per cent of global capacity to build lithium-ion batteries by 2030. North America will have just 12 per cent of the market.

Pierre Gratton, head of the Mining Association of Canada, said upstream mining companies have been in regular conversation with downstream manufacturers, including battery makers, in an effort to lock down new buyers for products like lithium and cobalt.

Jeffrey Kucharski, professor at Royal Roads University, told the committee that developing these supply chains will ensure that industries such as defence industry and clean energy sector have the materials they need.

Gratton is urging federal policymakers to create a framework to develop and protect Canadian supply chains for batteries and other products, and recommended the federal government establish a \$250-million program over five years to incentivize investment in demonstration projects.

The minerals — which include magnesium, lithium and cobalt -- are used to make electric car batteries, mobile phone components, solar panels and guided missiles.

The committee made five key recommendations, including new revisions to the *Impact Assessment Act*, the regulatory review process for major projects that was amended by the federal government. The current review process, the committee said, “imposes barriers and represents a serious financial risk for reputable mining companies to move forward with new projects.”

At the same time, the capital-intensive nature of mining lesser-known commodities, or to build downstream capacity for those minerals, will require investments in infrastructure by both provincial and federal governments, the committee said. Ottawa more generally needs to deepen ties with Europe, the U.S. and Japan as a way to strengthen non-Chinese supply chains.

Researchers creating new “breathing” lung model to study illnesses like COVID-19

McMaster University – An interdisciplinary team of researchers from McMaster and SickKids are developing a cutting-edge lung model that can better respond to viruses and drug treatments, giving scientists a tool to advance research in lung conditions like COVID-19, cystic fibrosis and allergens for asthma and air pollution.

The new bioengineered lung model will replicate key features of the human lung, including specialized cells, surrounding blood vessels and life-like immune functions.

“To better prepare for future pandemics, more sophisticated human lung models are needed to study disease and treatments with more precision. Our lung model platform will improve clinical trial designs for COVID-19 and beyond, with broad applications to drug development, immunology and developmental biology of the lung,” says Boyang Zhang, an assistant professor in chemical engineering who is leading this work at McMaster in collaboration with leading experts Jeremy Hirota and Karen Mossman from McMaster, and Amy Wong from SickKids and the University of Toronto.

Indigenous water treatment operators have voices amplified by new platform

University of Calgary – A platform for Indigenous water treatment operators across Canada launched in January is quickly gaining the attention of those in the federal government making decisions about investing in drinking water in Indigenous communities.

The platform known as Water Movement (WM) allows these water treatment operators to connect, ask questions and access a video library that features tutorials on a wide variety of topics, from managing treatment plants to tips on testing chlorine residue in water.

WM was initiated by Bitia Malekian, who received her bachelor's degree from the Schulich School of Engineering. It is supported by the Calgary Professional Chapter of Engineers Without Borders.

Since the platform launched, the data analytics team and WM's board of directors noticed frequent topics on the platform's discussion board, such as communities losing trained operators to larger municipalities, largely due to lack of competitive wages and funding.

On behalf of these operators, WM requested an audience with federal Minister of Indigenous Services Marc Miller to discuss calls to action, which include:

The calls to action quickly turned into an advocacy campaign. After creating its own TikTok account, WM posted a video that gained half a million views.

Shortly after the video went viral, a letter was shared with Miller to address the calls to action from water treatment operators. The letter prompted a formal meeting with the minister, water treatment operators and WM's board of directors.

With more than 2,100 users actively engaging on the platform, and in anticipation of 100 new training videos, WM has since secured 12 expert operators throughout Canada to continue building the video library.

WM is consulting with the Schulich School of Engineering to support software development and innovations for both its website and an upcoming mobile app to allow for offline streaming.

Flood water: toxins from the riverbed

Eurasia Review – A University of Saskatchewan professor contributed to a review of previous scientific studies on river sediments, pollutants and contamination from flooding as well as a study of recent extreme flood events in Germany.

During floods in the more industrial regions of Europe, North America and Asia, old sediments can be churned up by fast-flowing water. In the process, the pollutants bound in them are released and contaminate flooded areas.



Professor Markus Brinkmann of the University of Saskatchewan's School of Environment and Sustainability was part of an interdisciplinary team of researchers from Goethe University and RWTH Aachen University along with other partners.

Their review, which Brinkmann headed along with a junior research group leader, describes the risks involved when old river sediments bind with pollutants that entered the rivers through mining or industrial wastewater. They showed which pollutant loads were measured after various floods, which test systems were developed for different pollutants and how different sediments behave when water flows at high speeds.

It describes the risks for drinking water production, the influence of temperature on pollutant intake by fish and methods for assessing the economic costs associated with pollutants being mobilized in this way.

Canadian hyperloop company says ultra-high-speed travel between Calgary and Edmonton is feasible



CBC – A feasibility study looking at an ultra-high-speed transportation line between Calgary and Edmonton has been completed by Canadian hyperloop company TransPod.

Completing this study moves the project into the next phase of investment and research and development, said TransPod co-founder and CEO Sebastian Gendron.

The Toronto-based company's ultimate goal is to have Albertans shuttling between Calgary and Edmonton in

train-like pods — at speeds up to 1,000 kilometres an hour — through magnetic tubes. A one-way trip would take about 45 minutes. It would carry a mix of passengers and cargo. Tickets would cost between \$90 and \$150.

The study forecasts the project to cost an estimated \$22.4 billion, or \$45.1 million per kilometre, along roughly 350 kilometres of unique track. It also forecasts an additional cost of \$6.7 billion for fixed infrastructure-like stations.

The company hopes to have a test track constructed and complete high-speed tests from 2022 to 2027, with construction of the full inter-city line between Edmonton and Calgary to begin in 2025.

The company expects to have private funding secured for the first portion of the line by the end of the year. It said initial investment proposals for a total amount of \$1 billion have been shared with the Alberta government, with which it signed a memorandum of understanding in August 2020. That MOU supported the company doing additional feasibility studies, provided transportation data and identified suitable land for a test track.

Study findings indicate hyperloop transportation between the two cities would help reduce the province's carbon emissions by 636,000 tonnes per year. The project is expected to create 140,000 jobs.

Michigan mine wants to reduce local farmers dependence on global potash supply

Farm Progress – A U.S. potash mining company breaking ground on a new mine this fall says it is looking to reduce Michigan farmers dependence on imported potash by mining at home.

Michigan Potash and Salt Co. (MPSC) will mine the Borgen Bed, which lies a mile and a half below the surface and covers 15,000 acres, for potash. It will use solution-extraction technology for its mine, which is expected to come online in 2024.

The new potash wells will be drilled straight and then directionally from a central location on 2.5 surface acres to cover more than 250 acres of deep subsurface deposits.

Hot water is circulated through deep geothermal wells in the Borgen Bed. It is then pumped to the facility where the enriched water – which contains potash and salt -- is boiled. When water is boiled, potash and salt crystals are formed, which are harvested, cooled, compacted and crushed to size and stored.

The water is recaptured and recycled back through the system to re-enrich. The closed-loop system allows for about 90 per cent of process water to be recycled.

The solution-extraction technology to be used was brought to Michigan by the Pittsburgh Plate Glass' kalium

team, based out of Canada. It merged into the Mosaic company, which operated the potash mine until it was sold to Cargill in 2014, when Cargill ceased the facility's potash production in favour of mining salt. MPSC's vice president of MPSC potash marketing and governmental affairs says Mosaic saw it as too small an asset to continue operating compared to its Canadian operations.

MPSC says it can supply all of Michigan with its 300,000 tonnes of annual potash consumption, and it will have easy access to markets in Indiana, Illinois, Ohio and states out east. It can also potentially ship across Lake Michigan to serve Wisconsin.

7 years later, 2 engineers face discipline for actions



CBC – Seven years after Canada's largest tailings spill, the two engineers involved have been found in breach of their professional codes of conduct by the Engineers and Geoscientists B.C. (EGBC).

The results of disciplinary hearings for former engineer Stephen Rice and engineer Laura Fidel were released by EGBC in July. A panel imposed a maximum fine of \$25,000 against Rice, who resigned in 2018. Rice also agreed to pay \$107,500 in legal costs to the association and is no longer permitted to practise as a professional engineer in the province.

A separate discipline hearing panel found that Fidel also committed several acts of unprofessional conduct. A penalty hearing has yet to be scheduled in the Fidel case.

The panel found that both Rice and Fidel demonstrated unprofessional conduct in the course of their work at the mine. Rice was censured for not properly overseeing Fidel, the more junior, inexperienced engineer — and allowing Fidel to act as engineer of record for the dam's tailing storage facility. Other allegations were dismissed.

A disciplinary hearing is scheduled to proceed later this year for a third individual. The allegations in that case remain unproven.

In 2014, a four-square-kilometre tailings pond breached at Mount Polley mine in central British Columbia, leaking vast

amounts of water and effluent into Polley and Quesnel lakes and Hazeltine Creek.

More than 17 million cubic metres of water and eight million cubic metres of tailings effluent — containing toxic copper and gold-mining waste — flowed into lakes and streams that served as a drinking water source and sockeye salmon spawning ground in the province's Cariboo region.

The 40-metre-high tailings dam was built on a sloped glacial lake. That weakened its foundation.

After the Mount Polley disaster, EGBC says it took steps to improve dam safety in B.C., including producing professional practice guidelines for overseeing dam foundations.

Public hearing held for proposed carbon dioxide pipeline

Dakota Gasification Company – The North Dakota Public Service Commission (NDPSC) held a public hearing to consider a carbon dioxide pipeline being proposed by Dakota Gasification Company.

The Dakota Carbon Pipeline would be used to carry carbon dioxide captured at the Dakota Gas' Great Plains Synfuels Plant to well sites for underground sequestration.

Carbon dioxide is a product of the facility's coal gasification process. Approximately two-thirds of its production is being captured and sent via pipeline to the Weyburn and Midale oilfields in Saskatchewan for enhanced oil recovery.

The 6.8-mile pipeline is part of a project under review by Basin Electric that would facilitate the capture and sequestration of additional carbon dioxide.

The project would be a step toward the state's goal of being carbon neutral by 2030.

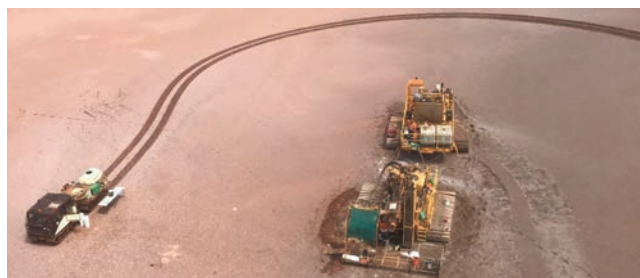
The pipeline would cross land currently impacted by coal mining and reclamation activities and other utility development. Pending permitting, pipeline construction would begin in early fall of 2021 and be completed by the second quarter of 2022.

Trigg set to flourish in budding SOP sector

Mining Journal – Trigg Mining is working to bring more sulphate of potash (SOP) mining to market using solar energy.

The potash market is dominated by the cheaper, more commonly found muriate of potash (MOP), such as BHP's Jansen deposit in Saskatchewan.

SOP has a niche as a premium mineral fertilizer for high-value, chloride-sensitive crops such as fruit, cocoa and coffee beans.



mining-journal.com

"It increases drought tolerance and helps plants become much more efficient with water uptake," Paterson said.

"With increasing climate change and drought issues, and the salinity of our soils ... we need to be using smart fertilizers that are efficient and nutritious.

Trigg Mining has three SOP projects in Western Australia. CEO Keren Paterson described its Lake Throssell brine SOP project.

"There's no open pit or rock waste dump," she said of the contrast with traditional surface mining.

It relies on mineralized brine from aquifers.

"It will be harvested using solar energy through the evaporation process and produce a very clean fertilizer for sustainable agricultural outcomes."

In May, Trigg established an initial inferred resource for Lake Throssell, of 14.2 million tonnes at 10.3kg/m³ SOP, indicating the scale and grade to underpin long-term production.

"We're anticipating Lake Throssell to be a multi-decade project with further growth in the pipeline with the additional lakes in the portfolio," Paterson said.

NASA engineer slams idea that women shouldn't 'wear lipstick to the lab'

In The Know – A NASA engineer is wanting to open up the thinking about engineers' appearances and what role that may play in discouraging some people from pursuing STEM professions.

Susan Martinez is a mechanical engineer at NASA Marshall Space Flight Center — a position for which few people are selected for. Based on her experiences, she believes there is a common misconception about the specific type of person who would fit in a STEM position.

"You can only look like this. You can only dress like this, you can only act like this — I think that's terrible," Martinez said about the "boxes" people feel need to be ticked to pursue engineering.

"I really, really would love to take this platform to a space where people can look at my profile and say, 'I want to be just like her.' I want to be able to be fashionable and still represent myself as a woman in STEM."



Yahoo.com

Susan Martinez, mechanical engineer, NASA Marshall Space Flight Center

“Allowing women to be fashionable or wear what they want and still not have their intelligence questioned, or maybe they can wear lipstick to a lab and that’s fine, without somebody looking at them funny, or telling them they don’t belong there, which are all things that have happened to me — it really eats at you in your heart and your brain,” she said.

“There are so many things that STEM can be if we have the space to let it be that.”

According to Martinez, the consequences of not allowing diversity within the STEM field could be disastrous.

“If we don’t have women, and everybody — non-binary, LGBTQIA+, everybody — the STEM community is going to die,” she explained.

“We can’t afford that in this day and age, in our climate. We can’t afford for something like that to happen.”

Why earthquakes are so devastating to Haiti



CNN

University of Miami – A combination of complex geology and construction practices explains the devastation left behind by the Aug. 14 earthquake that rocked the cities of Jérémie and Les Cayes on Haiti’s southern peninsula.

The powerful 7.2 magnitude earthquake immediately drew comparisons to the powerful temblor that rocked the country’s commercial center, Port-au-Prince, more than 11 years ago.

Both earthquakes illustrate the complex geology at work that makes the island and, indeed, that region of the Caribbean so susceptible to tremors.

Haiti is located near the intersection of two, massive tectonic plates: the North American plate and the Caribbean plate. These plates move past each other over time, and a series of fault lines between them cut through the island of Hispaniola, which is divided by Haiti and the Dominican Republic.

“It is a tectonically complex area,” said Falk Amelung, a professor of marine geosciences at the University of Miami’s Rosenstiel School of Marine and Atmospheric Science. “In addition to transform motion, Hispaniola is contracting by two to five millimeters a year in north-south direction, and it has subduction zones both in the north and in the south.”

The quake occurred along the central section of the Enriquillo-Plantain Garden fault zone, a major system of left-lateral, strike-slip faults that run along the southern side of Hispaniola, according to Amelung.

“The recent earthquake increased the stress along the fault segments to the west and east of the rupture zone, making these segments likely sources of future earthquakes and increasing the seismic hazard for Port-au-Prince to the east,” Amelung explained.

But the catastrophe now being witnessed in Haiti is also as much a result of construction practices on the island. Many structures on the island are built using unreinforced concrete, which is adequate to weather the power of a hurricane but deficient when it comes to withstanding earthquakes, said Christian C. Steputat, a forensic engineer specializing in structural, geotechnical and materials engineering.

Even though other Caribbean nations have adopted strict building codes, Haiti still has no uniform building code to ensure that structures are earthquake-resistant, noted Steputat, who has worked on design and construction projects in Haiti and the Dominican Republic. The Dominican Republic recently ramped up construction standards for building projects on its side of Hispaniola.

The 2010 earthquake that struck Port-au-Prince led masons and others to improve their building practices, said Kit Miyamoto, CEO and president of Miyamoto International, a global earthquake and structural engineering firm.

His team of structural engineers visited hard-hit areas to help with damage assessment and search-and-rescue efforts.

“Port-au-Prince building is much better than it was in 2010 — I know that,” Miyamoto said. “It’s a huge difference, but that knowledge is not widespread. The focus is definitely on Port-au-Prince.”

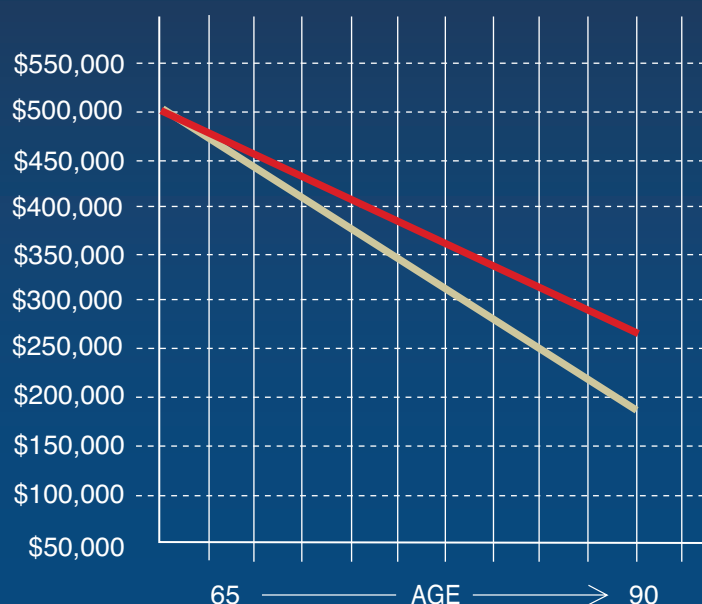
While his engineers were inspecting government water towers and the damaged offices of charities in the region, the Build Health International team was doing rapid assessments and repairs to restore the southern peninsula’s healthcare infrastructure.

The BHI team is made up of mostly Haitian engineers, architects, logisticians, contractors, electricians and plumbers.

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We've assumed a rate of return of 5% over a period of 25 years on an investment of \$500,000 and minimum annual required income payments for the Engineers Canada RRIF when compared to retail financial institution RRIF.



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Calendar of Events

University of Regina – Leading Hybrid Teams Webinar

Oct. 13, 2021

<https://anc.ca.apm.activecommunities.com/uregina/activity/search/detail/7678>

4th Biennial SMA Environmental Forum

Oct. 20, 2021

Virtual event

<https://www.eventbrite.ca/e/2021-sma-environmental-forum-tickets-159533953349>

Engineers Canada – Sustainability in Practice Course – Online

Oct. 20, 2021

<https://catalogue.edulib.org/en/cours/polymtl-sdes101/>

University of Regina – Assertive Leadership Webinar

Nov. 3, 2021

<https://anc.ca.apm.activecommunities.com/uregina/activity/search/detail/7679>

National Professional Practice Exam (NPPE) – Online

Nov. 8 – 10, 2021

<https://www.apegs.ca/Portal/Pages/event-details-7/97795>

APEGS PD Days – Writing Proposals and Requests for Proposals Webinar

Nov. 15, 2021

<https://www.apegs.ca/Portal/Pages/event-details-7/100567>

Premier's Awards of Excellence in Design – Virtual Gala

Nov. 19, 2021

<http://designcouncil.sk.ca/design-week>

2021 ACEC-SK Awards of Distinction

Nov. 16, 2021

Saskatoon, SK

<https://www.acec-sk.ca/event/index.html>

Saskatchewan Geological Open House

Nov. 29 – Dec. 1, 2021

Saskatoon, SK

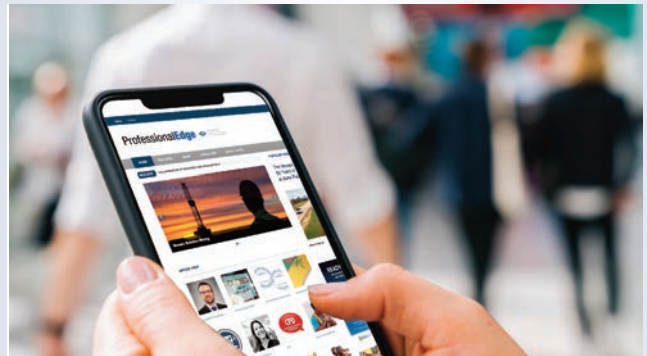
<https://openhouse.sgshome.ca/index>

University of Regina – Business Writing for Subject Matter Experts Webinar

Dec. 1, 2021

<https://anc.ca.apm.activecommunities.com/uregina/activity/search/detail/7680>

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