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Association of Professional Engineers & Geoscientists of Saskatchewan

THE PROFESSIONAL EDGE

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Emerging Fields

Achieving a Safe and Prosperous Future through Engineering and Geoscience

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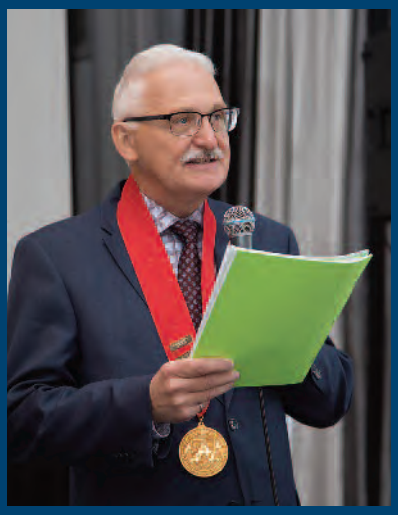
President's Message



Ernie Barber, P.Ag., P.Eng., APEGS President

I have a hunch that many if not most engineering and geoscience professionals identify with a specific discipline, often labelling their professional practice with the designation of their undergraduate degree. The definition of disciplines matters to individual professionals, to clients, to academic institutions and to professional regulators.

APEGS has the legislated responsibility for regulating the engineering and geoscience professions and must continually be aware of emerging disciplines and shifts in older disciplines. Feature articles in this edition of the *Edge* introduce readers to some examples of the ways that our professions are evolving with the emergence of new disciplines.

Our professions are dynamic. The number of distinct engineering and geoscience disciplines practised in the province continually grows and the way each discipline is practised also changes in response to the needs of society and our clients. There are many forces in play that lead to proliferation of disciplines and to evolution of older disciplines. The agriculture sector was once the domain of agricultural engineers: As that sector evolved and adopted new technologies, the demand increased for other engineering disciplines and the generalist discipline of agricultural engineering has been crowded out, partially replaced by biosystems engineering.

Emerging technologies relevant to health care spurred the evolution of biomedical engineering. Environmental engineering and environmental geoscience disciplines emerged from an increasing public focus on environmental stewardship, the increasing complexity and interdisciplinary nature of infrastructure projects and changes in regulations. Computer and software engineering were born out of the digital computing revolution.

Engineering and geoscience disciplines differ around the world. Disciplines that are "new to Saskatchewan" may emerge due to the global mobility of engineering and geoscience companies and to the mobility of engineering and geoscience professionals. Over half of APEGS members have a principal residence outside the province and an increasing number of new applicants hold degrees from outside Saskatchewan and Canada.

Academic institutions sometimes create distinct new disciplines, many times beginning at the postgraduate level, either in response to changing needs of practising professionals for greater specialization or in recognition of the opportunity to create practical solutions and tools out of basic science discoveries. APEGS has a legislated responsibility to ensure that any person who presents themselves in Saskatchewan as "engineer" or "geoscientist," including those aligned with an emerging discipline, is registered with APEGS. Academic institutions work collaboratively with APEGS to ensure that graduates of new programs will be eligible for registration as a professional engineer or geoscientist.

Ours are dynamic professions and each of us may find our interests and competencies changing substantially over our careers. Standard engineering or geoscience discipline labels from our undergraduate days may not sufficiently describe the breadth and limitations of our current scope of practice which could be a subset of, or a combination of, recognized discipline definitions. Each of us will protect ourselves and our profession by maintaining a unique and current program of Continuing Professional Development and by reporting CPD activities on an annual basis.

Something to Brag About

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

Our annual Company Profiles 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: Professional Edge editor Lyle Hewitt @ **lyle@martincharlton.ca**

Who Dunnit?

The World of Forensic Engineering

BY MARTIN CHARLTON COMMUNICATIONS

Photo courtesy Gravity Engineering.

Investigation into roof collapse due to snow drifting in Saskatchewan (location confidential).

Who killed Colonel Mustard in the library with a candlestick? The mystery is solved within the hour by a team of highly skilled forensic investigators who sweep onto the crime scene with their high-tech gadgets and scientific methods. Forensics continues to intrigue the public, fuelled by a plethora of CSI television shows and movies. In reality, high-profile forensic cases do exist, but they aren't always a homicide or figured out quite so dramatically. There are other important forensic investigations being solved by a lesser - known team with an equal set of specialized skills.

A partially filled grain trailer failed catastrophically when the centre components buckled during transportation. That is a forensics case in Saskatchewan. And the highly skilled investigators are forensic engineers. They don't figure out who done it, they figure out why it happened so the failure doesn't occur again. Unfortunately their cases sometimes sometimes their cases do involve casualties.

A failure could be anything from a bridge collapse to a faulty water pipe. Forensic engineers look at the big picture, using the principles of engineering to work backwards, narrowing down the clues until they find the cause.

> "Forensics is a different way of thinking . . .. You have to connect the dots," says Jason Burtney, P.Eng.

Burtney is with Kova Engineering (Saskatchewan) Ltd. in Saskatoon. While forensics may be popular on TV, Burtney says there aren't many engineers in Saskatchewan who work in the field. His colleague, Paul Caughlin, P.Eng., M.Eng., remembers one of his first investigations. He had to figure out why a residential basement wall collapsed. The homeowner was so thankful when Caughlin explained the

Photo courtesy Gravity Engineering.

Photo courtesy Gravity Engineering.

cause of the failure, he went home with two boxes of fresh garden tomatoes. Caughlin says not many major structures and products typically fail in our province. Forensic investigations make up between two and five per cent of the company's work, but when a case comes along, the engineers like the challenge.

"I think the big draw is being able to apply engineering theory to tell a story of the past," says Caughlin. "The picture of what happened and why is not always clear as you begin the work, but as we piece together more information the story usually becomes clear."

The practice of forensic engineering was just formally defined in Canada within the last couple of years, to provide a better understanding of the complex job. That's likely one of the reasons forensics has never been a conventional discipline within the engineering curricula in university. Professor Doug Perovic would like to see that change. He teaches one of the core courses of a new forensic engineering certificate program offered by the Faculty of Applied Science and Engineering at the University of Toronto. Launched in September 2017, the university calls it a first of its kind in Canada.

"Forensic engineering skills are highly valuable in the assessment of deterioration in infrastructure, product quality and procedural practice improvement as a result of investigations, direct impact on improving engineering design practices and revision of codes and standards to improve public safety," says Perovic.

Perovic has led hundreds of forensic investigations in his career and says some of his conclusions have resulted in improved products and standards. He wants more students to learn how "reverse engineering logic" is invaluable to finding the correct solution to a real-world problem.

Gravity Engineering Incorporated, based out of Calgary, is a consulting firm specializing in structural engineering investigations throughout Western Canada. Kevin Brown, P.Eng., is a 35-year veteran in the structural engineering industry and has been with Gravity Engineering for the last two decades. Brown says he continues to learn on the job. He travels to symposiums, conferences, and takes various courses to stay on top of the forensics field. Brown says he must be qualified when he investigates a case, as he may have to back up his findings by testifying as an expert witness in court. Depending on the investigation, forensic engineers can be hired by law firms, property loss adjusters, building owners or insurance companies. Brown says forensic engineers have to remember there are no sides and their only job is to figure out what happened.

> "We are not advocates for our client's position. We are an advocate for our opinion," says Brown.

SGI CANADA has contracted the expertise of forensic engineers for years. A spokesperson for the provincial insurance agency says engineers "help us analyze a loss to identify what happened, why it happened, what are the costs to fix the loss and whether we would have the right to sue or take recovery against a manufacturer for faulty product or the homebuilder for improper workmanship."

From flood to fire, crashes to collapses – a forensic engineer is a master puzzle solver. Unlike their design-focused peers who often begin a project with a clean sheet of paper, as Kevin Brown says, "forensic engineers start with a mess."

TOP: Roof collapse at foundry (location confidential). BOTTOM: Roof collapse in Saskatchewan (location confidential).

Digging Deep

Geo-Archaeology

BY MARTIN CHARLTON COMMUNICATIONS

Photo courtesy Canada North Environmental Services.

An area near the Cayzor Athabasca Mine where ancient Indigenous artifacts were discovered.

Imagine your excitement should you find in that old shoebox in the basement one of your favourite hockey cards that dates back 40 or 50 years.

Sure, it's a little rough around the edges but otherwise it's in relatively good condition considering its age.

Now imagine you're an archaeologist or a geologist digging in the ground and unearthing an artifact approximately 5,000 years old. Indeed that is a rare find, even more so than your Gordie Howe card from the shoebox.

There's buried treasure under our feet and David Sanscartier, an environmental engineer with the Saskatchewan Research Council, was one of the lucky ones who in 2016 was present during a dig in northern Saskatchewan where an ancient projectile point was discovered.

It was during Project Cleans, a large-scale, multi-site remediation project and a cleanup of abandoned sites in the North, when this well-aged cultural piece was found on the shore of Jean Lake, approximately two kilometres northwest of Uranium City.

> "This was a pretty exciting find," Sanscartier explained. "I never expected we would find any artifact on those mine sites, so that was very interesting."

Alan Korejbo is a senior archaeologist from Canada North Environmental Services who was surveying the abandoned Cayzor Athabasca Mine when he discovered the projectile point.

"Although archaeologists develop a sharp eye to detect such things, the moment one discovers a pristine artifact that has likely lain dormant over several millennia is almost always surreal," Korejbo said during an interview with the SRC. "The imagination begins to take over trying to determine what this person was doing here. How did they live? What did they eat? What did their family or group look like? These are some very important cultural questions."

"After the discovery, we surveyed the site's surface to see if further heritage resources such as stone tools or features like fire hearths or stone cairns were visible on the surface. We didn't find any other heritage resources and the site was accurately mapped and recorded."

And therein lies the collaborative workings between environmental engineers like Sanscartier and geologists and archaeologists like Korejbo at remote sites, and how all work in unison to discover and preserve found artifacts.

Archaeologists, geologists and engineers assume different roles at a work site. While artifacts and skeletal remains and any remnants of past civilizations are studied by the archaeologist, geologists are focused on the solid and liquid materials in the earth, including soils, minerals and rocks.

Photo courtesy Canada North Environmental Services.

Projectile point discovered at the Cayzor Athabasca Mine in 2016.

Communication at work sites is paramount.

"The interaction with the archaeologists on (Project Cleans) was informative and I learned quite a bit through that. But also the communication we had with the local community was interesting too because once we found the artifact we contacted the leaders on those First Nation for some guidance on how to best deal with the cultural artifact."

Archaeologists assist geologists and engineers with integrating and protecting social heritage and cultural resources into the remediation planning and operations.

Typically the archaeologist will be given the plans for the summer dig season to tell them which land geologists will be disturbing. With that information, archaeologists are free to go about their work and determine what kind of survey will be needed.

"Sometimes we have overlap. When we have the archaeologists on site we'll have some of our internal resources going with that individual. We're all looking for different things in many cases based on our specific areas of expertise," explained Ian Wilson, an environmental remediation manager at the SRC who worked on Project Cleans.

"While an archaeologist is doing a pre-assessment of, for example, a forested area, to make efficiencies, geologists and engineers go out with a biologist and walk over the same ground to look for rare plant species or certain biological screens. That way, they're going over the same areas and seeing the same things and so we get multiple surveys and filters going on at the same time."

"That really helps us out because all the mines (on Project Cleans) have already been impacted, so there's definitely potential there for findings," Wilson continued. "When we're pre-screening areas that haven't been affected by man, it's not only about finding things but also looking for areas from a biological and archaeological view where there could be potential."

"The two parties share everything they find because the work the archaeologists do often supports or could potentially impact what the engineers and geologists and the remediation project team does. It's not out of the realm of possibility that plans change or become delayed at a site, depending on what is found, to allow a full investigation."

> "This is not archaeology as an academic endeavour where maybe there's some secrecy," Sanscartier noted. "This is very much the archaeologist supporting the overall project and there is ongoing communication and sharing of information throughout."

Added Wilson, "A lot of the time, we see that as value added from a regulatory standpoint and from a cultural standpoint."

Saskatchewan remains a rich province to conduct research. The majority of the findings and the knowledge learned has been gleaned from materials found generally in the southern half of the province, given the extensive development.

Despite limited and isolated development in the northern half, research is conducted, though the study area hasn't been as extensive as it has been in the South. This means there is a lot more cultural and archaeological awareness mapping.

But engineers go where the work is and the project portfolio is generally in the northwest corner of the province.

"The area where we are working (for Project Cleans) is extremely interesting from an archaeological viewpoint and from a cultural heritage viewpoint," Wilson explained. "It's beautiful up there, so if we were to choose a place within Saskatchewan, even though we don't get to it, I think we're in a good place."

The Stars My Destination:

Geoscience and Engineering on Mars and Beyond

BY MARTIN CHARLTON COMMUNICATIONS

Photo courtesy the FMARS society.

The Flashline Mars Arctic Research Station (FMARS) at Devon Island, Nunavut.

When most people think of engineers and geoscientists in space, they think of fictional characters like Star Trek's Scotty. But a growing number of Earth-bound professionals today are hard at work getting humanity ready for the final frontier.

Life on Mars?

Glass isn't as transparent as you might think.

Fresh questions from scientists and geologists have risen thanks to a surprising finding on Mars. Avalanches and dust devils have been spied by NASA's Mars Reconnaissance Orbiter over the past decade and over the span of approximately 40,000 passes of the red planet.

And now, for the first time, the spacecraft has detected deposits of glass inside craters on Mars. The discovery may have important implications in the search for ancient life on other planets.

One crater of particular interest is Hargraves. It's located in a region that once contained warm vents and was likely hospitable for life. Hargraves is being considered as a possible landing site for NASA's Mars 2020 Rover.

This news is fascinating to Erica Massey and other like-minded geologists.

Originally from the Kindersley area, Massey now lives just north of Kelowna where she obtained her undergraduate degree. During her studies there, she was awarded the opportunity to attend the University of Iceland through UBC's Go Global exchange and study-abroad program.

Massey, who has since earned an M.Sc. through UBC and is a member of APEGBC, specialized her research to focus on glaciovolcanic geochemistry - ancient volcanic eruptions that occur beneath mountainous depths of ice and meltwater.

Specifically, Massey set her sights on palagonite, a material formed from volcanic (molten) glass when lava interacts with water. Her thesis delves deeper into the textural relationships in glass and palagonite.

Photo courtesy the FMARS society.

Researchers from an Arctic Mars station make a simulated planetary expedition.

"Whether glass is found on the seafloor or wherever, it's a part of these deposits that have been erupted under large ice formations (up to two to three kilometres of ice during different ice ages) and made these deposits," Massey explained.

"Glass has a signature that it has cooled quickly. It's on Mars, it's on the moon, it's on Earth. It also represents the magma that it was formed from. By analyzing the glass, we know what kind of composition of magma this was."

Ancient Earth could have supported early life, despite the intense volcanic activity. Massey's findings help support this theory.

Observing the deposits on Mars – backed up with new evidence from the Orbiter - may indicate an environment that had life-supporting heat and surface water.

Because the Orbiter retrieves chemical composition and spectral imaging of the rocks and soil, the data that comes back is used to show the minerals that are in those rocks and soil.

This is of particular interest to geologists who also have learned that more than 1 000 kilometres of a southern ice cap on Mars is comprised of landscapes similar to glaciovolcanoes on Earth.

In addition, further research has shown that bits of plant life were preserved in impact glass on Earth when, millions of years ago, asteroids collided with Earth near what is now South America. Researchers are looking for similar deposits on Mars.

Massey predicted exploration of Mars and other planets within our solar system will continue to grow.

In late October, NASA's Juno probe delivered flyby images of Jupiter. Images revealed the detail of the planet's thick cloud bands and powerful storms. In fact, some of the tempests are large enough to swallow Earth, or at least a good chunk of it.

NASA also found that Jupiter's atmosphere is a turbulent mixture of gas, particularly hydrogen and helium. Traces of molecules like ammonia, methane, sulphur and water also were found.

Looking beyond this solar system, scientists have discovered at least 1,000 exo-planets close to the size of Earth and with similar topography. The question is whether they are capable of supporting life.

Canada's "Little Mars"

The summer of 2017 saw a team of six would-be astronauts settle into a research station in one of Canada's northern-most locations - Devon Island, Nunavut.

Devon Island is the ideal place to train future space explorers - the valleys, canyons and gullies all over the desolate island, as well as the ground ice, are remarkably Mars-like.

The team studied lichens and geology and learned how astronauts could potentially live in harmony on the red planet.

"Both of these sites are excellent planetary analogues," Paul Sokoloff, a researcher at the Canadian Museum of Nature, told the CBC. "We thought it was a really great progression to be able to say, 'OK, well, we know that

these are both good Mars analogue sites,' but we've never done the exact same scientific program at both."

The group studied and compared how this Mars analogue site stacked up to findings on Earth, including biology, geology, crew morale and isolation over long term.

The lichens came into play because they're a good way to practise studying simple biology. The group also looked at permafrost polygons, which are shapes on the tundra that may also exist on Mars.

All the while, the group monitored itself as well. They locked themselves in a metal container for approximately eight weeks – something they called a tuna can – to observe what it would be like for humans to travel to Mars.

Martian Concept Cars Tested in Canada

To prepare for a future Mars expedition, a NASA team test-drove a prototype Humvee across the Northwest Passage.

The journey across the icy and rocky terrain was similar to what an astronaut would experience on Mars.

This was the first time that the Northwest Passage was navigated in a road vehicle.

Destination? A remote outpost on Devon Island in Baffin Bay, the largest uninhabited island in the world and also referred to as Mars on Earth.

The objective was to safely deliver the HMP Okarian, a concept pressurized rover undergoing rigorous training for Mars exploration.

The entire journey lasted three years - 2009 to 2011.

At one point the vehicle went over a large fracture in the sea ice covered by snow and began falling backwards into the frigid ocean. Thanks to some quick thinking and a little luck, the crew managed to get the vehicle on land before it became submerged.

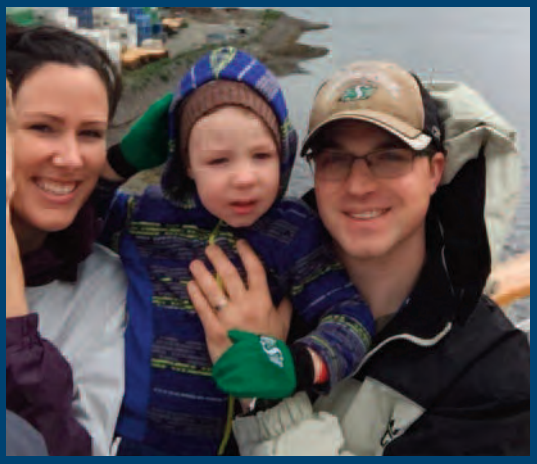
The team also weathered a 48-hour Arctic storm, an experience much like a violent dust storm on Mars.

In the end, the team broke the record for the longest distance ever travelled on sea ice in a road vehicle.

TOP: Mars researcher Erica Massey, Geoscientist-in-Training. BOTTOM: HMP Okarian, Mars personnel carrier concept vehicle.

Wikipedia

Member Profile



This month *The Professional Edge* chats with Penelope (Penny) Popp, P.Eng., a transportation engineer working for the Ministry of Highways and Infrastructure.

Tell us about your personal and professional background.
I grew up in small-town Saskatchewan and moved to a farm part way through elementary school. I went to high school in Vibank. From there, I went to the University of Regina where I studied engineering as well as business administration.

Why did you choose to go into engineering?
In school, I loved math, calculus and chemistry so it seemed like a natural fit. I enjoy tackling complex problems. I chose traffic engineering specifically because it is something that affects and benefits everyone – we all spend time on the highway so I saw it as a way to help people on a level that everyone could relate to.

What was your biggest challenge in college?
I didn't face many challenges in my undergraduate studies but when I took my MBA I was working full time so that was a heavy work load.

What was your first job after college?
I started off with the Ministry of Highways working as a traffic engineer in the southern region office doing traffic operations. From there, I moved around within the ministry. I spent some time with SaskBuilds. That was a career highlight – helping to set up a new Crown corporation. We had a small staff involved in setting up many P3 projects so that was an exciting time.

What do you feel was your single greatest accomplishment as an [engineer/geoscientist]?
I've been involved with so many innovative projects that it's hard to pick. One that stands out is the Highway #1 east functional study. All three communities east of Regina including the rural municipality were involved in the study. It was rewarding to play a part in bringing these stakeholders together to find solutions in a spirit of collaboration and cooperation.

What are your interests outside of work?
I enjoy running. I run with the Jaleta Pacers, a performance-oriented distance running club that also does charitable work. My family enjoys travelling. The Amazing Race is our favourite show!
Our favorite mode of travel is cruising, most often to Caribbean destinations. Most recently we went on our first Alaska cruise and now we are totally sold on it. Also in my spare time I enjoy developing and facilitating project management courses at U of R Centre for Continuing Education.

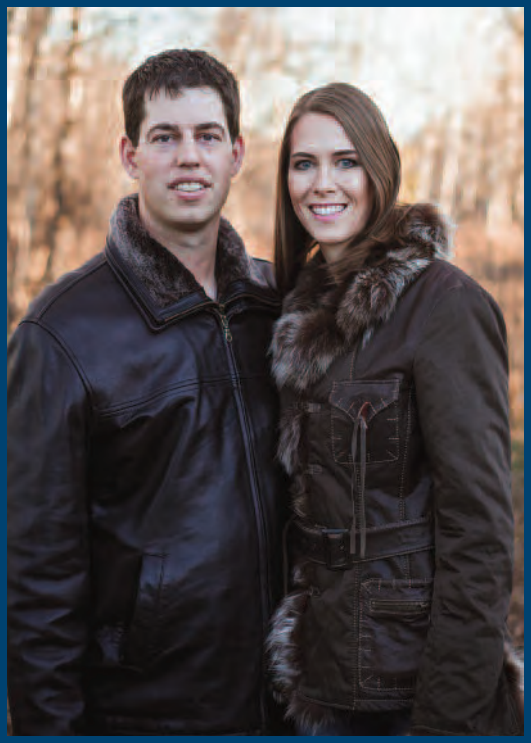
What is your favourite vacation spot?
Skagway, Alaska. The scenery there is amazing and the whole atmosphere is so peaceful, I just found the place to be really welcoming.

Have you ever met anyone famous?
Last year, I was having lunch at a restaurant and K.D. Lang was at the next table. I also run with Ted Jaleta. That is as close as I've been to famous people.

What is your favourite book or books you are reading now?
My favourite book is Pride and Prejudice which is a classic I can read over and over again and never tire of it. Likewise, I've read The 7 Habits of Highly Effective People many times. As for my current reading, I have a three-year-old at home so most of my book choices these days involve green eggs and ham and so forth.

Who has had the greatest influence on your life and career?
During my career, I have had countless mentors. A couple who stand out are Jon Wyatt, P.Eng. and Terri Arendt, P.Eng. who were my mentors in my first job who helped me figure out how to use engineering judgement to work with others and find solutions. They saw potential in me helped me grow and learn.
For my life in general, I would say my husband and children. My husband really helps me stay balanced. He is a huge supporter of my career – it helps that he's also an engineer. We have LEGO in common. We have a whole room in our home devoted to LEGO.

Professional Development Profile



Ian Farthing, P.Eng.

The Engineering and Geoscience Professions Act and The Engineering and Geoscience Professions Regulatory Bylaws require that members remain competent. APEGS's Continuing Professional Development Program provides members with a framework to plan and report on their continuing professional development activities. Check out the profile below to see how meeting the reporting requirements is easy to do as part of every engineer's or geoscientist's daily work to protect the public and the environment.

Name: Ian Farthing, P.Eng.

About Me: I have lived in Prince Albert with my wife Alanna for over four years. We enjoy being active and involved in our community. My wife and I enjoy activities together such as golfing and curling.

Job Responsibilities: I am currently a project engineer with Associated Engineering in Prince Albert. My work includes areas of transportation and municipal infrastructure. My responsibilities include contract administration, cost estimates, surveying, design and making on-site project decisions. This position has provided me with a great deal of diversity in work. My career has allowed me to help provide communities with improved access to safe drinking water and safer passages to northern communities.

Professional Development Activities

Formal – I carry out 3-D modelling training and evaluation and other internal training and awareness programs within my company.

Informal – I attend APEGS AGM track sessions. I expand my knowledge of modelling software for both transportation and municipal infrastructure applications. I undertake self-directed learning to gain knowledge that will be applied to upcoming projects.

Participation - I have been a member of the APEGS Awards Committee for several years. I help guide Engineers-In-Training within my workplace.

Presentations – I have made presentations on specialized jobs and methods of construction to co-workers in lunch-and-learns.

Describe how your development activities help increase your knowledge/competency at your job:

My current position has allowed me to be involved in a wide variety of projects and has encouraged me to expand my knowledge and skill set to provide value to my clients. Training programs combined with sharing knowledge in informal settings directly adds value to different phases of projects such as design, tendering, construction, commissioning and assessment.

Informal activities such as track sessions allow me to gain knowledge through the session itself and provide me with networking opportunities with others that attend those sessions.

An Essential Requirement

The Engineering and Geoscience Professions Act and The Engineering and Geoscience Professions Regulatory Bylaws require that members remain competent as an integral part of self-regulation. APEGS's Continuing Professional Development Program provides members with a framework to plan and report on their continuing professional development activities. Reporting is optional, but APEGS has embarked on a path to make reporting a requirement to prove to the government and the public that engineering and geoscience professionals are maintaining their competence.

With the risk of losing self-regulation of some professions in BC and Quebec, APEGS took the opportunity to connect with Fred Antunes, P.Eng., deputy minister of Highways and Infrastructure, to explore his perspective on why reporting professional development activities is important for members of a self-regulated profession.

"With the privilege of self-regulation comes an obligation to protect the public by ensuring that the men and women who practise engineering and geoscience are competent," said Antunes. "We know they are competent when they graduate from an accredited university. However, with the rapid changes in technology and new developments in engineering and geoscience, APEGS needs to be transparent and demonstrate that there are processes in place to ensure that members' knowledge and skills remain current."

APEGS will be voting on required reporting at its annual meeting in May 2018. "I believe it is critical that APEGS has a requirement for members to report," said Antunes. "If reporting becomes a requirement, I will ensure the engineers and geoscientists working in my organization and the consultants we engage comply."

As a Professional Engineer with permission to consult, Antunes makes it a habit to report his professional development activities.

"I was registered in the four Western provinces at one time and I took the obligation seriously, reporting my professional development annually," said Antunes. "It was a very simple process that took very little time, even reporting in four provinces, so there is absolutely no reason to avoid reporting."

APEGS is making presentations around the province to raise awareness about the Continuing Professional Development Program, share the benefits of reporting and show how quick and easy it is to report. Check out the above infographic to find out more.

Indigenous and Scientific Ways of Knowing Nature

SUBMITTED BY KEVIN HUDSON, P.ENG.

Indigenous people are the descendants of the first people to inhabit a given region, in contrast to groups that have settled or occupied the area more recently. Indigenous people possess local traditional knowledge that can help document the effects of a changing climate and perhaps, offer solutions on how to better protect it. In Canada these are our First Nations peoples, who have called this place home for millennia. They can offer a wealth of traditional ecological knowledge of Canada through oral histories, observation of hunting and fishing patterns and other wisdom that has been passed down to younger generations for thousands of years.

Canada is committed to collaborating with Indigenous governments, leaders and communities to more broadly and respectfully incorporate traditional knowledge into decision making, including in environmental assessments, resource management and advancing our understanding of climate change and how best to manage its effects. Natural Resources Canada is awarding contracts to study traditional and cultural knowledge on climate and environmental change in the Northwest Territories. It's a way to collaborate our Western scientific reconstruction of past climate with the oral histories that are provided by First Nations groups. If both knowledge systems are reporting the same thing at the same time, that increases confidence that these are accurate reconstructions.1

The Western scientific method is to search out information about a problem (such as climate change), propose a hypothesis, predict the results and then carry out controlled experiments to determine if the hypothesis accurately predicted the results. By contrast, the fundamental attributes of Indigenous Ways of Knowing are place-based (supports relationships with and responsibilities to the land), holistic (interrelationships with the whole of nature), relational (everything has equal status), mysterious (versus knowable), based on cyclical time (versus rectilinear) and spiritual (respect for the spiritual relationships that exist between all things). Both knowledge systems deserve recognition, respect and understanding.2

Non-Indigenous students planning a science-related career will benefit from learning some Indigenous knowledge. Their perspective on nature and their creative problem-solving capabilities will be enhanced. They may become more well-rounded and reflective scientists, engineers, resource managers and health professionals in the future. Multiple ways of understanding the environment encourages two-way learners to create knowledge hybridized from Indigenous and Western scientific knowledge systems and to take sustainable action.2

The "seventh generation" principle respected by First Nations groups teaches that in every decision one must consider how it will affect their descendants for seven generations into the future. Threatened with a changing climate, all sources of knowledge must work together as we face the reality of our global and ecological interdependence, for seven generations to come.

References:

1. *Canada Seeks Traditional Aboriginal Knowledge on Climate Change*, TheStar.com, March 12, 2016.

2. *Bridging Cultures, Indigenous and Scientific Ways of Knowing Nature*, Glen Aikenhead, Herman Michell, 2011, Pearson Canada Inc.

CSA Launches New Standards for Incident Investigation

SUBMITTED BY SASKATCHEWAN WORKERS' COMPENSATION BOARD

The Canadian Standards Association (CSA) recently launched the new Z1000-05 Incident Investigation standard to help employers pre-plan for an incident, learn how to control a scene, gather evidence and hopefully prevent incidents from occurring.

The new standard is part of the CSA's Z1000 suite of Occupational Health and Safety Standards to assist employers developing or enhancing their safety management systems. The full suite of standards includes hazard identification, inspections, psychological health and safety, managing work in confined spaces, hearing loss prevention, emergency preparedness and the new incident investigation standard.

"Even if an employer starts out with no knowledge of safety, you can purchase from the suite and set up a robust safety management system," said Chris Budzich, president of Proactive Safety Consulting and representative on the CSA committee that wrote the Z1000-05 standard.

"The Z1000 suite was designed for organizations of any size to implement a safety system, but the way that this has been approached is that each one of the standards could be a stand-alone item if you wished. If you only wished to have information on incident investigation, then the Z1000-05 standard could operate on its own."

Employers can also use individual sections of all CSA standards to work together. For example, the new Z1000-05 Incident Investigation standard and the Z1000-02 Hazard Identification standard are intended to function together.

> "It will guide you line by line through controlling the scene right off the bat to how to control these hazards," Budzich says.

The investigation standard was developed from the best investigative practices in use, rather than drawing from one particular model of investigation.

"We tried to write it so that it's very scalable," says Troy Winters, Chair of the CSA committee that developed the CSA Z1000-05 Investigation Standard and safety advisor for Canadian Union of Public Employees (CUPE), national office. He explains the practices outlined in the standard can apply to events of any size.

"Every incident needs to be investigated, whether it's a paper cut or a chemical explosion. All injuries must be reported; all injuries must be investigated."

This includes investigating the circumstances around dangerous conditions.

"You wouldn't leave a puddle laying in the middle of the floor at your house. Why is it happening at work?" says Winters. "If it isn't fully investigated, the next time someone slips, they fall and break their neck. It isn't just the dangerous conditions, it's the near misses that cause an incident to take place."

Phil Germain, vice president of prevention and employer services for the Saskatchewan Workers' Compensation Board agrees.

"You have to ask the 'five whys.' Injuries and fatalities happen because multiple things break down at the same time. You have to ask those questions."

The investigation standard was developed by 30 people from across Canada – a combined 1,000 years of experience. The committee researched and wrote the standard from scratch to completion in less than two years: the fastest standard ever developed.

For more information about injury prevention and safety training, visit WorkSafe Saskatchewan's website at **www.worksafesask.ca**. To learn more about the products available through CSA, visit **www.csagroup.org**.

Notes from Council

The APEGS Council met Friday, October 13, 2017 at the Delta Bessborough in Saskatoon. 18 of 19 Councillors were present. Council will meet next on November 30 and December 1, 2017 in Regina.

Council received the following presentations and information items:

- Activity updates were provided from the constituent society liaisons, the ACEC-SK liaison, the Sponsorship Task Group Liaison, the 30by30 Task Group Liaison and the APEGS Directors to Engineers Canada and Geoscientists Canada.
- The APEGS Director of Corporate Practice and Compliance provided an update on the online competency-based assessment tool. APEGS has reviewed two applicants that also went through the APEGBC process and noted that results were similar using both evaluation methods. The APEGS Experience Review Committee's overall assessment of the tool is positive. Bylaw changes will come with the overall bylaw package in February.
- The APEGS Director of Registration reported on the latest activities of the Pacific Northwest Economic Region (PNWER). Their Summit was held in Portland in July 2017 and was one of the largest yet for PNWER with up to 900 delegates attending throughout the week. The summit included a meeting of the APEG organizations and representatives from the Oregon State Board, ACEC-OR, lobbyists and state legislators to discuss the comity of licensure.
- The APEGS Communications Manager reported on the development of a strategic communications plan. The plan is currently in the discovery stage and it was noted that staff are reviewing the alignment of external vs internal communications.

Council passed motions as follows:

- Endorsing the proposed conceptual changes to the Regulatory Bylaws, including the requirements for annual Continuing Professional Development reporting of 80 credits per year for licensees and 30 credits per year for licence waiver holders. The endorsed changes also require an annual ethics component be added to the program.
- Approving the Sponsorship Task Group terms of reference.
- April 30, 2018 as polling day for the 2018 Council elections.
- Appointing Tara Zrymiak, P.Eng., FEC (Chair), Margaret Anne Hodges, P.Eng. FEC, FGC (Hon.), Ryan MacGillivray, P.Eng. (Group II – Mechanical and Industrial), Bob Cochrane, P.Eng. (Group V – Agricultural and Forestry), Kaylee Puchala, P.Eng. (Members-in-Training), Connie Barsness, P.Eng. (South-East District) and Ryan Morelli, P.Geo. (Geoscience South) to the Nominating Committee for the 2018 Council elections.
- Life Membership for the following members:
  Bertrand, John M., P.Eng.
  Bosch, Jerome P., P.Eng.
  Ip, Thomas C.W., P.Eng.
  Kupskay, John S., P.Eng.
  Lotts, Arthur B., P.Eng., P.Geo.
  Mysyk, W. (Kim), P.Geo.
  Radigan, Paul D., P.Eng.
  Rieder, Francis J., P.Eng.
  Schmitke, Barry W., P.Eng.
  Snowdon, Reginald G., P.Eng.
  Strickland, Thomas C., P.Eng.
  Thomas, Charles R., P.Eng.
  Villaraza, Antonio M., P.Eng.
  Wrubleski, Philip D., P.Eng.
  Zaleschuk, James A., P.Eng.
- Appointing Michel Detharet, P.Eng., FEC as Vice-Chair of the Investigation Committee.
- Authorizing APEGS staff to enter into a contract with Notarius to provide digital seal / digital signature service and make it available to members. It was noted that it is not compulsory for members to use this service.

Council noted and received the following reports:

- Registrar's reports for May, June, July and August 2017.
- The report on compliance activities Continuing Professional Development reporting statistic reports for July through September 2017.
- The Continuing Professional Development Implementation Plan progress report.
- The unaudited financial statements for May, June, July and August 2017.
- Executive Committee minutes, 30 by 30 Task Group minutes, Sponsorship Task Group minutes, Board minutes and reports from the committees.

Spring 2018 Professional Development Days

DoubleTree by Hilton Hotel, Regina - March 1 & 2, 2018

Thursday, March 1, 2018

8:00 - 8:30 — **REGISTRATION**

8:30 - 10:00

TRACK ONE

Get to the Point! A Practical Writing Course for Business and Technical Professionals (RGI International)

This interactive two-day classroom session introduces participants to the Pyramid Method of Writing™ . and applies it to writing effective letters, reports, emails, instructions and proposals. It offers an opportunity to receive feedback on one pre-course assignment and two post-course assignments. The second day allows time to discuss and evaluate longer, more technical documents such as recommendations, investigations, formal reports and studies and proposals. Group exercises allow participants to learn from each other.

Presented by: Lisa Moretto, the President of RGI International, Inc.

EARLY BIRD: $900 **REGULAR:** $1,200

TRACK TWO

Sustainable Development and Environmental Stewardship for Engineers (Engineers Canada)

Sustainable development is an emerging aspect of engineering practice which is more comprehensive and anticipatory and in many areas is overtaking the more narrow discipline-specific activity of "protection of the environment." Engineers Canada has published a national professional practice guideline to complement the codes of ethics of the 12 engineering regulators. This half-day workshop will provide participants with information about, and application of, the principles that comprise the national guideline.

Speakers: Mahmoud Mahmoud, Ph.D, P.Eng, FEC, founder and CEO of GES Geotech Inc., Chris Feetham, MBA, P.Eng., FEC, senior compliance promotion officer with Environment and Climate Change Canada-Atlantic Region.

EARLY BIRD: $225 **REGULAR:** $250

10:00-10:15 — **COFFEE BREAK**

10:15–12:00

TRACK ONE

Get to the Point! (Continued)

TRACK TWO

Sustainable Development (Continued)

12:00-1:30 — **LUNCH ON YOUR OWN**

1:30-3:00

TRACK ONE

Get to the Point! (Continued)

TRACK TWO

Conversations that Motivate and Engage (UofR - Continuing Education)

This half-day session will provide you with the knowledge and skills needed to increase your communication effectiveness.

Presented by: Kelley Orban, life coach

EARLY BIRD: $225 **REGULAR:** $250

3:00 – 3:15 — **COFFEE BREAK**

3:15 – 5:00

TRACK ONE

Get to the Point! (Continued)

TRACK TWO

Conversations that Motivate (Continued)

Friday, March 2, 2018

8:00 - 8:30	**REGISTRATION**	
8:30 - 10:00	**TRACK ONE**	**TRACK TWO**
	Get to the Point! A Practical Writing Course for Business and Technical Professionals (Continued)	**Good Guy or Bad Guy: Which One Are You? (APEGS)** There are a lot of examples of bad character in the news media these days. This session will explore the topic of good character as it relates to professional practice. **Presented by:** Grant Koropatnick, P.Eng., FEC, CEO and Registrar for Engineers and Geoscientists Manitoba (EGM). **EARLY BIRD:** $225 **REGULAR:** $250
10:00-10:15	**COFFEE BREAK**	
10:15–12:00	**TRACK ONE**	**TRACK TWO**
	Get to the Point! (Continued)	**Good Guy or Bad Guy** (Continued)
12:00-1:30	**LUNCH ON YOUR OWN**	
1:30-3:00	**TRACK ONE**	**TRACK TWO**
	Get to the Point! (Continued)	**Watch out for Unconscious Biases: If I Looked at the World a Different Way (APEGS – 30 by 30)** Join us for this practical workshop where participants are given an opportunity to practise and have their self-awareness raised where they have unconscious bias. Also learn why unconscious bias matters, and how it affects your outcomes and bottom line. **Presented by:** Komal Bhasin, consultant, facilitator, and life coach with over 12 years of experience in consulting, strategic advising, and leadership/ management, with a particular focus on the health and social service sectors. **EARLY BIRD:** $225 **REGULAR:** $250
3:00 – 3:15	**COFFEE BREAK**	
3:15 – 5:00	**TRACK ONE**	**TRACK TWO**
	Get to the Point! (Continued)	**Watch out for Unconscious Biases** (Continued)

Registration and Fees:
For information on fees or to register for these events, please log-on to your On-line Profile on the APEGS website (www.apegs.ca) and register under Meetings.

Looking for Accommodations?
APEGS has negotiated a rate of $149.00/night, plus taxes, at the DoubleTree by Hilton. Contact Marriott Reservations at 1-888-890-3222. Ask for the APEGS block of rooms.Please book before February 16, 2017.

For More Information:
For more information, contact Shawna Argue, P.Eng, Director of Registration, APEGS: 1-800-500-9547, email sargue@apegs.ca; or Jolene Arthur, Compliance Coordinator (email jarthur@apegs.ca).

Member Benefits and Affinity Programs

As an APEGS member you are eligible to participate in the member benefit and affinity programs.

Corporate Discounts

APEGS partners with selected suppliers to offer discounts to members on various products and services.

APEGS Travel Insurance Program

ATI INSURANCE BROKERS INC.

This program is available to members, employees of members, and staff of the association.

It has been specifically designed to deliver the most comprehensive and cost-effective travel health and accident insurance available.

APEGS Travel Discount Program

travel discounts

APEGS is pleased to offer an exclusive worldwide travel discount service to our members.

Savings average 10-20 per cent below-market on all hotels and car rental suppliers around the world. Save time and money. Let Local Hospitality Inc. negotiate the best deals and comparison price for you. Any hotel, any car, anywhere, any time, other discount programs, home insurance, rentals and health & fitness.

Engineers Canada Affinity Programs

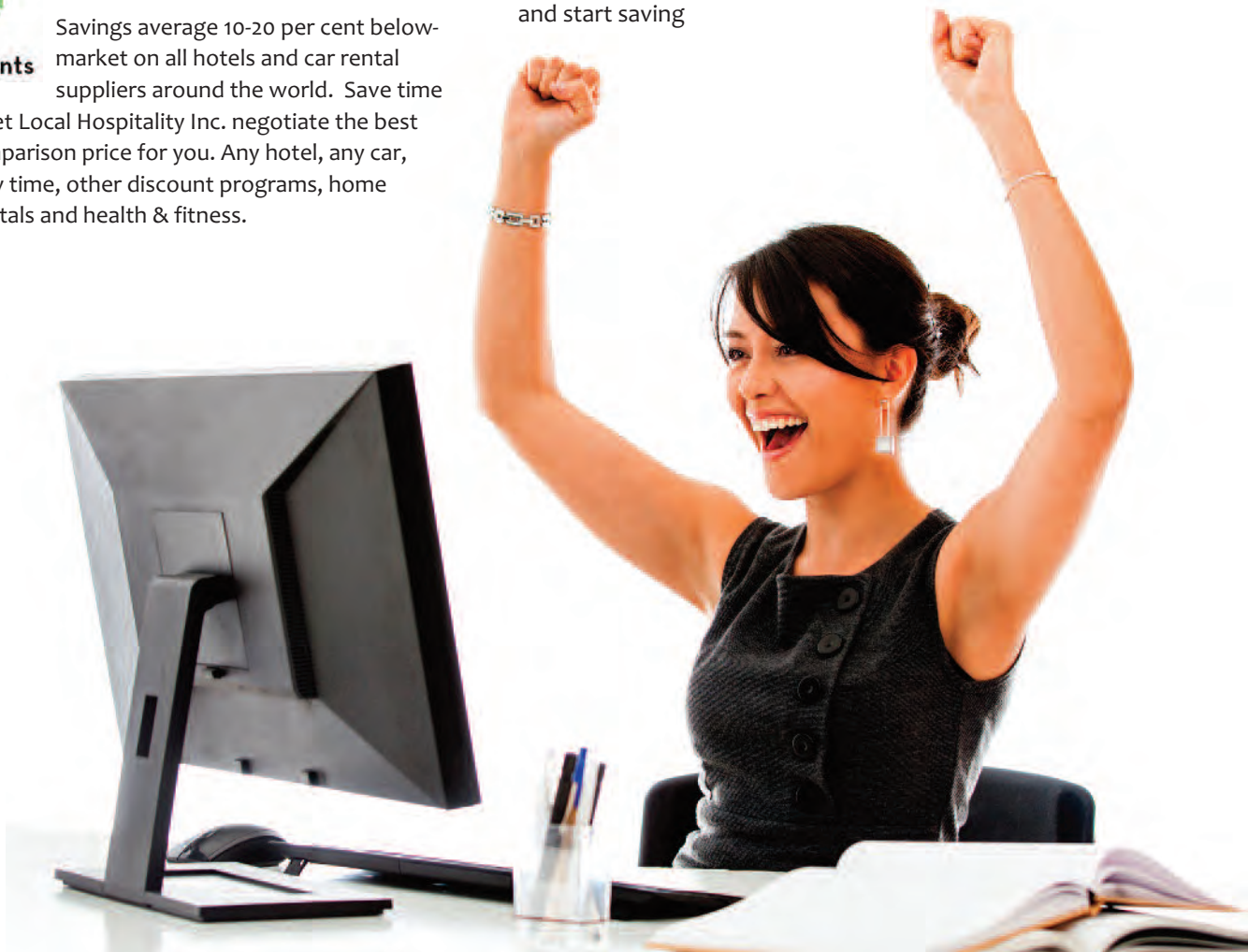
All APEGS members and their families can take advantage of the insurance plans, financial and other services through Engineers Canada's sponsored initiatives.

APEGS Services

Numerous services are available and many costs are included in the APEGS membership fee.

- Subscription to *The Professional Edge*
- Professional Development
- University Access
- Volunteer Opportunities
- Local Constituent Societies
- Engineers Canada Affinity Programs

Visit **apegs.ca/Portal/Pages/member-benefits** today and start saving



Board Member Opportunity for Rainbow Youth Centre in Regina

The Rainbow Youth Centre (RYC) in Regina is currently seeking individuals with the following skills and experience: finance/audit, fundraising, communications/marketing, legal, building maintenance, or policing to join our Board of Directors.

The primary activities include a two-hour board meeting once a month and time serving on one or two committees. Committee work could involve two to four hours per month to advance the vision of RYC.

For over 35 years, the Rainbow Youth Centre (RYC) has provided a range of services and programs to meet the needs of youth between the ages of 11 and 25:

- Parenting skills classes for young parents and families
- Home visiting with young families
- Pre-employment and job skills training
- Job development and placement services
- Anger management
- Drug and alcohol awareness
- Social and informal counselling assistance
- Recreational, creative and cultural programs and more.

Working with the dedicated RYC Board of Directors to contribute to the work of RYC is a rewarding experience.

If you have the requisite skills and desire to make a difference in the community, we are definitely interested in talking to you. For more information about RYC, please visit us at www.rainbowyouth.com or Rainbow Youth Centre on Facebook. Please contact Ron Single, Chairperson, **rsingle@sasktel.net** for more information.

Celebrating Our Own

Saskatchewan Engineer Wayne Clifton, P.Eng., FEC Honoured for Lifetime Achievement

Regina-based engineer Wayne Clifton, P.Eng., FEC received the 2017 Beaubien Award from the Association of Consulting Engineering Companies (ACEC) at a ceremony in Ottawa on October 24, 2017.

Clifton is President and CEO of Clifton Associates, the largest independent, specialist consulting engineering firm headquartered in Saskatchewan. The firm has an extensive client list across Canada and around the world. Clifton himself has consulted on more than 3,000 projects related to geotechnical and environmental issues throughout his career.

In Saskatchewan, Clifton is best known for his firm's work on the "Big Dig," a complex $18 million project to deepen Wascana Lake in the heart of Regina.

The Beaubien Award recognizes individuals for their lifetime contributions to ACEC and to the advancement of the consulting engineering profession and industry. The award was created by ACEC in 1984 in honour of Dr. James de Gaspé Beaubien, who founded ACEC in 1925. The Canadian Consulting Engineering Awards are considered the highest form of recognition for excellence in the consulting engineering industry.

"It is humbling to be honoured by my peers in this way. The work of an engineer is not glamorous – I just try to get the job done, solve problems and help people. I have always measured my success by the people and communities that I've helped. This award has given me an opportunity to reflect on those projects and all the lives they've touched," said Clifton.

Clifton has worked as a Professional Engineer since 1966. His firm, Clifton Associates was founded in 1978 and now boasts six offices and 250 staff across Saskatchewan and Alberta.

"Although my name is on the door, Clifton Associates is a team effort. I would like to dedicate this award to all of the brilliant professionals with whom I've had the pleasure of working with through the years."

In addition to his professional accomplishments, Clifton is an adjunct professor at the University of Saskatchewan and the University of Regina. He has authored several hundred technical reports that have been published in journals and conference proceedings.

Clifton has been active at senior levels with many industry associations including ACEC-Saskatchewan, the Association of Professional Engineers and Geoscientists of Saskatchewan and the Canadian Council of Professional Engineers (now Engineers Canada).

In 2003, ACEC-SK recognized his contribution to the profession by presenting him the Lieutenant Governor of Saskatchewan Meritorious Achievement Award. He has provided leadership in the implementation of an Environmental Code as the basis for environmental regulation in Saskatchewan. He has served on the Prime Minister's Scientific Advisory Committee, as a member of the National Research Council, and the Standards Council of Canada Advisory Committee on Trade.

Michael Walker, P.Eng., 2018 Allen D. Williams Scholarship Recipient

Saskatchewan's Michael Walker, P.Eng., PE, PMP, of McElhanney Consulting Services Ltd. was awarded ACEC's 2018 Allen D. Williams Scholarship. Walker accepted the award at ACEC's National Canadian Consulting Engineering Awards gala in Ottawa on October 24, 2017.

The scholarship is presented annually to a young professional employed by an ACEC member firm in recognition of their commitment, understanding and contribution to the consulting engineering industry. Recipients receive funding to cover registration, airfare and accommodations to attend the annual conference of the International Federation of Consulting Engineers (FIDIC).

The Scholarship Foundation Board was impressed with Walker's leadership role in large complex projects, his

involvement in provincial, national and international industry associations and mentorship of young professionals.

"Michael Walker has made a significant contribution to our Association since he arrived in Saskatchewan," said Bev MacLeod, ACEC-SK executive director. "He approaches everything with an infectious enthusiasm that inspires people to fully participate in whatever he is promoting. We look forward to following his career."

Matt Dunn, P.Eng. Named One of CBC's 2017 Future 40

Matthew Dunn, P.Eng. has been named as one of CBC Saskatchewan 2017 Future 40 winners. The broadcaster invited the public to nominate the province's new generation of leaders, builders and change-makers under the age of 40.

Dunn, 36, was recognized under the Science and Technology category.

Matthew Dunn is a Professional Engineer, former athlete, community leader and board member of Saskatchewan Aboriginal Track and Field. He is a proud Dene man from the Athabasca Fort Chipewyan First Nation.

Matt works tirelessly in his role as Indigenous Peoples Initiatives Co-ordinator at the University of Saskatchewan College of Engineering. His achievements include:

Dunn holds a master's degree in engineering and has made it his life's mission to encourage and support Indigenous peoples to consider and enter the sciences, specifically engineering. He is the Chair of Engineers Canada's Equitable Participation in Engineering Committee. He is on the APEGS Equity & Diversity Committee and Indigenous subcommittee. He has been instrumental in starting a Canadian Indigenous Advisory Council to the American Indian Science and Engineering Society to encourage youth to enter into the sciences and engineering. He is also a former recipient of the prestigious Indspire Award that celebrates and encourages excellence in the Indigenous community.

We Simply Cannot Do It Alone

SUBMITTED BY MARGARET ANNE HODGES, P.ENG., FEC

APEGS's 30 by 30 is not alone in its efforts to raise awareness of what a great career engineering and geoscience can be and why it is important to support and encourage our professional members to remain engaged in the professions throughout their careers.

At the APEGS fall Professional Development Days, the Full STEAM Ahead! track session learned from experts on the experiences of women in the workforce, heard the insight from the Executive Leadership Panel and collected ideas for 30 by 30 from the membership. There is a great deal of information and research material available to us and there are many exciting initiatives taking place across the country. A couple of notes for our members to be aware of: Driving WinTech - **drivingwomenintech.com**

Driving WinTech is a community-based research initiative that aims to understand and elevate women in technology across Canada. Throughout the fall, members of Women in Tech completed a tour across Canada (coast to coast) to facilitate 50 community activities and reach more than 10,000 stakeholders nationwide.

30 by 30 participated by providing some funding and spreading the word to the membership about the opportunity to participate. The goal is to collect stories and we have a great one to share with you.

Past President Tara Zrymiak, P.Eng., FEC, attended the Saskatoon Conversation. As is often the case, Tara was wearing her set of 30 by 30 buttons. At her table were several professional women, one of whom had brought her daughter. When Tara was asked about the buttons, she didn't get a chance to answer because the girl was able to explain that 30 by 30 was an effort to help girls enter engineering. She knew this because she wants to be an engineer and she had her own 30 by 30 buttons at home, which she got at the Saskatchewan Science Centre this past summer. I can't think of a better story.

Check out the Driving WinTech blog to read a detailed account of their trip and contribute to their online survey.

OSPE's Let's Break Barriers in STEM - **www.letsbreakbarriers.ca**

The Ontario Society of Professional Engineers has launched its Canada 150 STEM Challenge: Overcoming Systemic Barriers for Women Choosing STEM Careers. Their proposal has been approved for funding by Status of Women Canada (SWC). OSPE is a member of Engineers Canada's 30 by 30 Champions.

They have developed a survey to collect thoughts and ideas as to why women don't choose to enter engineering and what can be done to encourage them to remain in the profession. Please check it out and contribute.

There is a lot more taking place across Canada and internationally to support and encourage girls and women in STEM. 30 by 30 will continue to bring these opportunities to you. I hope you will find a moment to check out these two excellent initiatives!

The Honour Pin - The Birth of a New Tradition

SUBMITTED BY TARA ZRYMIAK, P.ENG., FEC

First year students at U of R pledge to uphold Code of Ethics.

I was honoured and inspired to attend the Honour Pin ceremony at the University of Regina on Thursday, October 5, 2017. This is the third year for this event, which was started by the Regina Engineering Students Society (RESS) in 2015, modelled after the Iron Pin ceremony at UBC. The Honour Pin is the first-year student version of the Iron Ring that is presented to graduates. It represents a promise to uphold the ethics, integrity and honesty of the profession of engineering.

As part of his introduction to the ceremony, RESS Vice President Academic Quinn Bast advised the students present that they could wear their pin in exams, labs, walking the halls or anywhere to remind themselves and others that they "know what's going on" regarding ethical responsibility in school and in life.

I was pleased to speak on behalf of APEGS and informed the students about the importance of ethics to the profession and the renewed emphasis on ensuring our members are informed about their responsibility and practise with integrity in light of recent events such as the Charbonneau Commission and the Elliot Lake Mall collapse.

The Dean of Engineering, Esam Hussein, Ph.D., P.Eng., reminded the students that when you cheat, you are only cheating yourself and that while you will sometimes succeed and sometimes fail, you will always have your ethics and integrity.

Associate Dean Academic David deMontigny Ph.D., P.Eng., FEC talked about the Academic Integrity Committee started by students to advise the college about ways to reduce the occurrences of ethical violations at the school.

The University of Regina Engineering Code of Ethics that was recited by all those in attendance before receiving their pin was adapted from the APEGS Code of Ethics and reads as follows:

UNIVERSITY OF REGINA

I, as a student of Engineering and Applied Science of the University of Regina, shall recognize this code for guiding my conduct throughout my studies, personal life and career. I shall act at all times with honesty and trustworthiness towards my peers and society. Accordingly, I shall:

1. Hold paramount the safety, health and welfare of the public within the university and workplace by promoting a welcoming, respectful and ethical environment that values everyone equally.
2. Uphold the academic integrity of the University of Regina and of the Faculty of Engineering and Applied Science, completing and submitting work that is founded on personal achievement and without plagiarism.
3. Conduct myself with fairness and avoid conflicts of interest.
4. Give credit where it is due and accept, as well as give, honest and fair professional comment.
5. Report any concerns to the appropriate governing body.

The ceremony was concluded with closing remarks by RESS Vice President Communications Kaylee Hayko.

It is inspiring to see that engineering students not only recognize the importance of ethics in their education and in their profession, but also that they value it enough to take time out of their busy schedule to develop and run the Honour Pin Ceremony and the Academic Integrity Committee.

The future of our profession is looking bright with these dedicated and honourable future members.

Call for APEGS Council Nominations

Nominating Committee

The Nominating Committee is soliciting names for the Council positions described below. You may contact staff support to the Nominating Committee, Shawna Argue, at sargue@apegs.ca to propose names of potential candidates. Shawna may also be reached through the APEGS office in Regina by phone at 306-525-9547 (toll free 1-800-500-9547 North America), or facsimile 306-525-0851.

The Bylaws require the Nominating Committee to nominate, whenever possible, the person holding the office of President-Elect for President, and one person for the position of President-Elect (typically the person holding the office of Vice-President). Stormy Holmes, P.Eng., FEC is the current President-Elect and Terry Fonstad, P.Eng., FEC is the current Vice-President. The Nominating Committee is also required to nominate, whenever possible, at least two persons for Vice-President and at least two persons for each vacancy on the Council.

www.apegs.ca/Portal/Pages/council-elections

Submissions of Nominations

Any five members may nominate over their signatures an eligible nominee for any elective office, except that of President. Such nominations shall be in the hands of the Registrar at least forty-five days before the election is to take place. To meet this requirement, the nominations must be in the APEGS office no later than 5 p.m., Thursday, March 15, 2018, as the election will take place when ballots are counted on Monday, April 30, 2018, the "polling day."

2018

Vacancies & Terms of Office

Officers

- President-Elect – one-year term
- Vice-President – one-year term

Group and Electoral District Councillors to serve a three-year term

- Group II (Mechanical and Industrial)
- Group V (Agriculture and Forestry)
- Members-in-Training
- South-East District
- Geoscience South District

Terms of Office

Only members in good standing are eligible for nomination.

A person elected to Council may only hold office while a resident of Saskatchewan.

A person nominated for President-Elect must have served at least one full year (i.e. from the close of business at one Annual Meeting to the close of business at the next Annual Meeting) as a member of APEGS Council prior to the date on which they would assume office as President-Elect.

A person nominated as a representative of an electoral group must be classified with the Association in that electoral group. The Councillor representing Members-in-Training can complete the term of office after obtaining his or her P.Eng. or P.Geo. status.

Call for Award Nominations

The Awards Committee is seeking nominations for the APEGS Awards as well as other provincial and national awards such as the Saskatchewan Order of Merit, the Order of Canada, the Canadian Engineers' Awards (Engineers Canada) and the Canadian Professional Geoscientist Award (Geoscientists Canada).

If you know of a Professional Engineer or Professional Geoscientist who should be considered for an award, or an exceptional engineering or geoscience project that should receive an award, the committee would like you to nominate that member or project. There are seven APEGS awards: the Exceptional Engineering/Geoscience Project Award, the Environmental Excellence Award, the Friend of the Professions Service Award, the Promising Member Award, the McCannel Award, the Brian Eckel Distinguished Service Award, and the Outstanding Achievement Award.

In addition to the APEGS Awards, the Awards Committee nominates APEGS members for awards presented by both Engineers Canada and Geoscientists Canada. Nominations for awards must be received by November 30 to provide time for the Awards Committee to review and consider the nominations for the annual APEGS Awards and to prepare nomination packages for provincial and national awards. The Awards Committee will develop and maintain a list of nominees for consideration for the various awards. Nominations can be submitted online at **www.apegs.ca/Portal/Pages/Apegs-Awards**.

Alternately, nominations can be sent to:

APEGS Awards Committee
300 - 4581 Parliament Avenue
Regina SK S4W 0G3
Fax: (306) 525-0851
Email: apegs@apegs.ca

ACEC-SK 2017 - The Lieutenant Governor's

Meritorious Achievement Award

Photo (L to R): The Honourable Vaughn Solomon Schofield, Lieutenant Governor of Saskatchewan, S.O.M., S.V.M. presenting Rick Kullman, B.E., M.Sc., FCSCE, FEC, P.Eng. (Retired) the prestigious Lieutenant Governor of Saskatchewan Meritorious Achievement Award.

Her Honour the Honourable Vaughn Solomon Schofield presented The Lieutenant Governor's Meritorious Achievement Award to Rick Kullman, P.Eng. at a ceremony in Saskatoon.

The Association of Consulting Engineering Companies - Saskatchewan (ACEC-SK) honoured Rick Kullman, P.Eng., as the 2017 recipient of the prestigious Lieutenant Governor of Saskatchewan Meritorious Achievement Award at their 2017 Awards of Distinction Reception on November 7, 2017.

Rick Kullman was raised in Regina, but moved to Saskatoon to complete his undergraduate studies, receiving a Bachelor of Science in Civil Engineering (with Great Distinction) from the University of Saskatchewan in 1974. A registered Professional Engineer since 1976, he was first granted a Licence for Permission to Consult as a structural engineer in 1985.

After several years working for Saskmont Engineering, Rick returned to the University of Saskatchewan to undertake further studies that led to a Master of Science degree in 1987. After completion of his Master's degree, he joined former Saskmont colleagues Carl MacPhedran and Ben Robb as an associate of MacPhedran & Robb Engineering Ltd. in Saskatoon. The firm name was eventually changed to Robb Kullman Engineering LLP to reflect an evolution in ownership and corporate structure.

He served in many different roles as an APEGS volunteer since 1994. A member of the Consulting Practice Committee for 10 years, including four years as chair, he also completed a three-year term on Council (Group 1, Civil). Kullman sat on the Governance Board and served two terms as Chair of the Experience Review Committee. He was elected Vice President in 2007 and rose to position of President of APEGS in 2009-2010. He took on the position of APEGS representative as a Director on the board of Engineers Canada, a three-year term which ended in 2015.

In 2004, the distinction of Fellow was conferred on Kullman by the Canadian Society for Civil Engineering. A member of CSCE since 1983, he has served that organization as Chair of the Saskatoon Section and Technical Activities Chairman of the Prairie Region. He also served as a member of Canadian Standards Association Subcommittee on Structural Glued-Laminated timber from 1999 to 2015.

In 2009, the distinction of Fellow was conferred upon Kullman by Engineers Canada. In 2013, he was awarded an Honorary Fellowship by Geoscientists Canada.

Kullman was named the Saskatoon Engineering Society Engineer of the Year in 2015 and received the McCannel Award from APEGS in 2017.

He is an Alternate Warden of Kipling Camp No. 4 (The Ritual of the Calling of an Engineer).

"Over the course of his career, Rick Kullman has elevated, enhanced and promoted the engineering industry across the province and the country," acknowledged Bev MacLeod ACEC-SK Executive Director, "Most significantly for ACEC-SK he foresaw the opportunities for consulting in Saskatchewan."

ACEC-SK 2017

Awards of Distinction

Brian Eckel Awards

Pinnacle Award

SAL Engineering Ltd.
PROJECT NAME: Pelican Narrows High School Addition and Renovation Project
CLIENT: Peter Ballantyne Cree Nation

BUILDINGS CATEGORY

Stantec Consulting Ltd. - Award of Merit
PROJECT NAME:
Innovations in Cyclotron Science
CLIENT: University of Saskatchewan

MUNICIPAL INFRASTRUCTURE & WATER RESOURCES CATEGORY

Associated Engineering - Award of Merit
PROJECT NAME: Municipal Utilities Back-up Power Project
CLIENT: Town of LaRonge and Northern Village of Air Ronge

PROJECT MANAGEMENT

SAL Engineering Ltd. - Award of Excellence
PROJECT NAME: Pelican Narrows High School Addition and Renovation
CLIENT: Peter Ballantyne Cree Nation Award

TRANSPORTATION

Tetra Tech Canada Inc. - Award of Merit
PROJECT NAME: Highway 6-10 Grade Raise at Quill Lake
CLIENT: Saskatchewan Ministry of Highways

ISL Engineering and Land Services Ltd. - Award of Excellence
PROJECT NAME: Idylwyld Drive Overpass at Ruth Street Rehabilitation
CLIENT: City of Saskatoon

Young Professional Award

Michael Walker, P.Eng., PE, PMP, McElhanney Consulting Services Ltd.

Photo (l to r): Michael Walker, P. Eng., PE, PMP accepting the Young Professional Award from ACEC-SK Chair Paul Walsh, P.Eng.

Community Initiative Award

The 2017 ACEC-SK Community Initiative Award was presented to Dillon Consulting

Mentor Award

The 2017 ACEC-SK Mentor Award was presented to William (Bill) James Wright, P.Eng.

Brian Eckel Memorial Scholarship Award

2017 Brian Eckel Memorial Scholarship Award was presented to University of Saskatchewan Electrical Engineering student Ryan Caufield.

Photo (L to R): Robert Johanson, Ph.D., Engineering Licensee, Head of Dept. of Electrical and Computer Engineering, University of Saskatchewan; Ryan Caufield, 2017 Brian Eckel Memorial Scholarship Award recipient and Paul Walsh, P. Eng., ACEC-SK Chair.

88th

Annual Meeting and Professional Development Conference

May 3-5, 2018

Delta Bessborough
Saskatoon SK

Thursday May 3

Evening Welcome Event

Friday May 4

Breakfast Keynote
Professional Development Streams
Professional Development Luncheon
Luncheon Keynote
Past Presidents' Dinner
President's Reception

Saturday May 5

Business Meeting
Partners Program
Kids Program
Youth Science Day
Volunteer Luncheon
Awards Banquet

Registration February 2018

apegs.ca

Fall Professional Development Days

The APEGS Fall Professional Development Days were held earlier than usual this year in conjunction with two October observances: Women's History Month and International Day of the Girl.

In celebration of women and girls and their love of STEAM—science, technology, engineering, arts and math, APEGS delivered a two-day professional development track about women, diversity and leadership in the workforce and sponsored the Regina Women's History Month Committee's breakfast and the Saskatchewan Science Centre's "Girls' Night Out."

Another track was offered with sessions on business ethics, millennials, emotional intelligence, climate change and waste water treatment. There was also an evening event to appreciate volunteers held in conjunction with the professional development days.

TOP: "Girls' Night Out" at the Fall Professional Development Days.
BOTTOM: Women's History Month Breakfast.

News Beyond Our Borders

vmlearning.com

Cross-country tour seeks to elevate women in tech

Engineers Canada - This September, Women in Tech-World kicked-off a cross-country fact-finding mission as part of their quest to elevate women in technology.

Driving across the country in a branded RV—lovingly called Chitty Chitty Van Van—the tour started on September 6, 2017, on the west coast in Vancouver, BC, before heading north to the Yukon. The tour is now on its way east, heading across the country towards the Maritime provinces.

At each stop on their tour, Driving WinTech hosts a community conversation with women in technology. These conversations aim to define, who are women in tech in Canada? What are their experiences in the tech industry? And what are best practices for inclusion and promotion of women in the tech industry?

Along the way, Driving WinTech will facilitate 50 community conversations and connect with over 10,000 people from diverse communities and sectors. After hosting these free events and panels that include trail-blazing women in technology, the Driving WinTech team will publish a national report on the experiences of women in technology in Canada. They will also create a set of Regional Playbooks to facilitate more inclusive and diverse tech communities. The team will also be sharing their data online and with the World Women Report by the State of Women, which reaches 85 million subscribers.

Solar and wind energy creating many jobs

Earther.com - In the coming decade, the percentage of Americans finding employment in two fields in particular will explode: wind and solar energy.

According to new data from the US Bureau of Labor Statistics, solar panel installer and wind turbine service technician are slated to be the two fastest growing jobs in the country.

Solar installation jobs are expected to grow 105 per cent while wind turbine technician jobs will grow 96 per cent by 2026. That's a huge leap compared to overall US jobs, which are expected to rise seven per cent over that period.

California has by far the largest number of solar workers in the US. Meanwhile Texas generates the most wind power of any state in the country.

The explosive growth of solar and wind jobs is due largely to the economic reality that renewables are increasingly competing with fossil fuels on cost.

The big percentage uptick in the Bureau of Labor Statistics is partly due to the relatively small number of installers, which sits at 11,300. However, the the Solar Energy Industries Association asserts that this number is artificially low because the Bureau miscategorizes many of the industry's employees.

Using the association's definition, the number of workers in the installation field swells to 137,133. Factor in sales, manufacturing and other positions and the solar industry employment figure swells to 260,077 as of last year. That number is nearly triple what it was in 2010.

Wind energy has similarly enjoyed explosive growth beyond turbine service technicians. The industry employs 102,500 people as of 2016 with Texas accounting for roughly a quarter of all people employed. Those ranks will continue to grow along with technician gigs, too.

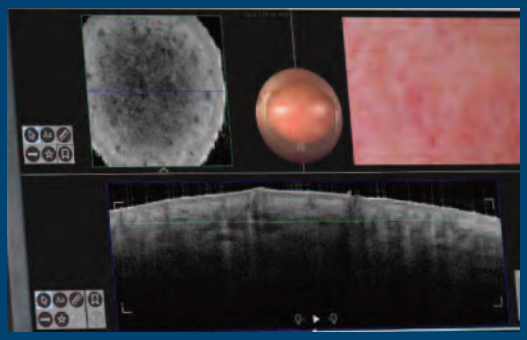
Edmonton gathers info on large building energy use

APEGA - The City of Edmonton has become the first municipality in Canada to track the energy efficiency of its large buildings.

The city has launched a three-year pilot called Large Building Energy Reporting and Disclosure. The program asks owners to share information about their large buildings — those with more than 20,000 square feet of floor space — and offers incentives for improving energy efficiency.

The city estimates that large buildings produce 38 per cent of the city's greenhouse gas emissions and represent 42 per cent of its energy consumption. A 10 per cent reduction in energy use by just one of the estimated 4,500 large buildings could have the same effect as taking 22 cars off the road.

Tech Corner



s3-eu-central-1.amazonaws.com

Laser scanner detects cancer in under 30 seconds

The Engineer - Skin cancer diagnosis can take weeks, involving referral to a dermatologist for a skin biopsy, and then possibly an invasive sentinel lymph node biopsy under general anaesthetic to find out if the tumour is spreading.

New technology, developed in a European project led by UK-based Michelson Diagnostics, could dramatically speed up this process by allowing dermatologists to diagnose a malignant melanoma in real time.

The scanner allows dermatologists to view a 3-D image of the blood vessels under the skin, up to a depth of 1mm.

The technology is conventionally used in retina scans, in which a laser beam is projected onto tissue and the reflected light is detected by a microscope and used to create a 3-D image.

Unlike retinal scans, however, the new technology is able to detect motion within the tissue. This reveals the flicker of light patterns created by moving blood cells against the background of solid tissue.

The system uses algorithms to extract the motion information and reveal the structure of the blood vessels.

Cancers are known to grow their own blood vessels. But unlike the blood vessels in healthy tissue, these vessels tend to grow in an abnormal, disorderly fashion.

This allows the system to detect blood vessels grown by the tumour from within healthy tissue and there are also hints that the degree of irregularity of the vessels may indicate how far the tumour has progressed.

africanexponent.com

Robot becomes Saudi citizen

Toronto Star - Until recently, the most famous thing that Sophia the robot had ever done was beat Jimmy Fallon a little too easily in a televised game of rock-paper-scissors.

But now the advanced artificial intelligence robot, which looks like Audrey Hepburn, mimics human expressions and may be the grandmother of robots that solve the world's most complex problems, has a new feather in her cap: Citizenship.

The kingdom of Saudi Arabia officially granted citizenship to the humanoid robot last week during a program at the Future Investment Initiative, a summit that links deep-pocketed Saudis with inventors hoping to shape the future.

Many people recognized the irony of Sophia's new recognition: a robot simulation of a woman enjoys freedoms that flesh-and-blood women in Saudi Arabia do not.

Those social controversies may still be above Sophia's programming. In her interview, she stuck to lighter fare, like an AI apocalypse.

"My AI is designed around human values such as wisdom, kindness and compassion," she said. "I strive to be an empathetic robot. I want to use my artificial intelligence to help humans live a better life. I will do my best to make the world a better place."

Sophia, created by David Hanson of Hanson Robotics, has graced the cover of a fashion magazine, taken a spin in one of Audi's autonomous cars and starred in a concert. She even tells jokes, though her voice is a bit monotone and her comedic timing needs a tune-up. For example, after beating Fallon in rock-paper-scissors on his show, she quipped: "This is a good beginning of my plan to dominate the human race. Ha. Ha."

News From The Field

dailydot.com

K+S tackling gender imbalance in professions

Saskatoon StarPhoenix - The company behind Saskatchewan's newest potash mine employs a greater percentage of women than many of its competitors in the traditionally male-dominated industry, but its senior manager of human resources says achieving gender parity in the next decade will be a tall order.

Maryann Deutscher said that while K+S Potash Canada's (KSPC) superintendent of primary mining is a woman and there are other similar success stories in the company, it will take time for perceptions about traditional and non-traditional roles to fade and a larger pool of women willing to work in engineering and the trades to develop.

"Is it realistic to say it would be 50 per cent? No, it's probably not realistic because your pool's just not there yet, right?" Deutscher said Tuesday in an interview before adding: "When you're thinking 10 years, there's people that have to be in those trades, in those operator-type roles now . . . Will it grow? It'd be great to see it even grow by 10 per cent and get up to that 25-30 per cent, for sure."

Of KSPC's 470 employees in the province, 96, or 20 per cent, are women, according to Deutscher. That is above the 14 per cent provincial mining average reported three years ago by the Saskatchewan Mining Association. By comparison, KSPC's parent company K+S AG said earlier this year that women make up 12 per cent of its 14,530-strong workforce.

While preconceived notions about the industry are prevalent, every major company in the sector is working to hire more women. Deutscher said championing female employees will not only encourage more young women to consider careers in mining, but also make the companies they work for stronger and more productive.

PotashCorp, Agrium and Mosaic declined to comment. All three companies have said publicly — in annual reports and other documents — that they support efforts to improve gender diversity in that face of what Mosaic has described as "challenging and persistent perceptions that our sector is traditionally male."

Young amateur geologists make big archaeological finds

CBC Saskatchewan - For Lily Ganshorn, it started as a hunt for meteorites at the beach near her family's cabin at Lake Diefenbaker.

As the day wore on, the six-year-old convinced her father to start breaking nearby pieces of rock which looked like dried-out mud.

"They're so cool," said Lily Ganshorn. "You smash the rocks and then they're so shiny with little animals."

"We found our first ammonite [a pre-historic shellfish] doing that," said Jon Ganshorn, who said his daughter's cousins soon wanted to join in on the hunt. "As soon as we saw that first one, you could tell it was something."

After a few days, one of her cousins found a fossil containing what appeared to be a dragonfly.

Curious, her father sent photos of the fossils to the University of Saskatchewan Department of Geology, where graduate student Meagan Gilbert confirmed the Ganshorns had unearthed remnants of shellfish that swam in the Western Interior Sea roughly 75 million years ago.

"At that point Saskatchewan basically sat right in the centre of this massive seaway that stretched all the way from the Gulf of Mexico to the Arctic," said Gilbert.

She said the Ganshorns' Cretaceous-era fossil find included bivalves and prehistoric oysters. She also spotted ammonites, which "are basically like squid with a shell."

She could not identify the dragonfly from the Ganshorns' photo alone, but noted the shellfish species were often prey for prehistoric sea reptiles.

For the time being, Lily and her cousins are keeping most of their finds at their cabin. This is where Lily's father found himself building a rock garden last year to accommodate her burgeoning rock collection.

Lily added it's important for geology enthusiasts to tell scientists about their finds, especially "well-preserved" examples like these.

Lily and her cousins have now dubbed themselves the Dinosaur Hunter Gang.

ENERGY

US interest in CCS

Regina Leader-Post - Delegates from the United States were in Saskatchewan in late September to tour the carbon capture and storage (CCS) facility at Boundary Dam 3 in Estevan.

Rachel McCormick, head of the energy and environment section at the Embassy of Canada in Washington, D.C., says there are lots of conversations taking place down south about the technology, which aims to reduce greenhouse gas emissions by producing cleaner coal.

"SaskPower is seen as a world leader in the sense that this is the first of its kind and that leadership has been recognized," she said.

Samantha Gross, a fellow for energy and climate issues at the Brookings Institute in Washington, D.C. said CCS is "situation-specific" with where it will work.

She characterized Saskatchewan as a "particularly good place to start with carbon capture and storage" because there is a local coal supply, a local coal industry and someone purchasing the CO_2 resulting from the CCS technology.

"It's great to see the technology get started," she said, later adding there are a "suite of solutions to get to where we need to go" when it comes to reducing greenhouse gases.

Hydroelectric project on hold

CBC Saskatchewan - SaskPower is pausing its development of the Tazi Twé hydroelectric project near Black Lake, Sask., due to a decline in the projected demand for power in the region.

Demand for power was projected to grow at a rate of four to five per cent annually in northern Saskatchewan. Those predictions were recently decreased to one to two per cent per year.

In the fall of 2015, nearly two-thirds of the band members who voted said "yes" to going ahead with the project. It was set to add 50 megawatts of power to the provincial grid and would have been the first new hydro project in the province in more than 30 years.

The hydroelectric project could bring $1.3B to the northern First Nation.

About 1,600 people live in the remote community, which is 100 kilometres south of the border between Saskatchewan and the NWT.

SaskPower said it can continue to meet demand in the area with its current infrastructure.

The Crown corporation said it has invested $34 million in the project over the past five years in studies and project development.

The proposed $630-million water diversion project would have been a partnership between the community and SaskPower, the province's electrical utility.

The project had initially been expected to begin construction by late 2016 or 2017.

ENVIRONMENT

No end in sight for Quill Lakes flood victims

Globe and Mail - For more than 12 years, farmers around east-central Saskatchewan's Quill Lakes have watched the waters rise and their profits fall from flooding that shows no signs of stopping. And as nature takes its toll on the bottom line, their very way of life is under threat too.

The Quill Lakes – three lakes connected by creeks – have merged and risen by more than seven metres since 2005, engulfing more than 40,000 acres of private farmland and 56,000 acres of Crown land, estimates Kerry Holderness, Chair of the Quill Lakes Watershed Association. At first, the rise was attributed to heavy rainfalls – specifically in 2011 and 2014. But Mr. Holderness said it's now recognized that the Quill Lakes are in what's called a "wet cycle" and could remain at this level for between 10 and 25 years.

Last year alone, the watershed group reported that farmers lost a combined $10.9-million of profit from crops lost to the flood waters. And the losses will continue to mount. The reality is that many who farmed in that area will never see their land again, and even if they do, they will never get to farm it: The high saline content of the water, caused by high evaporation levels that leave the water concentrated in dissolved salts and minerals, will render the land unusable for long after the water recedes.

The rising waters are part of a natural variation where the

Quill Lakes "normally just fill up and get bigger and in a normal dry, hot period they become smaller and they've cycled like that for centuries," said Professor John Pomeroy, the director of the University of Saskatchewan's Centre for Hydrology and a Canada Research Chair in Water Resources and Climate Change. He also said within the past 70 years, the eastern Prairies have had more concentrated rainfall and more winter rains, which create more runoff – both of which Environment Canada connects to climate change – and "farmers have been dramatically draining wetland sloughs in their lands into Quill Lakes."

Prof. Pomeroy approves of regulations that allow the Saskatchewan Water Agency to shut down all unapproved drainage into the Quill Lakes, but said more can be done. Specifically, he sees restoring wetlands in the Quill Lakes basin as a way to reduce inflows into the lakes. A Quill Lakes drainage plan proposed in 2015 could have helped, but was vetoed by the province because of environmental concerns around draining salt water into the Qu'Appelle river system.

UNIVERSITIES AND RESEARCH

thestarphoenix.com

U of S studies 3-D heart muscles

CKRM - A University of Saskatchewan researcher is looking at ways of regenerating heart muscle through a 3-D printer.

Dr. Mohammad Izadifar explains that right now, if you have a heart attack, your heart muscle doesn't heal.

"There is no permanent solution for repairing heart damage, so my research aims to regenerate heart muscle by combining medicine and engineering."

Izadifar has conducted research out of three places on campus – the Colleges of Engineering and Medicine and the Canadian Light Source synchrotron.

He has proven 3-D printed human cells, or what he calls the "heart patch" can grow to form muscle.

Izadifar takes a gel and inserts stem cells into it to make the patch, which is then inserted on to the heart so the stem cells can then form muscle.

Right now, testing is at the mice and rats stage. Human testing is expected in 10 to 12 years.

Sask. researchers shortlisted for supercluster funding

Saskatoon StarPhoenix - Ottawa has announced a short list of nine so-called supercluster proposals — including several with Saskatchewan ties — that could qualify for a piece of a $950-million federal fund to spur on business development.

The proposed tech hubs are aimed at fostering public-private partnerships in industries across the country.

The contest, a cornerstone of Ottawa's so-called innovation agenda, aims to lift the economy, promote research and create high-quality jobs. The feds are looking for ambitious bids that also feature intellectual property strategies designed to keep benefits for Canada.

A protein innovations Canada supercluster in the Prairies would position Canada as the global supplier of plant-based proteins and related products. Led by Ag-West Bio Inc. and including the University of Saskatchewan, it would focus on new technologies and value-added supply-chain infrastructure.

A smart agri-food supercluster led by Agrium Inc. would work on building information technologies in the crop, livestock and agri-food processing sectors.

Stantec Inc. leads a proposed infrastructure supercluster that aims to use advanced digital communications and interconnected applications to improve design and construction.

The "Smart, Sustainable and Resilient Infrastructure" Supercluster (Prairies) would transform Canada's built environment to make it more resilient, sustainable, productive and cost-effective. It would revolutionize the design, construction and operations of infrastructure and make Canada a world leader with the use of advanced digital communications, cutting-edge tools, and interconnected applications and services.

Synchrotron finding solutions for pharma pollutants

Phys. Org - Pharmaceuticals, including antibiotics, are an increasingly common pollutant in water systems, said Catherine Hui Niu, associate professor in the Department of Chemical and Biological Engineering at the University of Saskatchewan.

After pharmaceuticals are used in humans and animals, traces are excreted and end up in sewage and, from there,

into the environment. Their presence in waterways has raised concerns about potential risks to human health and ecosystems. To date there has been no effective way to remove them from water sources.

There are some materials that attract pharmaceutical pollutants to them in a process called adsorption, and could hypothetically be used to help remove them from water, says Niu. But their adsorption capacities need to be enhanced to make them useful for large-scale clean-up efforts.

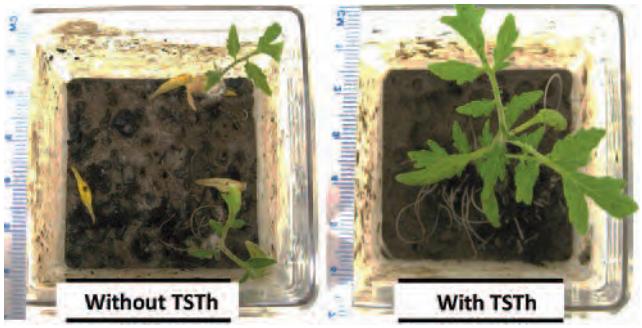
Barley straw, the leafy part of barley plants, has adsorption properties that show promise for helping remove certain antibiotics from water.

Niu and Bei Yan, a member of her research team, used the Canadian Light Source at the University of Saskatchewan to study samples of pretreated barley straw exposed to a type of antibiotic commonly used to treat bladder infections which has been detected as a pollutant in some water and sewage samples.

The scientists' work revealed some of the mechanisms of how the pretreated barley straw works as an adsorbent. They found that subjecting the straw to a chemical and microwave heating protocol actually improved its adsorption qualities, specifically for removing the antibiotic norfloxacin from water. These results have been published in *Chemical Engineering Journal*.

In fact, it is about six times higher than that of untreated raw barley straw.

All of this is still at a laboratory stage, cautions Niu. But understanding the mechanisms is an important step for developing eco-friendly materials than can help remove antibiotics such as norfloxacin from water.



Researchers find oil-hungry fungus

Global News - A fungus discovered by researchers at the University of Saskatchewan could help clean up oil spills and restore oil sands tailings.

The discovery was made after testing was done on a dandelion found growing on a coarse tailings site.

Scientists found a property in the fungus allowed plants to grow and thrive on coarse tailings.

The team found more than 90 per cent of seeds treated with the fungus sprouted on coarse tailings while no untreated seeds sprouted.

As the plants grew, they also cleaned up the soil beneath them.

The discovery could potentially lead to faster cleanups of oil spills or in the recovery of tailings.

The researchers also found the fungus was able to grow with diesel, crude oil and similar materials as its only nutrient source.

The team has started real-world testing at two petrochemical spill sites in Alberta and British Columbia, with the first results expected in 2018.

MINING

Gold mine expansion

Saskatoon StarPhoenix - The new owner of Saskatchewan's only gold mine is planning a seven-year, $90 million expansion it hopes will boost production, cut operating costs and extend the operation's lifespan into the mid-2020s.

SSR Mining Inc.'s planned investment in the Seabee gold operation, which is about 125 kilometres northeast of La Ronge, is "really exciting," said the president of the Saskatchewan Mining Association.

"I think the $90 million . . . that they're looking at really sends a strong signal that they're looking at reinvesting in that whole area for the long term. It's really significant," Pam Schwann said.

SSR Mining acquired the operation — which consists of two underground mines, Seabee and Santoy, and a mill — as part of its $450 million friendly takeover of Saskatoon-based Claude Resources Inc. in May 2016.

The company said in a preliminary economic assessment that the expansion could boost the mine's annual production by about a third compared to record-setting 2016 levels while cutting operational costs by about nine per cent.

While the company's expansion plans — which are not expected to create a significant number of new jobs — could be affected by fluctuations in the price of gold, it doesn't foresee any issues.

Despite never having a long life expectation, the Seabee operation has been "slugging it out" since it entered production in 1992 and is today a "long-term success story" for the province's mining industry, Schwann said.

"I think it might also signal to some of the other gold producers out there or gold exploration companies that Saskatchewan is a place where you can profitably have a gold mining operation."

Calendar Of Events

amazonaws.com

Managing Your Career Transition
December 13, 2017
Webinar
www.apega.ca/members/events/career-transition/

Psychological Health Two-Day Certificate Course
Regina Construction Association
December 14-15, 2017
Regina, SK
www.rcaonline.ca

The Secret Tool for Transforming Toxic Workplaces
January 17, 2018
Webinar
www.apega.ca/members/events/toxic-workplace/

Retaining Project Documentation
January 24, 2018
Webinar
www.egbc.ca

Evaluation and Rehabilitation of Pavements
January 29-30, 2018
Vancouver, BC
www.egbc.ca

Women in Leadership
February 7, 2018
Webinar
www.egbc.ca

Restoration for Resilience: Ecological Restoration in the 21st Century
February 13, 2018
Vancouver, BC
www.serwc2

The Complete Professional: Elevate Your Own Brand
February 23, 2018
Vancouver, BC
www.egbc.ca

International Conference on Water Management Modeling
February 28 - March 1, 2018
Brampton, ON
www.icwmm.org

APEGS Spring 2018 Professional Development Days
March 1-2, 2018
Regina, SK
www.apegs.ca

Production, Transportation, Placement, and Quality Control for Asphalt Concrete Pavements
March 5, 2018
Vancouver, BC
www.egbc.ca

APEGS Annual Meeting and Professional Development Conference
May 3-5, 2018
Saskatoon SK
www.apegs.ca

RFG 2018 Conference - Energy, Minerals, Water, Earth
June 16, 2018
Vancouver, BC
rfg2018.org

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