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Canada's premier publication dedicated to the promotion, production and distribution of potash.

2015

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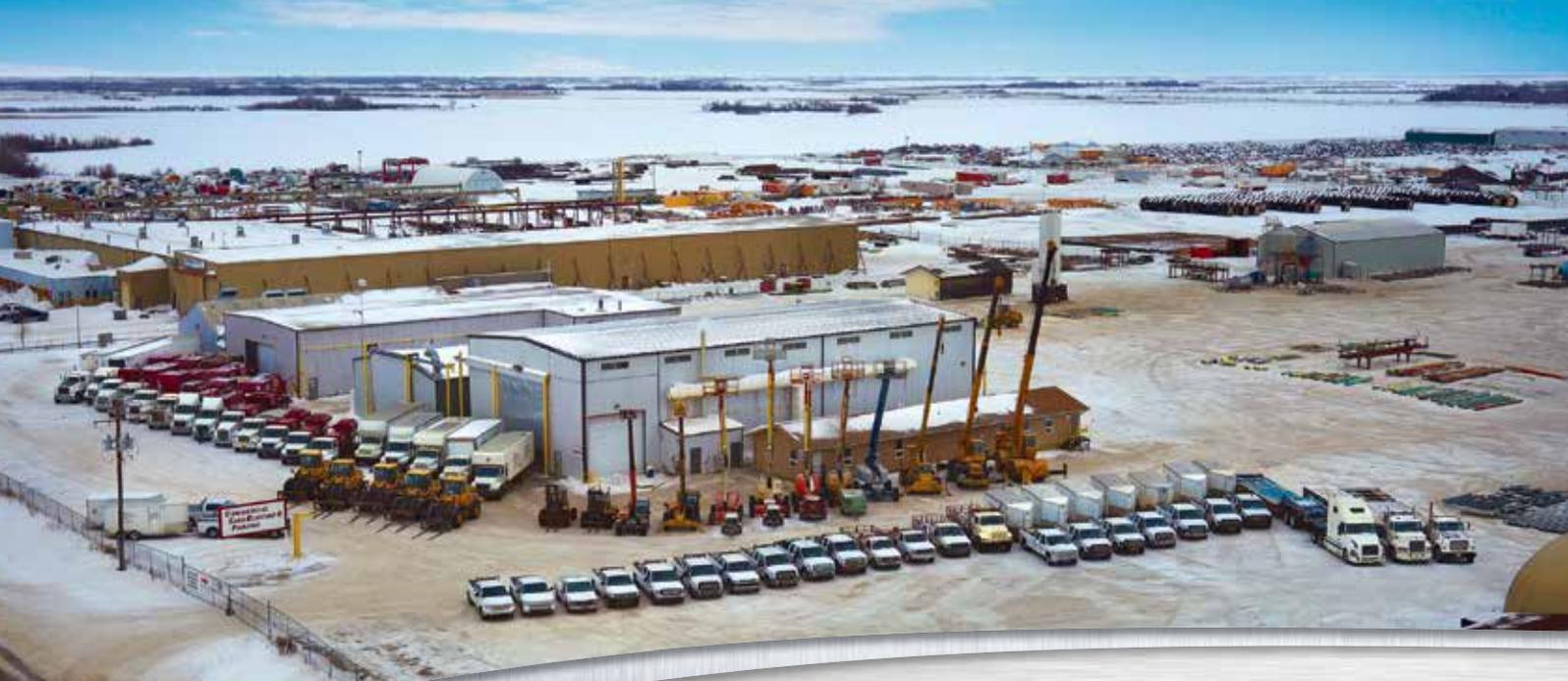
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# Message from the Premier of Saskatchewan **The Honourable Brad Wall**



**O**n behalf of the Government of Saskatchewan, I am pleased to welcome readers to this 2015 edition of *PotashWorks* magazine, the only publication focused on potash promotion, production and distribution.

In 1962, after years of geological surveys and exploratory drilling, the first sale of Saskatchewan potash, from Esterhazy, Saskatchewan, was made. Fifty years later, starting from one mine in one community, the Saskatchewan potash industry today is the largest in the world, usually accounting for about 30 per cent of global production. It directly employs nearly 5,000 people, and contributes to the livelihood of thousands more.

These are exciting times for Saskatchewan. We are experiencing one of the fastest and most sustained periods of population growth our province has seen in living memory. Our government has worked hard to support the development of a strong and diverse economy. Potash has been, and will continue to be one of the biggest contributors to economic growth in Saskatchewan.

This resource is an important component in the Saskatchewan Plan for Growth—a plan for meeting the challenges of our growing province. One of our government's primary goals is for Saskatchewan to build on its global leadership in food, energy security, and innovation. Development of our energy and mineral resources is central to this goal—and no discussion of it is complete without including potash. With the value of Saskatchewan's potash sales in 2013 at \$5.6 billion, the importance of this sector to the future of our economy cannot be overstated.

In 2013, total investment in the mineral sector in our province reached \$21.3 billion. Saskatchewan is attracting a significant long-term investment, led by the potash industry. All of Saskatchewan's current potash operations have recently completed—or are currently undergoing—an expansion. It is estimated that Agrium Inc., Potash Corporation of Saskatchewan, and Mosaic Company could eventually invest a total of almost \$14 billion to expand Saskatchewan's production capacity by over 90 per cent. In addition, K+S Potash is investing \$4.1 billion to develop a solution mine in our province – the first new mine to be built in Saskatchewan in 40 years.

Currently, there are several other companies exploring the possibility of establishing new potash mines, including global mining giants BHP Billiton, Rio Tinto, and Vale. To put things into perspective, the amount of land presently covered by potash dispositions is approximately 20 times more land than was under disposition prior to 2004. Given this trend, we feel our current leadership in the global potash industry can and will be maintained.

Potash is the lifeblood of many large and small communities in Saskatchewan. A promising future lies ahead for these communities and for the mining companies operating in Saskatchewan. In so many ways, our provincial potash industry embodies the cutting edge of our most innovative and powerful technologies. It employs many of our very best and brightest people who are helping to grow our province, and are helping to feed a growing world. ♦



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# Message from the mayor of Esterhazy **Pauline Chewka**



It has been an interesting year here in "Potashville". The potash market is going through a challenging time in the global market, and while continually investing in the long-term sustainability of the local mines, there has been a noticeable change in the climate of our community.

Earlier this spring, a number of positions were cut during a sweep through the company and it left our town unsettled. Things have since balanced out and become more normal, however the construction has noticeably slowed. K2 expansion has been completed and K3 is moving toward its operations by 2017. By that time, the ebb that the industry is in should be behind us and we will be prepared for the certain influx

that is to come. Our potash mines here are an integral part of our community, having K1, K2, and K3 Mosaic and PCS in Rocanville within our reach, it is easy to see why we rely on this industry so tightly.

Ebbs and flows in the potash industry are the norm and the slow down isn't at all unusual, so for the town council it is business as usual. We continue to work towards keeping our community current and growing it for our inevitable future.

This has been a busy and challenging time to be in the mayor's seat. I do, however, look forward to the growth that these challenges bring. Growth is a good problem to have. ♦

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# Greetings from the mayor of Rocanville

## **Daryl Fingas**



Once again I would like to introduce you to the town of Rocanville.

We are a thriving potash and farming community of approximately 1,000 people situated in southeast Saskatchewan along the Manitoba border.

As PotashCorp's expansion project nears an end, we have seen our town return back to near normal activity. Since the 1,400-person work camp has been closed, the out-of-province license plates from across Canada has drastically reduced. Strangers are gone and a few have stayed to make Rocanville their home.

A new 12-suite apartment block has been recently completed this summer and is currently filling up fast. Our new housing sub-division

has added another new home and curbing is put in and partially paved. There are still another 19 lots for sale, with a tax incentive being given for five years. Across the street is another housing sub-division called Autumn Court, where many lots are available for modular homes.

PotashCorp is continually hiring new people to fill their expansion project as needed. So, if you would like to make Rocanville your home, please feel free to visit our friendly town. Our school is kindergarten to Grade 12, and we have an indoor swimming pool, nine-hole golf course, curling and skating rink, and many other recreational activities.

Rocanville could be your next home. ♦

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# 25 years, one vision

## *PotashCorp reflects on the past, looks to the future*

By Jillian Mitchell

Over the last 25 years, PotashCorp has tapped into something much deeper than the ancient seabeds it mines—human potential.

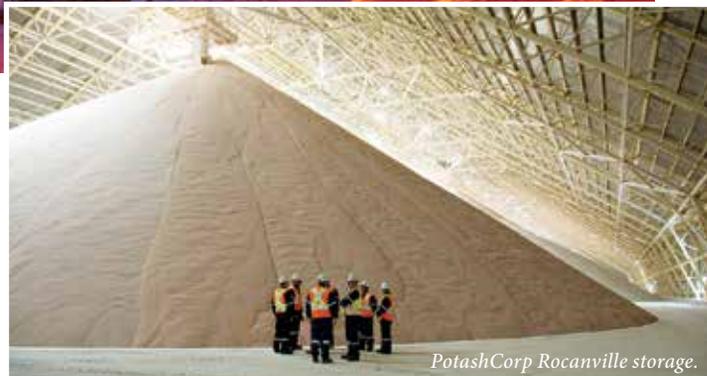
To celebrate its 25th anniversary since becoming publicly traded, the world's largest fertilizer company has compiled 25 individual stories on its website at [www.potashcorp.com/25](http://www.potashcorp.com/25). Highlighting the people and communities impacted by PotashCorp, it is an initiative true to the company's vision.

"PotashCorp's mission has always been to provide the essential nutrients that help farmers feed a growing world - potash, nitrogen, and phosphate. This mission is central to everything we do," says Denita Stann, PotashCorp's vice-president of investor and public relations. "Along the way, our company aims to nourish the potential of our employees, our communities and others touched by our business."

In 2014, PotashCorp was named one of Canada's Top 100 Employers, Canada's Top Employers for Young People, and a Top Employer in Saskatchewan, all of which signal that the company is on the right track.

With future workforce requirements in mind, PotashCorp supports a wide range of scholarships and bursaries for applicable academic programs and continues to reinforce its working relationships with aboriginal organizations.

As an active participant in the communities where the company operates, PotashCorp is committed to building strong relation-



*PotashCorp Rocanville storage.*

ships with an eye to the future. The company's community investment program - which last year provided \$31 million to numerous local and international projects and causes - is just one great example.

Stann adds that PotashCorp is very proud of its multi-year partnership with international charity and educational partner Free The Children, an initiative that supports both local and global food security. In 2012 the company became the founding partner of the new agriculture and food security pillar, an important part of the organization's established Adopt a Village development model. PotashCorp directly supports food and agricultural initiatives across six communities in Kenya, India, and rural China.

Through Free The Children, the team also focuses on the creation and distribution of a supplemental educational curriculum and speaking tour, teaching about importance of agriculture and food security, at both the elementary and secondary school levels across Canada. The speaking tour was able to reach 80 schools in five provinces—inspiring more than 19,000 students this past school year alone—and has reached more than 30,500 students in total since the beginning of the partnership.

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**MOOSE JAW NEEDS WORKERS** Moose Jaw needs more workers to meet the growing labour demand being created by new and expanding businesses in the city, including servicing two potash mines in the area. More workers are needed to fill skilled jobs within our mining, manufacturing and processing, agriculture, trucking, and tourism service sectors. SIAST Palliser Campus helps meet local labour market demand offering training in engineering, technologies, and trades.

**MOOSE JAW IS BOOMING** The value of the city's 2014 building permits is up over 600 percent from 2001! A new \$100M hospital and \$27M Civic Centre Plaza are now under construction in the city. The Moose Jaw-Regina Industrial Corridor is helping drive that growth, and is home to world-class industries such as Mosaic Potash, Yara Belle Plaine Inc., Terra Grain Fuels and K+S Potash Legacy Project.

*...at the Heart of the Boom!*

## **For more information contact:**

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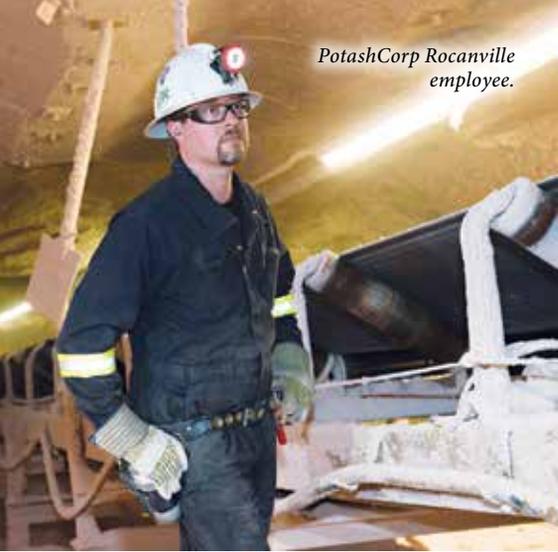
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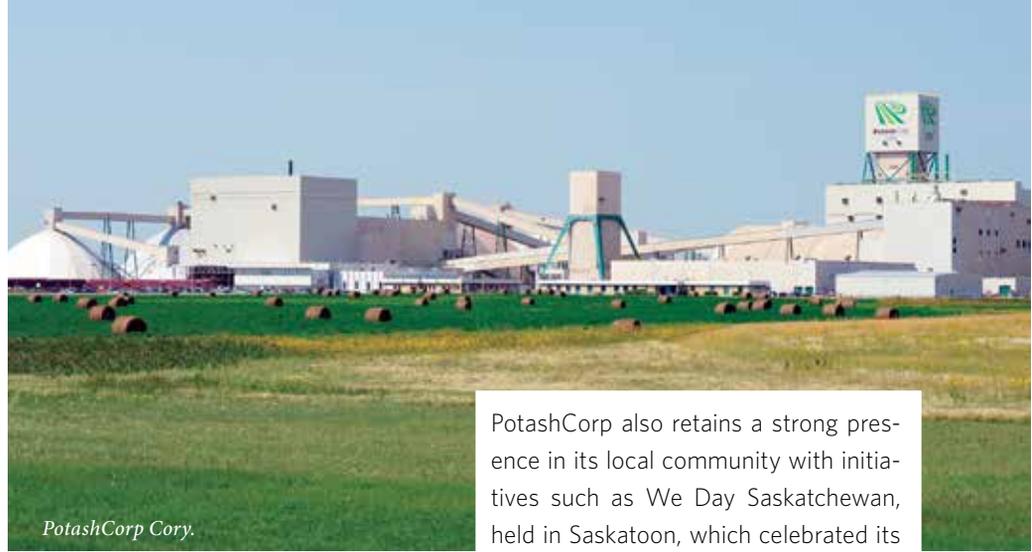
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PotashCorp Rocanville employee.



PotashCorp Cory.

PotashCorp also retains a strong presence in its local community with initiatives such as We Day Saskatchewan, held in Saskatoon, which celebrated its third anniversary this past November.

“We Day Saskatchewan is an amazing stadium-sized event that inspires youth to get involved and make a change by committing to acts of service,” Stann says. “Across Canada, PotashCorp has been able to reach 119,000 students at We Days this year alone.”

As a business, according to Stann, PotashCorp’s strength lies in its strategy of running its business with a long-term perspective. “To be successful, it’s important that we are well positioned to serve our customers for decades to come. And, while it’s important that we have the flexibility to grow, we must also focus on remaining cost competitive in our key markets. We believe that’s how we best serve the interests of all those associated with our business – our customers, employees, communities and investors.”

This focus has created value for PotashCorp’s stakeholders throughout its 25-year history as a public company and will continue in the future under the leadership of recently appointed president and CEO Jochen Tilk.

As the company is nearly through its multi-year \$8.3-billion potash expansion program, the next 12 months include bringing the company’s Pica-dilly New Brunswick mine and mill on stream, and ramping up production in Rocanville, Saskatchewan, following the site’s expansion. ♦



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## **Gary belongs to two communities. We're proud to be one of them.**

Gary Lerat grew up in a community he loves — the Cowessess First Nation in Saskatchewan. Today, he's also a member of the PotashCorp community. Thanks to a unique outreach program, we're tapping into the talents of First Nations and Métis people like Gary. We offered him a career path at our Rocanville mine, and he's making the most of it. "It's got that community feel," says Gary about PotashCorp. "Everyone there is almost like family." Visit **PotashCorp.com** to see how we continue to nourish human potential.



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# BHP Billiton - driven by values



*Looking up at the service shaft final headframe from on top of the Hoist rooms structures.*

Every person who works for BHP Billiton is driven by a collective set of core values, which underpins everything the company does.

At the heart of those values is an absolute commitment to sustainability. To BHP Billiton people, this means putting health and safety first, being environmentally responsible, and supporting our communities.

BHP Billiton's potash business, which is located in Saskatchewan, Canada, is demonstrating its commitment to this core value of sustainability with initiatives to build a strong safety culture at the Jansen Potash Project, and on unique approaches to support the communities around the project.

Building what is planned to be the world's largest potash mine brings both opportunities and challenges in the relentless pursuit of zero harm. The potash business has implemented prevention through design (PtD), a process of identifying hazards and designing in controls to mitigate risks associated with those hazards. PtD aims at preventing a serious event from occurring through the lifecycle of the design, or mitigating the consequences should a serious event occur. With an emphasis on eliminate, substitute, and redesign, PtD has had a significant impact on the risk management process in BHP Billiton's potash business, and is implemented in all steps of the project process. At the Jansen Project, for instance, the need to work at heights while replac-

ing light bulbs has been eliminated by using a simple redesign of lighting stanchions to include a hinge to lower the light bulb fitting. Parapets and handrails have been designed around roof perimeters to prevent personnel falling from heights. The applications can be found throughout the project design and play a significant role in the risk management processes which are part of the strong safety culture BHP Billiton is working to build at the Jansen site.

Engagement of all workers is a key component as the business goes about developing a culture where every worker takes very seriously the goal of keeping themselves and their fellow workers unhurt through every shift. To this end, contractors on site have formed a consolidated team which shares a unified purpose to drive a safety focus throughout the numerous contractor teams working on the project. Safety initiatives are shared amongst contractors and with BHP Billiton. Underlying the culture is a sense of accountability to each other; everyone on the site uses a five-point card system to assess risks and ensure they mitigate them in their daily work. The system extends through all levels of workers and anyone on site can ask to see another worker's, or leader's, card.

"Our people take their own - and their colleagues - health and safety very, very seriously," says BHP Billiton potash asset president Alex Archila. "Nothing is more important to us than ensuring that every person goes home safely every day."

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*Looking east at the service shaft final headframe and hoist rooms structures. Seven-thousand-plus tons of steel, 65 major lifts, and thousands of hours of pre planning. Assemble started July of 2013 and structure is currently completing final cladding and touch-up paint. The service shaft headframe sits 95-metres high and will house to 45 ton skips, as well as a cage counterweight for transportation of men and material in its operational readiness. The temporary sinking headframe site 48-metres high, and had the final structure build around and overtop while crews continued to sink. The scope of work was completed without serious injury and is considered a milestone for the project.*



*An aerial view of Discovery Lodge looking west. Discovery Lodge is the construction camp at BHP Billiton's Jansen Project and will be able to house approximately 1,200 workers when complete. The camp also includes a 1,200-person dining room and a 14,000-square-foot gym complex, which includes such amenities as gender-specific steam rooms, two squash courts, two gold simulators, free weight and cardio work out areas and an elevated running track.*



*Day Star First Nation Chief Buffalo, BHP Billiton VP corporate affairs Chris Ryder, Muskowekwan First Nation Chief Bellerose, BHP Billiton Potash president Alex Archila, and Kawacatoose First Nation Chief Poorman stand outside of the Discovery Lodge entrance way after signing the Opportunities Agreement on November 8, 2013.*

BHP Billiton people also take very seriously their role in supporting the communities around their operations. In Saskatchewan, BHP Billiton was proud to sign an Opportunities Agreement for First Nation participation in Jansen. The agreement, which is the first of its kind in southern Saskatchewan and in the potash industry, was signed at the Jansen Project site by the Kawacatoose First Nation, Day Star First Nation, Muskowekwan First Nation, and BHP Billiton. It formalises the relationship between the parties to create mutually beneficial opportunities in employment, business, and community development. The agreement includes commitments to capacity-building initiatives in education, training, and labour force development. The agreement will also assist in the building of the First Nations business capacity, by outlining a process to give entrepreneurs and community-owned business development corporations access to opportunities related to the Jansen Project.

“We believe the signing of this agreement enhances our mutual capacity and ensures that we can work together to ensure the members of these First Nations can participate meaningfully in the opportunities that arise from the Jansen Project,” says Archila.

One aboriginal-owned business, Powerchief, was contracted for the scaffolding on the Jansen service shaft headframe, which, now completed, is the tallest structure in Saskatchewan. Powerchief, which recruits from local aboriginal communities, completed its entire scope of work safely, lifting enormous amounts of metal without dropping a single object on site.

Archila emphasises that BHP Billiton is proud to be part of the Saskatchewan community as the company goes about developing the Jansen Project.

“We believe that Jansen is the world’s best undeveloped potash resource and is likely to be one of the lowest cost sources of supply once it is fully developed,” said Archila. “We are in this province for the long term and that includes a long-term commitment to working closely with local communities to ensure they value the relationships they have with us.” ♦

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# Strength from within

By Jillian Mitchell



*Garry Clarke, VP of Fortis' parent company, Northern Strands, and president of Fortis.*

It can easily be stated that the strength and success of a company rests solely on its foundations and principles. Accordingly, Fortis Mining, Engineering & Manufacturing, a subsidiary to the Northern Strands Group of Companies since 2006, has more than lived up to its Latin derivative, fortis, which aptly translates to “strong”, in the ever-changing landscape of the mining and construction sectors.

The humble beginnings of the internationally recognized company are rooted in the hard work and dedication of its employees, the heart of the operation. As a result of those enduring values, the company now boasts five major divisions: Mining, Engineering, Custom Machining & Fabrication, Destructive/Non-Destructive Testing & Recertification, as well as a heavy-duty mechanics shop.

“We’re basically growing with customers’ requests. We’ve expanded from

shaft work to doing construction work underground. It’s evolving to be more complete,” says Robert Stubbins, general manager of Fortis Mining, Engineering & Manufacturing.

In addition, Fortis has successfully forged relationships with a number of customers including Potash Corporation, Agrium, Mosaic, Cameco, Nyrstar, Rio Tinto, and Agnico Eagle, along with several other mining service companies.

“We would like the Fortis name to mean ‘one-stop shop,’” adds Garry Clarke, vice-president of Fortis’s parent company, Northern Strands. “If you have a project, give it to Fortis and Fortis will take care of it from beginning to end.”

Clarke adds, “We’re not going anywhere, we’re strong here. We’re proud of every job we do and try to exceed our customers’ expectations.”

Indeed, the company has become a specialist within the mining and construc-

tion industries by integrating engineering and manufacturing technologies into one effective and efficient process.

“There’s a certain number of unknowns when you start taking things apart in the middle of the production stream,” says Clarke. “We have a fabrication shop, we have engineers, a machine shop, and we’re also tied to Northern Strands, so we have all the rigging and fall protection products. Basically whatever we need to keep the project going and keep it on track, we have access to internally.”

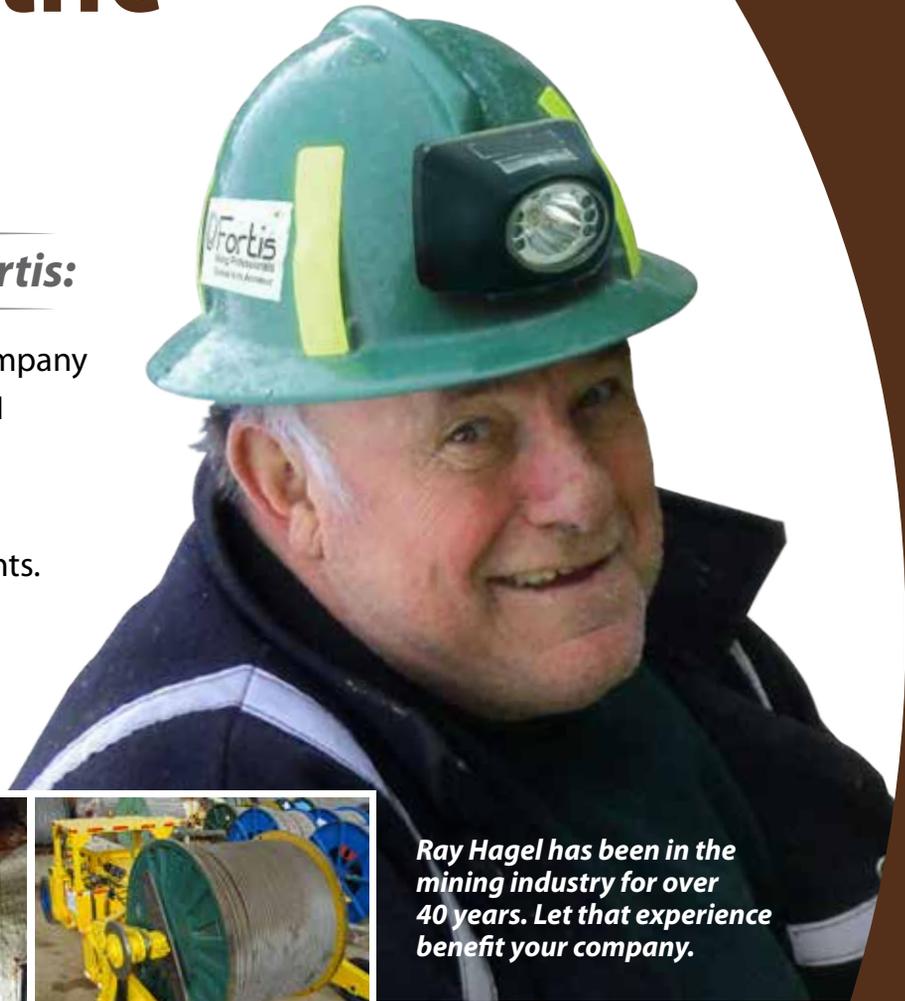
The continuing commitment to its certification as an ISO 9001, 14001 and OHSAS 18001 organization remains exceedingly high. As a company that places high value on progress and excellence, Fortis looks to its future as a leader in work safe environments and ecological accountability. For the Fortis team and its subcontractors, this vision is something that starts and ends the workday.

“Safety mine requirements are changing and Fortis can readily adapt to address those changes by providing or manufacturing special equipment and developing customized procedures to deal with each unique work space,” says Clarke. “In these mines, you have a tight space, so sometimes you need to have special equipment and special procedures just to get the job done.” ♦

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As the world's leading producer of potash and phosphate, Mosaic mines and manufactures these natural resources to produce high-quality fertilizers. These same crop nutrients give farmers a fighting chance to meet the growing demand for food as the world's population rises to an anticipated nine billion by 2050.

Over the past decade, Mosaic has increased its production capacity with its potash expansion projects in Saskatchewan. The company has committed to sustainability and to supporting its communities as a responsible neighbour. It has created value for customers and shareholders – all while maintaining a relentless focus on safety in its workplaces.

That work begins in Saskatchewan. Mosaic's potash business is proud to call the province home, with mines in Belle Plaine, Colonsay and Esterhazy, and a head office in Regina. Mosaic's place in the provincial landscape spans over 50 years and it is committed

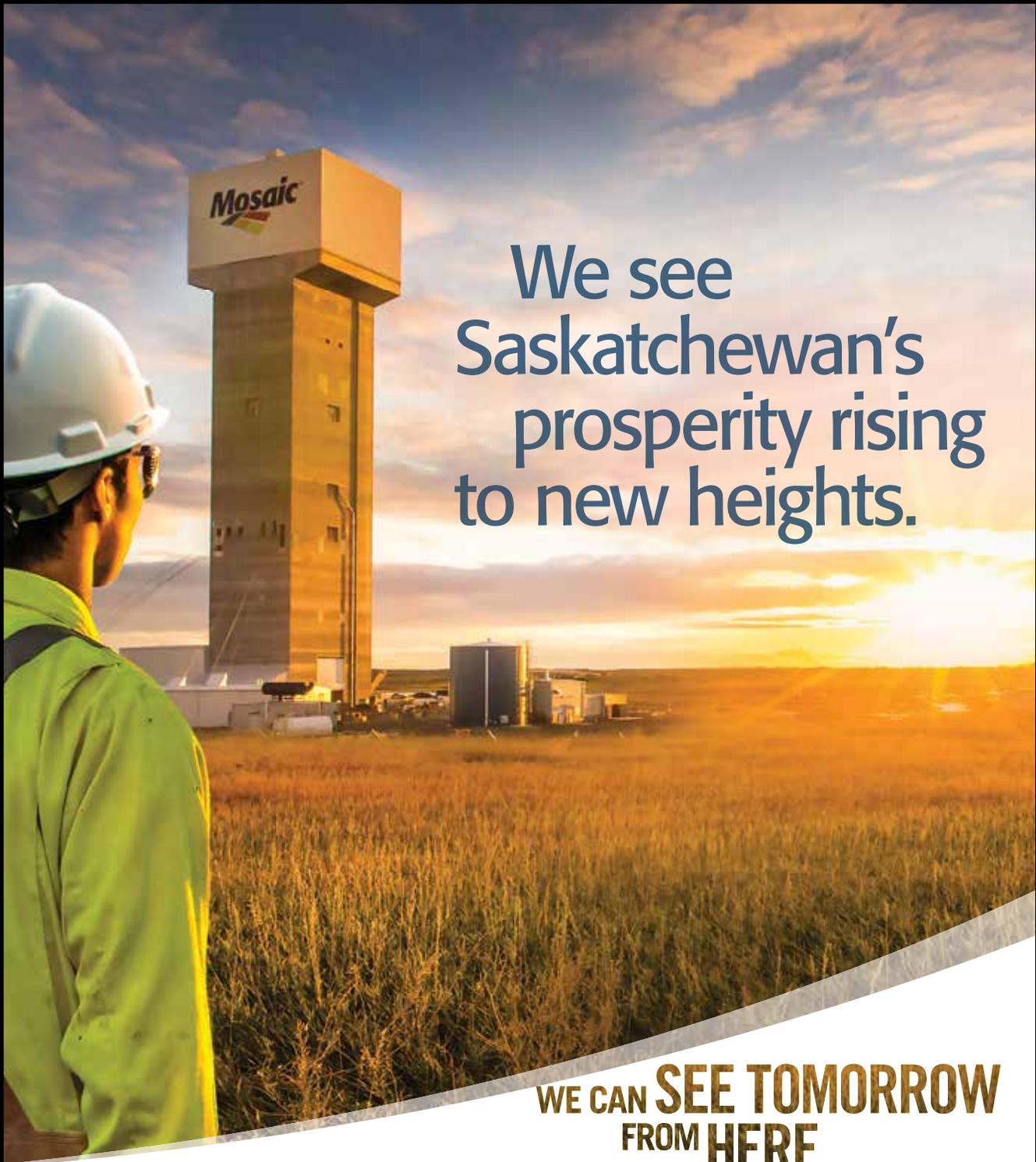
to growing Saskatchewan for the long term through continued investment in its businesses, communities and people.

In Canada, Mosaic employs nearly 2,300 people. From miners to skilled tradespeople, engineers to professionals, they are part of a global team that is richly diverse in skills, experiences and backgrounds. Their hard work and dedication helps find new ways to advance the business and ensure that Mosaic continues to be a world-class organization.

As the world's crop nutrient needs grow, Mosaic is growing to meet them. Current projects in the company's multi-billion-dollar potash expansion program continue to be on budget and on schedule despite the challenges of a competitive labour market.

There is no greater representation of Mosaic's growth and investment in the future than its K3 project. The 374-foot production headframe – the tallest structure between Calgary and Winnipeg – reached its completed height in 2013. Work on the site's mineshaft is moving forward along with supporting infrastructure. Scheduled to begin production in 2017, the development will provide capacity growth for the Esterhazy operations and Mosaic.

Being an industry leader is about more than just producing potash tonnes. Whether an employee works on surface, under-



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ground, or in an office setting, safety is a part of Mosaic's very DNA and how it chooses to do business. This mindset shapes its values and sets clear expectations throughout the company. In 2013, Mosaic achieved record safety performance, including a six per cent improvement in its key safety measures on the heels of two consecutive record periods.

Mosaic is also dedicated to making smart and responsible choices about its stewardship of the environment, and is the only mining company to have been recognized by Corporate Responsibility and Ethisphere. In Saskatchewan, examples include:

- Recycling or reusing 87 per cent of the freshwater used in its Saskatchewan potash operations
- Supporting the air zone management concept by belonging to the Southeast Airshed Association, Western Yellowhead Air Management Zone, and the Great Plains Air Zone
- Cogeneration projects at its Belle Plaine mine site
- Implementing energy reduction studies and programs at its sites through its continuous improvement departments
- Partnering with Ducks Unlimited for wetland compensation programs

This success extends to Mosaic's support of the community, which features targeted corporate giving, employee donations and volunteer work that focuses on:

- Community enrichment programs
- Food security, agricultural research and development
- Water conservation and stewardship

In 2013, Mosaic donated \$4.5 million to Saskatchewan communities. From working with Habitat for Humanity, to supporting food agencies, to investing in healthcare, Mosaic is doing its part to build strong and vibrant communities where its employees live, work, and raise their families.

Recent highlights include:

- Entering into a renewed 20-year Mosaic Stadium naming rights agreement with the Saskatchewan Roughriders beginning in 2017;
- Presenting the RCMP Heritage Centre with a gift of \$1 million to enhance programming and the visitor experience;
- Donating \$1 million to Habitat to further the provincial organization's goals and objectives; and,
- Contributing \$200,000 to Regina's Salvation Army to support a new student lunch program.

Mosaic and its workforce have worked hard to forge the company's identity and to deliver on its commitment to its stakeholders. Mosaic is ready for what's next. Here's to the second decade and to a future filled with prosperity and success. ♦

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# Vale pushes for potash in Saskatchewan

By Michael Schwartz

Forty years of potash production, each yielding around three to four million tonnes will be Vale's reward if its application to mine the Kronau project in Saskatchewan is successful. Kronau, which lies roughly 30 kilometres southeast of the province's capital Regina, will be Vale's first potash project in Canada, subject to full approval.

Saskatchewan's potash deposits are the remnants of a large shallow inland sea — one portion of the Western Canadian Sedimentary Basin that once extended from southwest Manitoba to northeast British Columbia. It has been globally estimated that 40 per cent of the world's total potash deposits lies within Saskatchewan.

Forming part of the Prairie Evaporite Formation located between 1,600 metres and 1,750 metres underground, Kronau's potash deposit — to be mined by solution mining techniques — spans roughly 50,000 ha. The potash is contained within several mineral beds comprising the top 55-metre thickness of the total Prai-

rie Evaporite Formation. The potash beds are a mixture of potash (Sylvite: KCl) and salt (Halite: NaCl), with minor amounts of other minerals and clays.

As of mid-August, the go-ahead for final feasibility (construction planning) has been authorized. In a year's time, this stage will be completed; its conclusions, combined with market conditions and the opinions of potential partners, will produce the final decision as to whether or not to proceed. If the decision is made to proceed, processing plant production will begin in 2019.

## **Vale confident**

"Mega projects in the mining industry are a major investment," says Matthew Wood, senior project leader in Regina. "Successful completion depends on a multitude of internal and external factors. However, Vale is in a unique position with production in South America and existing port, logistics and distribution infrastructure in Brazil. Vale is confident in the long-

term fundamentals of potash, and this project has the potential to become an integral part of Vale's fertilizers strategy.

"The main challenge for us is timing," adds Wood. "This is not uncommon for mega mining projects of this size and scope."

Supporting the core mining operations will be conventional water, power and transport infrastructure, as well as a dedicated combined heat and power plant for processing. By the time operations do commence, around 2,000 people will have been employed during construction, and 350 will be permanently engaged during actual processing.

## **Consultation**

While final construction and drilling activities depend on authorization and would not start until 2016, involvement of local communities has been essential since 2011. Vale has welcomed feedback from aboriginal communities, rural municipalities and the general public as soon as the project proposal was released to the pro-



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Community member examines core with Vale representative at a July 2013 open house event.

ince. Community updates and feedback opportunities on the project are planned for the life of the mine.

### Environmental demands

Up to 60,000 m<sup>3</sup> of water will be needed for the project daily, although Vale is committed to reducing water usage via recycling and other methods. For example, brine will be diverted to a reclaim pond and kept until it can be reused in the mine or processing plant. The pond will be designed to provide protection against storm events to further ensure that the brine does not spill over into surrounding soils.

Tailings at Kronau will comprise the salt remaining from the solution mining. It will be retained in a tailings management area enclosed by a dyke above ground and, when the mine closes, the tailings will be dissolved and restored to the ground. The process is currently used by existing potash mines throughout Saskatchewan.

The tailings area will be monitored for subsidence, slope stability, groundwater chemistry and hydraulic head. Additionally, downhole geophysical electromagnetic surveys, terrain conductivity surveys, and air-quality monitoring will also be completed. Simultaneously, when mining is underway, Vale will leave pillars between the mine caverns to increase stability during solution mining and subsidence.

One key area for power conservation comes in the form of a cooling pond: an alternative processing method would see hot brine being transferred into the external pond during the winter months. As the brine cooled, helped by Saskatchewan winter temperatures, potash would be processed with less energy, assisting both the environment and the bottom line of the project.

The potash will be put in storage and eventually loaded onto railcars destined for Vancouver. It will then be shipped to Asian and Brazilian markets for distribution. ♦

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# Enhancing mine safety with load cells

*Here's what you need to know about measuring weight or force with load cells, load pins, and tension links*



*Envirotec axle pad gallery.*

In industries from mining and manufacturing to construction, transportation, and agriculture, the need to weigh or measure inputs, outputs, and applied force has grown in recent decades to improve production safety and control costs.

"Design engineers are responding as complex systems such as mine lift equipment, construction cranes, industrial tanks, grain silos, and locomotives, which may have lacked weight or force-sensing capability in the past, are being upgraded to include load cells, load pins, and tension links," says Riley Phillips, a mechanical designer at Massload, a Saskatoon, Canada-based manufacturer of quality load cells and weighing systems. "These sophisticated weight and force sensing devices can help to maximize production load efficiency while offering some of the enhanced safety features that are increasingly required by regulation, such as automatic shutdown if a load exceeds capacity."

Here's a quick look at measuring weight or force with load cells, load pins, and tension links (also known as tension cells).

## **The basics**

A load cell is a transducer that changes force into a measureable electrical output. There are many varieties of load cells, of which

strain gauges are the most common. Load cells can range from a versatile single-ended shear beam, which can be used in weighing applications such as blenders, hoppers, and floor scales, to double-ended shear beams, which can be used in applications such as tank weighing and large-capacity platforms.

"Load pins and tension links are subcategories of load cells," explains Phillips. "Load pins can be substituted anywhere there is a pin and there's a need to know the shear force on it. Tension links are a type of strain gauge transducer that measures force in tension applications such as wire rope, chains, and pulleys. These are often used in lifting, pulling, and winching applications such as for cranes and mine lift equipment."

Standard load cells and tension links are typically used if the system is standard or an engineer can adapt the system to an off-the-shelf item. This tends to occur in applications where there's some system design flexibility in the early stages of design. Most load cells, load pins, and tension links are custom designed when they must be adapted to fit existing systems. However, designers should consider the potential for custom load cell solutions even for new designs where their use enhances the overall system integrity, safety, or performance.

## **How to avoid pitfalls**

Planning a superior weighing system or retrofitting an old one on existing equipment can present challenges to even veteran design engineers. Bringing in your weighing system vendor during the planning stage can allow you to improve safety and control costs while meeting specific code requirements.

"A lot of issues need to be considered," says Larry van den Bergh, president and CEO at Massload, which has refined its custom design flow over the past decade. "It is important to look at the design process upfront to ensure reliability and manufacturability while controlling costs."

"For instance, fit is critical on load pins because they normally have to interface with tight tolerances," adds Phillips. "Depending on where the load is applied, if the supports, loading area, pin diameter, or other factors are off, the load pin may not work as expected."

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To avoid pitfalls, insist on a regulatory-approved quality management system that traces the load cell manufacture at each critical step from start to finish and request a design flow checklist from the weighing system vendor to ensure that critical steps are not omitted.

“CAD modelling is not always straightforward, and sometimes you have to think beyond software’s presentation,” adds Phillips. “A stress concentration in the CAD modelling may look artificially high in one area, but may be masking a stress pattern in another area. You need accurate data on stress patterns throughout the component.”

Ask the weighing system vendor to validate the output of their load cell component against simulated real world conditions. This validation could be achieved through a digital photo of the test set up for enhanced accountability.

The design specifications, loading, testing, and application must be aligned, explains Phillips.

“It’s critical to get accurate CAD modelling and test data because that’s how the product will act, but it must be backed up by actual testing,” he states. “A mistake as simple as using the wrong supporting restraints could artificially strengthen load pin CAD results, and if real-world testing doesn’t catch it, the component may not have its stated capacity.”

To ensure output stability, engineers also need to know how the load cell output may vary depending on material strain over time, according to Phillips. Conducting a creep test to determine how stable the output is over time can also be important.

Because the accuracy of any load cell is only as good as its calibration, it is vital that the reference cells in any testing system be traceable to a trusted standard such as that of the National Institute of Standards and Technology (NIST). To guarantee that your supplier complies with the Verified Conformity Assessment Program (VCAP), a program implemented by the National Conference on Weights and Measures, it is also a good idea to ask for a copy of the VCAP auditor’s report.

“When warranted, it’s advisable for a vendor to cross check their results against an independent, third-party engineering firm as an added layer of reliability and quality assurance,” adds Phillips.

The right vendor partner will also pay attention to small details that will streamline manufacture of the weigh system component, such as bonding, grounding, sealing, and gauge selection to ensure lasting performance and resistance to water intrusion.

Phillips notes the importance of knowing the correct location where load cells, load pins, or tension links are supported “because if you over-support a load cell it won’t have the output you’d expect.” Placement of internal electronic components such as bondable or trimmable resistors can also affect device performance, he says.

“Even details such as putting scribe lines on where to place components can ease manufacturing,” says Phillips. “When these sorts of details are overlooked, they can require the manufacturer to rebuild a load pin or load cell before it’s done right.”

Details such as the types of bolts used should not be overlooked.

“The customer may require a countersunk bolt arrangement to hold lids on, if they’ve found that during operation bolt heads have been knocked off because they’re close to walls or equipment,” he explains.

The right weigh system vendor partner will also consider finer points that will affect field performance and maintenance.

“It’s important to include loading direction arrows because once a product like a load pin is sealed and symmetrical, the customer won’t know which way to place it in their equipment otherwise,” explains Phillips. “To enhance field performance, it’s also necessary to specify the right type of connector, whether hard wired, wireless, or quick disconnect.”

As design engineers respond to the growing need to weigh or measure inputs, outputs, and applied force to improve production safety and control costs, working and consulting with the right vendor partner can be a critical choice in designing weigh systems with the optimum load cells, load pins, or tension links. ♦



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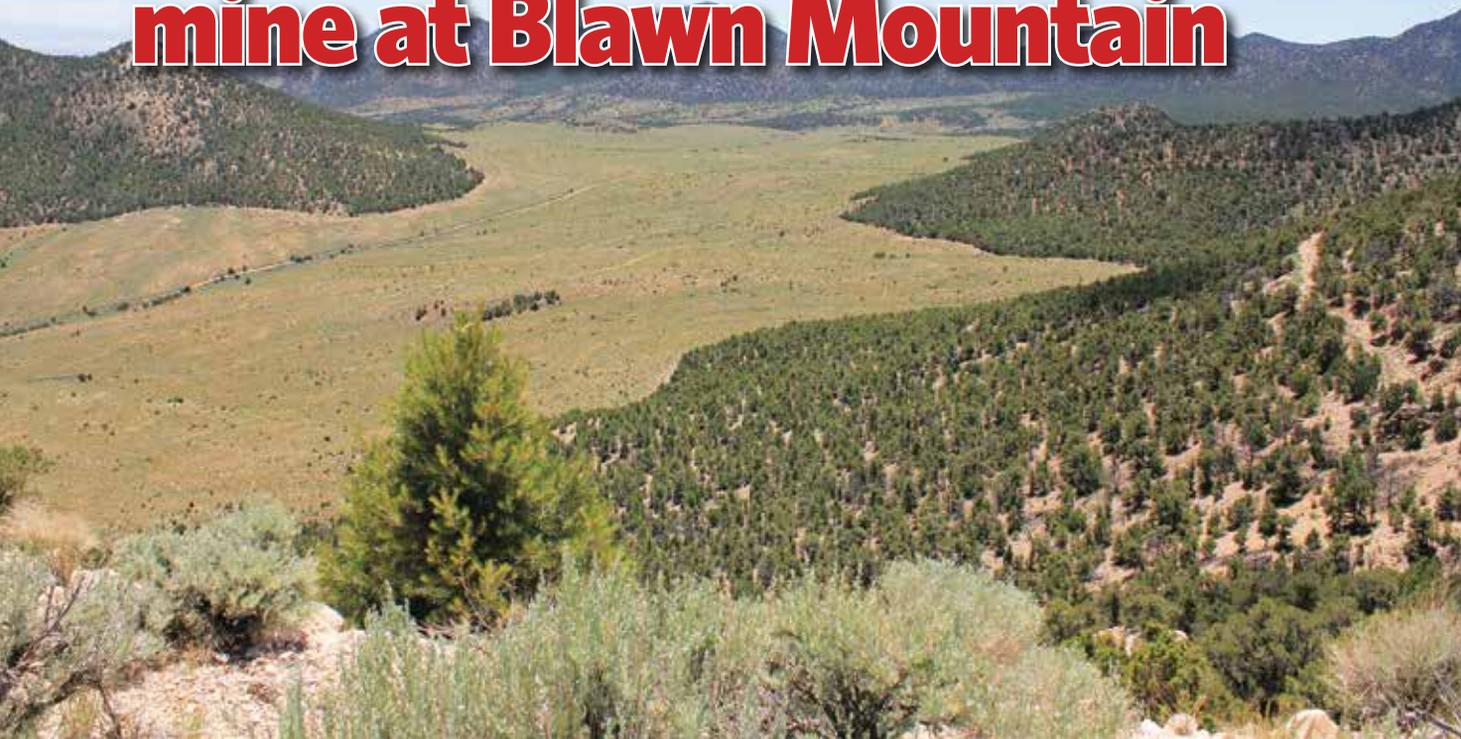
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# Potash Ridge ready to mine at Blawn Mountain



View from top of Area C Ridge.

By Michael Schwartz

Potash Ridge's Blawn Mountain potash project lies in southwest Utah, comprising four areas of alunite mineralization, spread over some 6,200 hectares. Potash Ridge itself is a Canadian-based exploration and development company, whose ambition is to develop mining and processing infrastructure to produce sulphate of potash (SoP). The company is keen to stress the premium quality of SoP, when compared with muriate of potash (MoP), otherwise known as potassium chloride (KCl).

Building up SoP sales is a clear objective for Potash Ridge, not least as it is recommended for a whole range of fruits and vegetables, and for coffee, tea and tobacco. The world's supply of SoP is in critical shortfall, with limited expansion opportunities from existing producers and existing production processes. Worldwide consumption of SoP is currently around five Mt/y, although estimated demand is more in the region of 10 to 12 Mt/y, with annual growth rates of about five per cent.

China is presently the largest consumer of SoP, consuming 45 per cent globally and, as the largest producer of tobacco, fruit and vegetables, an ideal market for SoP. Two other members of the CIRB club, India and Brazil, consume just 50,000 t/y and 32,000 t/y respectively for coffee, tea and tobacco, and citrus fruit, lacking the ability to source product in world markets.

At a \$703/t realized price in North America, SoP currently sells at a 145 per cent premium over MoP and did not experience the weakness in prices suffered by MoP in recent years.

Blawn Mountain's annual life of mine operation is anticipated to be 645,000t of SOP, and 425 Mt of proven and probable ore reserves are sufficient to support at a 40-year mine life. For the future, two additional zones of known mineralization exist with the potential to expand operations or mine life.

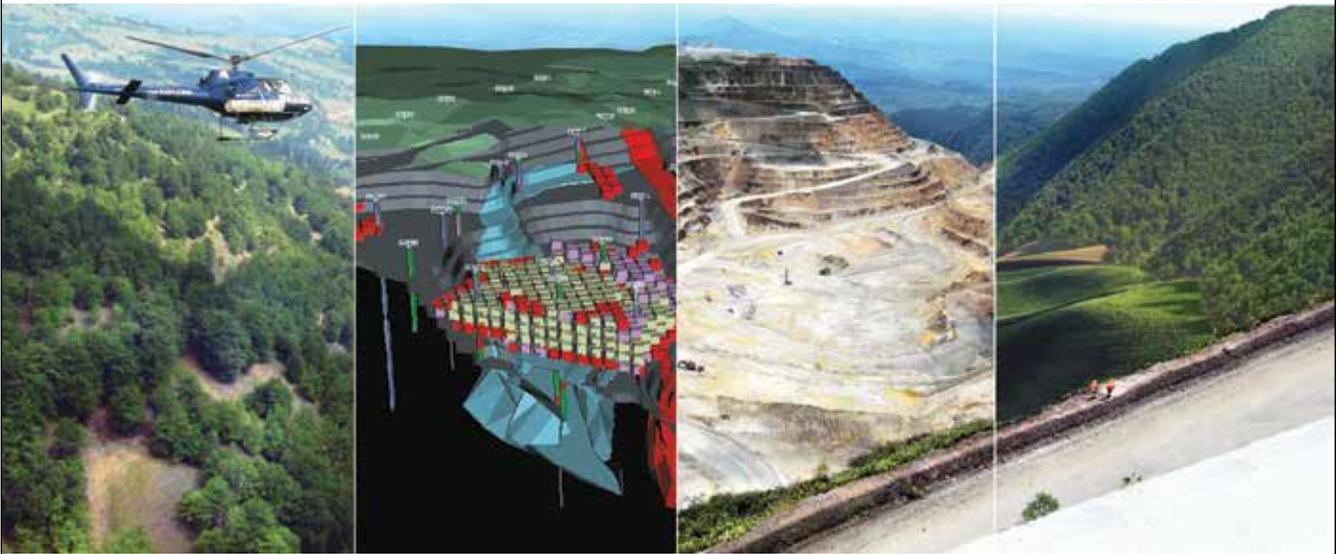
## **As things stand**

Potash Ridge has had to apply for several permits for Blawn Mountain. Approval for a mining permit was granted by the Utah Division of Oil, Gas and Mining (DOG-M) on July 8, 2014.

Potash Ridge's CEO Guy Bentinck fully appreciates operating in Utah.

"The state of Utah has been very supportive of the Blawn Mountain Project. The permitting process has been efficient to date, as shown by the timely approval of our water rights, ground water permit, and the large mining permit in 2014. Utah has been recognized by *Forbes* magazine as the best state for business in 2012, and by the Fraser Institute as a top quartile mining jurisdiction in 2013."

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**Table 1. Reserves at Blawn Mountain as of November 2013 by '000 tons/average per cent grade**

	Proven	Probable	Total
Alunite ore	136,254	289,540	425,794
SoP	8,457	17,970	26,427
Average per cent grade			
SoP K2O	3.56	3.49	3.51
SoP K2SO4	6.59	6.46	6.49

In addition to the mining permit, in November 2013 Potash Ridge successfully submitted a NI 43-101 compliant prefeasibility study to show that the project is viable in technological and economic terms.

The prefeasibility study also looked at water rights. In August 2012, Potash Ridge engaged a wholly owned subsidiary, Utah Alunite Corporation, and worked with the Utah School and Institutional Trust Lands Administration (SITLA) in order to ensure that Utah's state engineer would allow appropriation of water rights in the Wah Wah Valley near the site. Ultimately, water rights were approved for 20 years initially, extensions in principle being granted as long as mining continued.

**Mining techniques...**

Potash Ridge proposes to extract alunite through surface mining operations, which are lower-cost and lower-risk than underground operations. The surface deposit allows for ore and waste material to be removed using area and bench mining, and using conventional truck/shovel techniques.

A preliminary evaluation of slope stability for the mine concluded that mine slopes with overall angles of 45 degrees were appropriate. A relatively small mining equipment fleet, employing a medium-size hydraulic excavator, as well as a mid-size front-end loader to load end-dump mining trucks, will be needed, while preliminary water management plans have been developed for surface water, groundwater and dust control for the pits and haul road. One very strong advantage at Blawn Mountain is the minimal overburden: essentially shrubs and topsoil resulting in a strip ratio of 0.2:1.

**...and waste disposal**

Guy Bentinck summarizes his company's process for storing and disposing of waste, "The residue material that is left after the ore is processed into SoP will be stockpiled in a tailings area. The residue material will contain primarily alumina and silica (sand). The company expects to upgrade this material for sale to alumina plants as a substitute for bauxite in a typical Bayer processing plant. Test work is ongoing in this regard.

The current economics for the project do not include possible revenue from the sale of the alumina-rich residue."

**Drilling and exploration**

Potash Ridge has divided Blawn Mountain into four sections, two being the focus of current exploration, the other two being assigned for future exploration, having been defined by previous limited drilling. Total reserves are shown in Table 1.

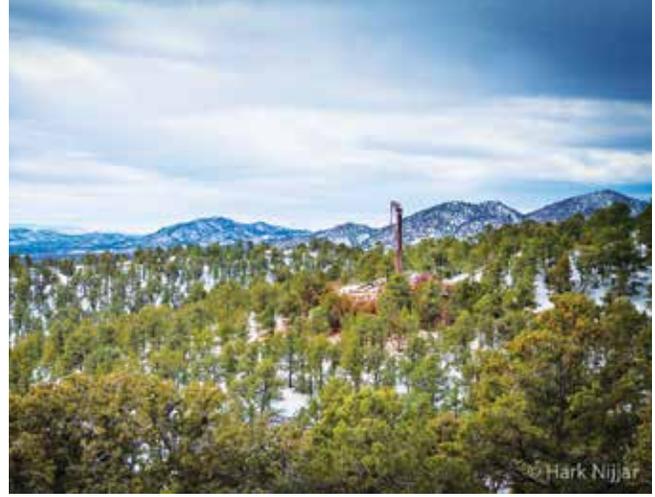
**Evaluation**

The project site was extensively developed during the 1970s but was shelved in the early 1980s due to poor economic conditions. Originally, alumina was the primary product and SoP was the byproduct.

Significant metallurgical testing has been performed over a two-year period to demonstrate that alunite at Blawn Mountain can be processed into SoP through grinding, calcining, leaching and, ultimately, crystallization. Through metallurgical testing, the corporation sought to confirm the historical flow sheet and then optimize it for the production of SoP as the primary product. Consequently, SoP recoveries were increased from 65 per cent to over 90 per cent through the test work performed as part of the pre-feasibility study. Alunite has been processed into SoP many times in recent history and a production facility still exists in Azerbaijan.

The corporation also sought to take advantage of technological advancements since the 1970s to make the processing flow sheet even more efficient. Metallurgical testing was carried out on ore from all mining areas in order to get a representative sample, so that the flow sheet is now optimal for the processing of ore from both mining areas.

Once all the evaluations were completed, the new plant's ore processing rate will run at an estimated 10.4 Mt/y. Further metallurgical test work will be focused on optimizing equipment design. This will include a continuation of pilot-scale test work and larger scale testing at vendor facilities.



## **Planning advantages**

The project consists of 18.5 sections of state land owned by SITLA (State of Utah School and Institutional Trust Lands Administration). State-owned land provides Potash Ridge with several advantages, including a simpler permitting process, leasehold and royalty agreements in place, and no environmental, social or aboriginal issues. Most importantly, the Blawn Mountain project has the support of both municipality and state.

“Certainly, not having to deal with First Nations has eliminated a complicated issue that many other projects have to address,” says Bentinck. The Blawn Mountain Project is located on lands managed by the State of Utah and SITLA. This land package has been specifically earmarked by the state for development, which is very advantageous to the corporation. The corporation will pay an annual royalty to SITLA, which will go towards funding education in the state of Utah.”

## **Infrastructure**

The necessary infrastructure for the construction and operation of the Blawn Mountain Project lies nearby. The project is located about 20 miles west of the Union Pacific railway route connecting Salt Lake City with Las Vegas, 12 miles south of Highway 21, and 62 miles west of Interstate 15, the main north-south travel corridor through Utah.

In addition, state highways SR-21 and SR-130 pass approximately 30 miles east of the project, as do two energy corridors, the Utah-Nevada and Kern River gas-lines. By rail, in particular, there is the option of transporting sold SoP to key domestic markets and ports.

One further advantage is that the area surrounding Blawn Mountain supports businesses that can supply construction materials, such as sand, gravel, limestone, railroad ballast and cement. Heavy equipment, industrial supplies, mining support services, and an experienced labour force are also available in Utah and neighbouring states to support construction, mining and processing operations.

## **The economics**

Potash Ridge is basing its economic evaluation of Blawn Mountain on certain assumptions. In terms of a timetable, construction is anticipated for late 2015, followed by a ramp-up to full production on the two years before 2019.

When it comes to hard finance, the pre-feasibility study completed in late 2013 showed that the Blawn Mountain project has a \$1.0 billion NPV at 10 per cent and a 20.5 per cent after-tax IRR (excluding potential revenue from alumina-rich material). Capital costs are estimated at \$1.1 billion for the development, construction and initial commercialization (processing plant construction and development capital costs are set to total \$954 million). Then there are the sustaining capital expenditures, perhaps running

to \$160 million over the full 40 years. The taxation rate at Blawn Mountain is expected to be 35 per cent, with annual royalty payments of approximately \$28.7 million.

In operational terms, the net cash operating cost is estimated at \$218/t of SoP (\$173/t after royalties). The most significant operating expense is natural gas, and is expected to be sourced from a neighbouring state.

## **And after the mining?**

Once extraction has been accomplished, the land at Blawn Mountain has to be restored.

“Even before mining operations commence, salvageable overburden material will be removed and placed in temporary storage areas,” says Bentinck. “Once the ore has been removed, the salvaged overburden/soil will be used as a backfill to reclaim the mined-out areas. As the ridges are mined, the area will be reclaimed as per our environmental reclamation responsibility outlined in our mining permit.”

## **Conclusions**

Potash Ridge is set to produce a highly desirable potash product that is experiencing a severe supply deficit and is selling at a significant premium over regular potash. In addition to selling domestically, key export markets will likely be China, India, and Brazil. The site is located very near to all required infrastructure, and within a strongly mining-friendly state. ♦

# Dynamic worldwide fundamentals suggest further expansion for potash mining in Saskatchewan

By Leonard Melman

If there was ever a case to be made for relentless increase in demand over time for any mined item, it would seem that the case for “potash” would occupy the top of that list. Potash is the fertilizer of choice for food producers and, as such, would appear to be the beneficiary of two undoubted fundamental facts.

First, the world’s population has been growing relentlessly for over a century, from barely one billion in 1900 to 2.5 billion in 1950, 4.1 billion in 1975, and about seven billion at the present time. The United Nations latest projections call for more than nine billion people in 2050. At the same time, urban expansion is eating up arable land with the result that the demand for greater production per acre of land appears certain to grow steadily into the future.

Many agricultural scientists therefore conclude that the only way to increase crop yields and maintain nutritional qualities of soils is through the judicious use of fertilizers, and the most widely used of all is potash. Fully 95 per cent of worldwide potash production is used for fertilizers, with the remaining five per cent allocated to soap production and other industrial applications.

Potash itself is comprised of potassium, nitrogen, and phosphate with potassium being a component of every cell of plants and animals, and is therefore

indispensable to human life. Canada is the world’s leading potash-producing nation and, luckily for Saskatchewan, fully 90 per cent of Canadian potash resources originate within that province.

According to the Saskatchewan Mining Association, potash was first discovered in the province by accident while drilling for oil during 1942. By the end of that decade, initial exploration work had documented a vast deposit network stretching from just east of the Alberta border through to southeast Saskatchewan. Depth below surface of the deposits ranged from about 1,000 metres on the west to about 1,600 metres to the east.

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*According to the Saskatchewan Mining Association, potash was first discovered in the province by accident while drilling for oil during 1942.*

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Early production shafts into the ore bodies encountered water problems, but by 1971, all of the province’s first-class deposits were in production. Saskatchewan’s potash production is currently dominated by two companies, Saskatchewan-based PotashCorp and USA-based The Mosaic Company. Mosaic currently operates three producing

potash mines: Belle Plain, Colonsay and Esterhazy; while PotashCorp presently operates five Saskatchewan mines: Allan, Cory, Lanigan, Patience Lake and Rocanville.

PotashCorp was originally formed as a result of some political friction between producers and the government during the early 1970’s when the industry resented government taxes and attempts at control. In response, the Saskatchewan government created a Crown corporation, Potash Corporation of Saskatchewan (PCS), which then acquired ownership of four mines. Eventually, PCS was privatized and re-named as PotashCorp.

During recent years, the two largest mining enterprises on earth, BHP Billiton and Rio Tinto, have taken an interest in Saskatchewan potash.

BHP Billiton is involved with its giant Jansen Project located in south-central Saskatchewan, where potash resources have been calculated at 5.3 billion tonnes of ‘measured’ resources, plus an additional 1.3 billion tonnes in the ‘inferred’ category, making it one of the largest deposits on Earth. Production estimates call for a mine producing 10-million tonnes of potash annually for a period of 70 years.

BHP’s CEO Andrew Mackenzie noted that recent declines in the price of potash from over \$400 per tonne to barely

\$300 have caused some potential investors at Jansen to delay their commitments, but he then added that the company remains committed to the project and, in fact, plans to spend an additional \$2.6 billion at Jansen over the next five years.

Rio Tinto's prior significant venture into Saskatchewan potash occurred in 2011 when it formed a joint venture with Russian company JSC Acron to develop a south Saskatchewan potash project. Due to declining prices and leftover fallout from the failure of a Russian marketing group, Rio Tinto sold their interest in the property.

However, this past December Rio Tinto announced their participation, once again in partnership with JSC Acron through their Canadian affiliate North Atlantic Potash Inc. in a new and potentially important project. Their property is located close to BHP's Jansen project and the company recently announced they were moving ahead with a drilling program with the ultimate goal of creating the next producing potash mine in Canada.

The main Saskatchewan potash deposits actually extend beyond their border into Manitoba where the provincial government has recently created a Crown corporation entitled Manitoba Potash Corp. with the goal of attracting commercial miners who would then develop the Russell-McAuley potash deposit in western Manitoba, which is estimated to contain about one billion tonnes of potash located 800 metres below surface.

PotashCorp is also involved in the Province of New Brunswick through its producing potash mine, the Penobscis Mine. The company originally acquired the mine in 1993 from Potash Corp. of America with final ownership being vested in the Potash Corporation - New Brunswick Division. In recent years, the mine has been producing potash at a rate of approximately 700,000 tonnes

per year while also producing rock salt at a rate of approximately 500,000 tonnes per year.

Due to recent adverse potash prices along with some market over-supply, Potash Corporation has recently laid off over 500 Canadian employees, about 400 within Saskatchewan and the other 100-plus in New Brunswick.

Canada is hardly the only country in the world with present ongoing potash exploration. Developments of new

projects are currently taking place in Ethiopia, the U.K., and Australia, as examples.

Potash mining remains an important part of the overall economic picture for Saskatchewan and, despite some periodic weakness, the important worldwide forces noted above appear likely to provide a favourable background for further expansion of this most important contributor to the provincial economy. ♦



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Photo provided by PotashCorp

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# Service guarantees



By Jillian Mitchell

The old adage “what you take care of will take care of you” is not lost on the Certified Mining & Construction Sales & Rentals (CMC) team of Saskatoon. The Saskatchewan-based company serves a geographical area, where for many years, a deal was signed with a handshake. For those who established life on the great Canadian plains, honesty, cooperation and community were the values above

all others that made the region grow and prosper.

The region boasts an abundance of industry, including potash and uranium mines, in addition to serving as the gateway to Saskatchewan and Manitoba’s northern mining industry. For CMC, Saskatoon is the perfect place to call home, and in turn, the company proudly serves its community in earnest.

“Saskatoon is a gem. In order for CMC to be successful, it needs to be in a place like Saskatoon that has a lot of support,” says Garry Clarke, vice-president of Northern Strands, CMC parent company. “All the industrial businesses get along and feed off of each other. If CMC needs something, you can pretty much find it in Saskatoon.”

Thankfully for the mining and construction industry of Saskatchewan, companies that possess values akin to CMC exist. In an industry where standards must be strictly adhered to and work safety is of the utmost importance, clients need to be rest assured that their equipment is dependable and backed by a service guarantee.

“The first focus we have today is that we make sure that we do it right. Every piece of equipment that leaves is right and is in good condition and can be depended on,” says Clarke. “That’s getting us our



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"A term that we use at the mines a lot is 'mine-ready'. If it comes from Certified, it'll have all the tags and testing," continues Clarke. "We will not only have everything ready, we will even come up with a lift plan so you can take it underground. In fact, we'll even take it underground, if you want."

"We're seriously trying to get the right people," he says. "This whole show would not fly if we didn't have the right people."

A little elbow grease and some genuine integrity have proved the successful formula for CMC, and for Clarke, the success of the company depends upon one key factor—its people. ♦

**Some things have only improved with time...**

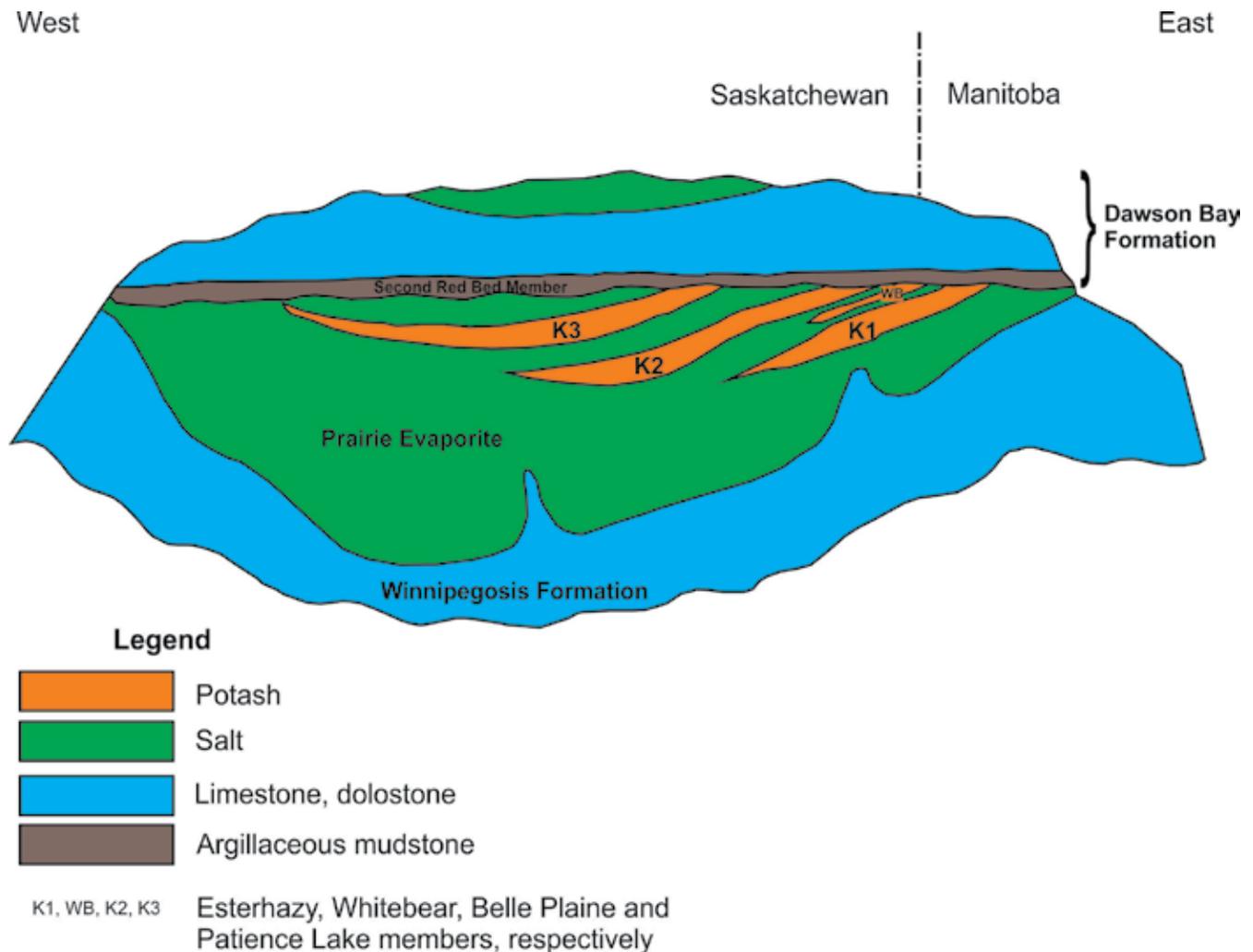
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# Move over Saskatchewan: Manitoba set to capitalize on potash industry

By Melanie Franner



In 2012, the Saskatchewan potash industry contributed \$761 million in provincial taxes, royalties and municipal taxes, according to the Saskatchewan Mining Association and Saskatchewan Potash Producers Association. The province produces more than 90 per cent of the country's potash

production and more than 30 per cent of the world's supply.

And Manitoba is now in a position to bring similar benefits to its own economy.

"The development of a conventional potash mine in western Manitoba has been promoted over the past 30 years, in large

part because of the huge economic impacts potash mines generate," explains John Fox, vice-president, Manitoba Potash Corp. (MPC). "We anticipate there would be significant regional economic benefits to western Manitoba from the development of a conventional potash mine."

## Then and now

As Fox mentions, Manitoba has been involved in potash exploration since 1986, when the MPC (solely owned by the Manitoba government) was established as a joint venture, with Manitoba as a minority partner. The interest lay in the Russell-McAuley potash deposit, a 2,247-square-kilometre deposit in the southwestern area of the province that runs along the border of Saskatchewan and its very prosperous potash deposits.

MPC estimates that the Russell-McAuley deposit has the potential to be a 40-year conventional potash mining operation that will yield approximately two million tonnes of potash per year – although it cautions that a review of existing data and exploration work are needed before any certainties can be made.

So what's changed between 1986 and 2014? Well, for one thing, the price of potash has recently taken a downturn. For another, the previous MPC partners have expressed no interest in moving the project forward.

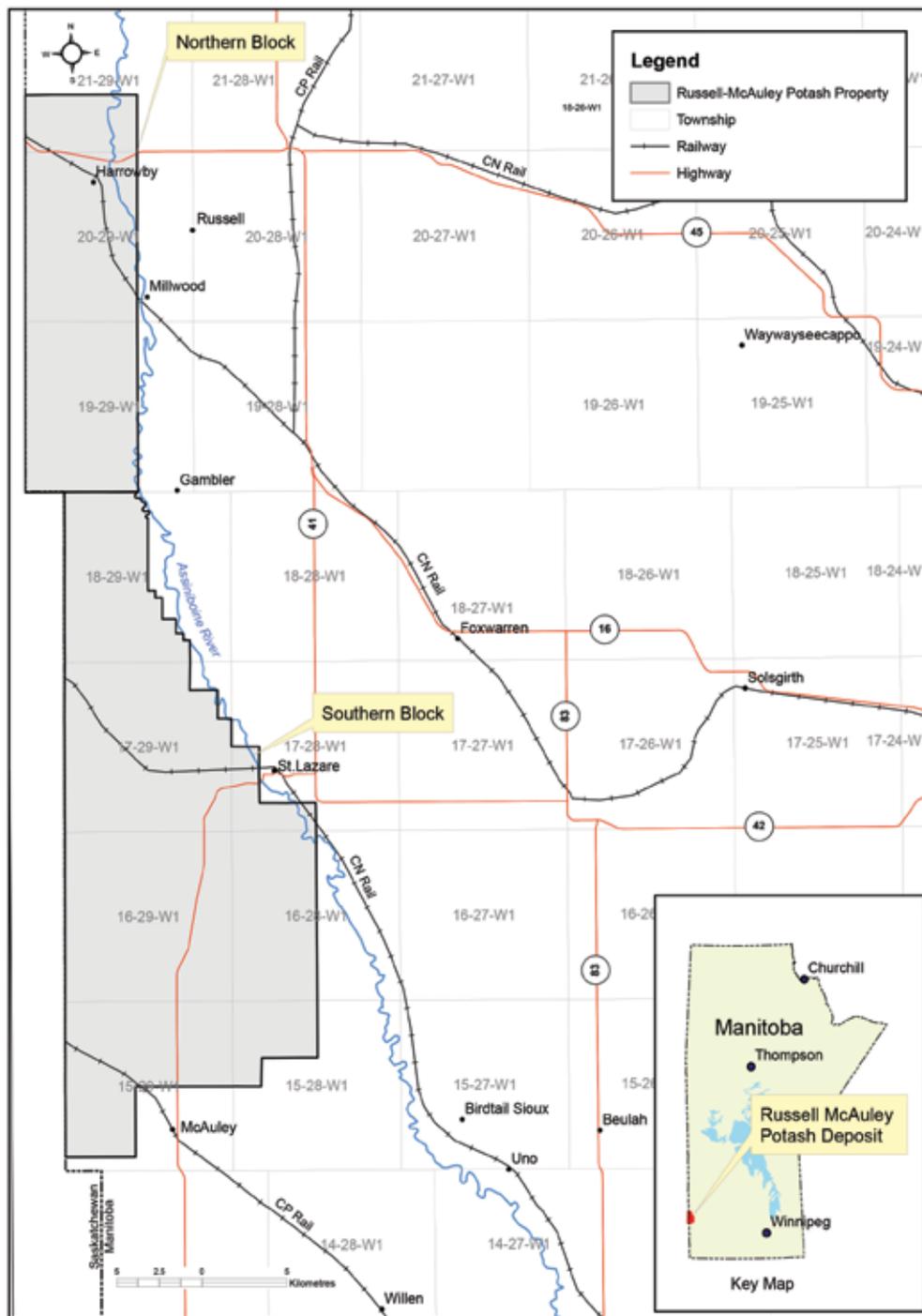
Under terms of the MPC co-management agreement, MPC had first rights of refusal. When the other partners opted out, MPC acquired their outstanding rights, and as a result, has become the sole owner of the Russell-McAuley project as of July 2014.

“Manitoba believes the potash in western Manitoba is viable with the consolidation of the conventionally minable potash resources,” states Fox. “We believe the economies of scale provided with this opportunity will facilitate mine development.”

## And the fun begins

In the coming weeks, MPC will approach an international short list of potential developers to seek out expressions of interest on the Russell-McAuley deposit.

“The reaction has been very positive in that we have already received a signifi-



Manitoba Potash Corporation (MPC) Property Location

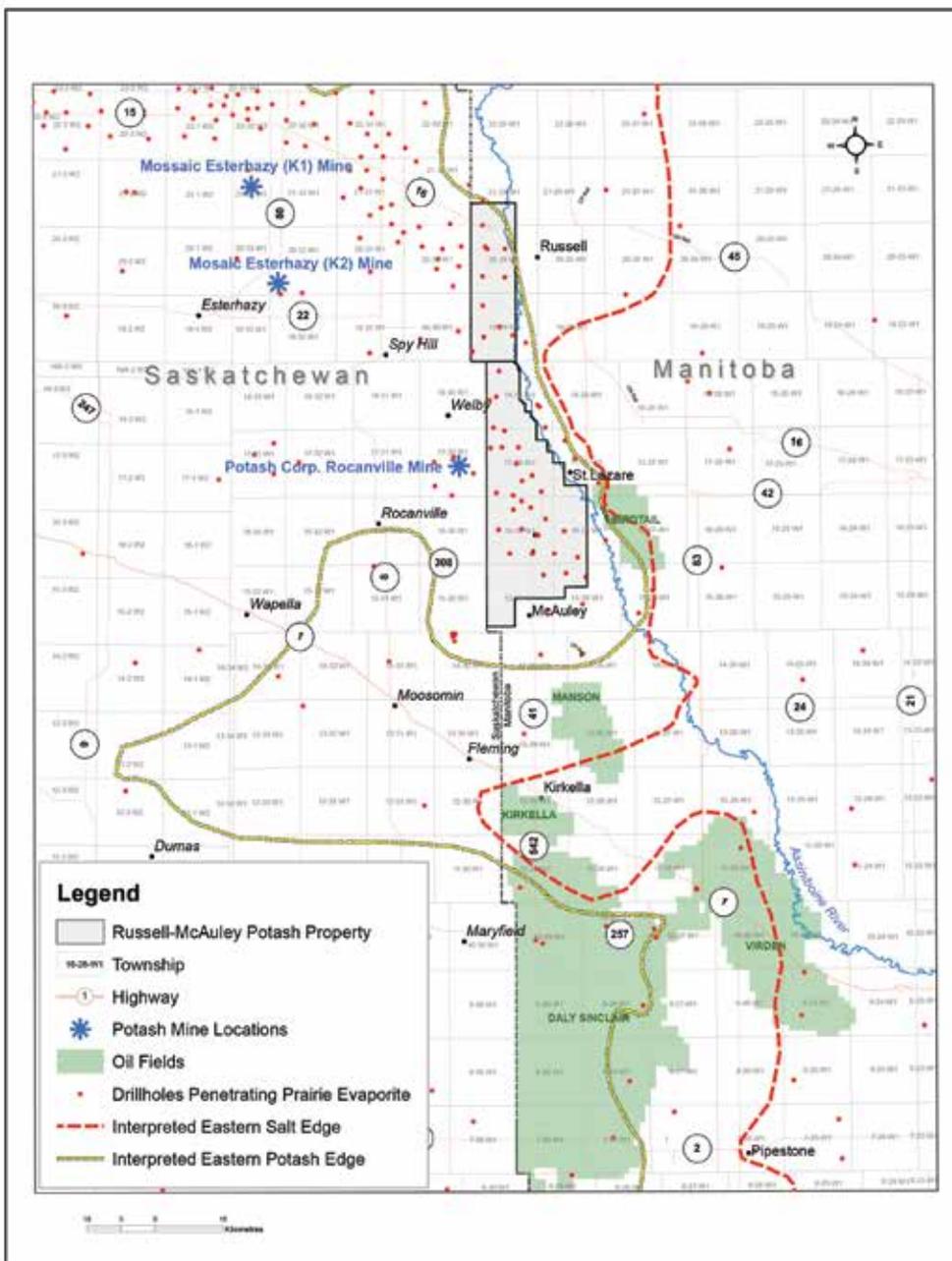


cant number of unsolicited approaches from the potash and fertilizer industry,” states Fox. “Manitoba will be conducting an open and transparent process to sell MPC, consistent with the sale of other Crown assets. Accordingly, Manitoba will launch a campaign in the very near future to seek expressions of interest for potential developers.”

The province views the fact that potash prices have taken a bit of a downturn as an advantage.

“We believe this is a good time for a project of this scale to come to market and we also believe it will garner interest from shrewd investors,” says Fox. “The timeline for development and first production is also long enough to position this project in more favourable economic conditions.”

Ed Huebert, executive vice-president, Mining Association of Manitoba Inc., sees the recent activity as a good sign for Manitoba and its economy.



Manitoba Potash Corporation (MPC)  
Manitoba-Saskatchewan Prairie Evaporite Edges



*With more than an estimated one billion tonnes of potash lying between 800 metres and one kilometre below the surface, the MPC is currently the sole owner of what could prove to be a very rich and profitable deposit.*

that will further facilitate development. And, I think the interest we've received to date supports our opinion that this project is viable. As well, Manitoba has an engaged, supportive government and policies that will have a direct and positive financial impact on the development of a conventional potash mine. These include: various tax and operating advantages; the lowest electricity costs in North America; a well-developed transportation infrastructure; and skilled labour and training-assistance programs."

### **Towards a potash-rich future**

With more than an estimated one billion tonnes of potash lying between 800 metres and one kilometre below the surface, the MPC is currently the sole owner of what could prove to be a very rich and profitable deposit. And, with suggestions of a deposit that is comparable in both quality and mining conditions to its sister deposits in neighbouring Saskatchewan, the situation seems to only get better.

True, declining potash prices may dampen the mood somewhat. But, as Fox has said, the Russell-McAuley deposit may prove to be an enticing option for a shrewd investor. The forecast will be easier to predict in the coming weeks, when MPC actively seeks out expressions of interest from potential developers.

In the meantime, it's just a matter of waiting. And, although time has not proven to be a friend to the Russell-McAuley project in the past, it may just prove to be the deciding factor to its future. ♦

"This is good news for the province," he states. "The area looks like it has a high-grade potash deposit."

Huebert is quick to add that the challenge for Manitoba and potential developers is the recent decline in potash prices.

"There are two ways to look at it," he says. "Potash prices spiked at \$870 a tonne in 2009. Now they are down to around \$280. Is this the right time for someone to buy into a project that has a long-term vision? On the other hand, if prices go back up to \$870 a tonne, the

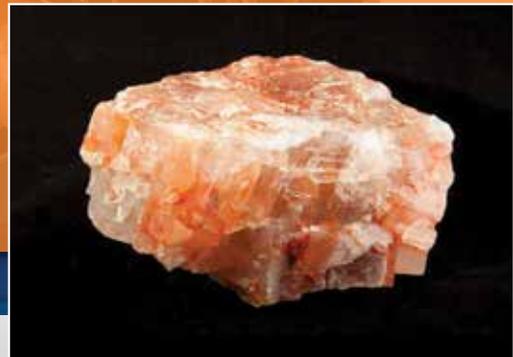
cost of the project could increase dramatically. Ultimately, it's going to come down to the strategic vision and commitment of a potential developer. And from the information out there, the deposit is both a respectable size and of a high-grade."

MPC admits that the road ahead may not always be smooth.

"As with any large mining project, there may be technical challenges bringing this project into production," says Fox. "However, we have structured plans



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# Fertile ground



After impressing PotashCorp on the Picadilly Mine Project in New Brunswick, Aecon Mining Construction Services was awarded its largest, single mining contract to date and promptly followed its client west to Saskatchewan. In 2014, the Aecon teams wrapped up work on a world-class processing facility that will help the potash giant meet its global demand.

Anyone familiar with Rocanville, Saskatchewan will instantly recognize the signature red and white vertical stripes that adorn PotashCorp's mine site buildings east of town. For 40 years, PotashCorp has been extracting and processing potash, phosphate, and nitrogen for a global market that heavily relies on these fertilizer products to keep farmland soil healthy and productive. Today, the company has put the town of Rocanville on the map. PotashCorp is the largest producer by capacity of potash, and third largest producer of nitrogen and phosphate in the world.

Supplying so much of the world's potash production from its Canadian operations has translated into substantial growth for the company's mining facilities in Rocanville, located some 230 kilometres east of the provincial capital.

"Without a doubt, being awarded and entrusted with this size of a contract by PotashCorp had a lot to do with our strong operational and safety performance on the Picadilly project," notes Phil Ward, executive vice-president, Aecon Mining. "We devel-

oped a great working relationship with the client and AMEC, the engineering firm, on that job, and we're thrilled to be working with them again."

### **A job like no other**

In April 2012, Aecon first mobilized on-site and began working on the new mill installation. The Rocanville potash mill differs in a major way from other milling operations: Rather than being spread out like a traditional horizontal mill, it's constructed vertically, standing just over 60 metres tall and featuring eight operational floors.

"For sure the vertical nature of this mill presented us with huge logistical challenges," says John Salter, vice-president, Aecon Mining and Construction Services, stressing the importance of careful planning and coordination on such a large-scale job. "With all the different levels on this job, we found the biggest challenge was just trying to execute the work around a congestion of workers on the same level at the same time. Scheduling, delivering and maneuvering the equipment, materials and supplies was a feat in itself, not to mention the logistics and processes needed for safe work execution."

Labour was another challenge, as is often the case when undertaking major projects in smaller communities and remote regions. With 750 workers required for this job, the Rocanville project was no exception, especially with Aecon self-performing the majority of the work. Some 75 key, experienced managers and supervisors were brought on site to oversee the project and were challenged to ramp up quickly with a team of skilled tradespeople.

"As you can imagine, a project of this size quickly depletes all resources from the local union halls in southern Saskatchewan," says Roger Archambault, senior project manager. "As a matter of fact, only 25 per cent of the required labour came from local halls. The remaining balance came from journeymen, who travelled from all across the country."

Ensuring the work was safely executed was high on the priority list. When asked how difficult it was to implement Aecon's Safety First culture on site, Jason Price, site safety manager, admits it was a challenge in the beginning.

"Bringing over 700 workers from all across the country translates into a lot of diversity when it comes to safety culture. We had all sorts of trades on site at the same time. Everyone had to be trained and educated on Aecon's safety practices, cooperating with PotashCorp's safety team, to ensure we were all on the same page."

### **K+S potash work**

Having already completed several high-profile piling jobs since its formation, Aecon Mining was ready to roll last summer when

news broke that the group had been awarded a major contract for client K+S Potash Canada's Legacy Mine, the first new green-field potash mine to be built in Saskatchewan in nearly 40 years. Aecon Mining was on tap for the installation of more than 2,000 piles to support the numerous buildings required to process the potash brought in from the mine. The evaporation process plant alone, as the site's single largest location, required 594 piles.

All told, some 2,400 bell piles were drilled, cleaned, and poured for the future location of Legacy Mine. By industry standards, a piling project of this magnitude is "quite the undertaking" says Lars Richter, Aecon Mining Services group general manager. "The amount of work we've performed on this contract shows the level of demand for the type of work we do."

Aecon Mining Construction Services has since been awarded several key process installations for the K+S Early Cavern Development and Well Pads portions of the Legacy Project. These combined contracts Aecon Mining holds with K+S Potash Canada are quite significant.

Aecon Mining proudly delivers all of their client's needs, from the inception of a project to end-of-project reclamation, and everything in between. The mining industry has become a major industry in Canada, which still has a lot of growth ahead, and Aecon Mining is positioned to play a major role in the development and maintenance of current and future mines. ♦

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# An elemental superhero: *Potash is fighting the zebra mussel invasion, one harbour at a time*

By Ashlee Espenell

Lake Winnipeg has fallen under attack. The zebra mussel implanted itself into Manitoba waters last fall and it doesn't want to leave. This striped foe looks like the freshwater clams native to Lake Manitoba, but it's actually an invasive species that originated in Eastern Europe. The zebra mussel's greatest weakness appears to be potash.

Zebra mussels made their way to North America in the 1980s by clinging to hulls and anchors of ocean liners and other saltwater vessels. They have since reigned terror throughout the Great Lakes and caused billions of dollars in damages and maintenance. Because they like to stow away on boats, motors, fishing nets, and scuba equipment, the zebra mussel is mobile. They successfully hitchhiked their way to North Dakota in 2010, where they were discovered in the Red River, and to Manitoba in 2013.

Long hailed for its ability to help things grow, potash also has another superpower: foiling the plans of the cunning zebra mussel. The potassium in potash acts as a killing agent to the zebra mussel by preventing its ability to transfer oxygen across the gill membrane.

"The key thing with potash is that it is non-lethal to other species," says Laureen Janusz, a fisheries biologist with Manitoba Conservation. Because liquid potash doesn't harm humans, other animals or the environment, it allows scientists to target just the mussels in a shared ecosystem. "It was the most environmentally benign substance we could use."

Zebra mussels have the ability to attach themselves to hard surfaces, and a full-blown infestation can mean up to thousands of mussels per square metre. The zebra mussels attach themselves to rocks, harbours, shorelines and boats, clog intakes and disrupt infrastructure. They're bad neighbours too; they attach themselves to other mussels and clams, eventually killing them, destroy food supplies and create toxic algae blooms. Janusz says that the infestation in the Great Lakes costs Ontario between \$70-90 million per year.

"They reproduce very quickly and a female zebra mussel can lay up to one million eggs," says Janusz. "It's very hard to get rid of them once they're there."



This summer, Manitoba Conservation undertook an experimental study that used liquid potash to fend off the zebra mussel in four different harbours in Lake Winnipeg. Silt curtains were used to seal off the harbours in Gimli, Winnipeg Beach, Balsam Bay and Arnes, creating contained bodies of water in which they could control the treatment. The four harbours were closed off for two weeks and liquid potash was added to the harbour until the concentration was high enough to kill the mussels in the test areas (100 parts per million of potassium). The \$500,000 experiment was the first liquid potash treatment of its kind attempted in open waters. And it worked: the liquid potash successfully killed all of the zebra mussels in the four harbours.

Unfortunately, as with most persistent invaders, the saga of the zebra mussel doesn't end there. Gimli, Winnipeg Beach, Balsam

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*They reproduce very quickly and a female zebra mussel can lay up to one million eggs.*

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Bay, and Arnes are now zebra mussel-free, but new larvae have been discovered in the other, untreated parts of Lake Winnipeg. Janusz says that, while the liquid potash treatment was successful in the shallow waters of the four harbours, the zebra mussels had managed to spread to deeper waters in Lake Winnipeg, and that they're now reproducing.

"We're at the adaptation stage in Lake Winnipeg now, and trying to minimize the potential of spreading them to other bodies of water," says Janusz.

The Canadian Wildlife Federation has called zebra mussels "dangerous mollusc invaders", and they are currently listed on the Manitoba Prohibited Species list in The Fisheries Act. The province will continue its efforts to test and monitor zebra mussels in Lake Winnipeg, and an awareness campaign and five decontamination units for boats are being used to stop them from spreading. ♦

## What will the next 50 years bring?

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# Prairie flood affects potash production

By Jaime Rieger

When the weekend of June 28, 2014 was upon the people of southeastern Saskatchewan, no one was thinking about a potential for a flood. Canada Day was just around the corner, and many were preparing for a rainy holiday. Potash employees were working their shifts: business was as usual. What came next was unprecedented.

In the early morning of June 29, after hours and hours of steady downpour rain which measured in at almost eight inches in the hardest hit areas, the calls for help started. People in the towns of Moosomin, Rocanville, Spy Hill, Esterhazy, Langenburg and more were waking up to flooded basements. Rivers of water were pouring into people's homes as sump pumps struggled to keep up. Town sewer lines were filled to capacity and many were watching in horror as flood waters consumed their basements. Some homes flooded as much as six feet. By Sunday afternoon on June 29, almost as many

as 50 communities had declared a state of emergency, which would only be the beginning of the 96 communities in total who had to declare. But it didn't stop there.

The rain waters had nowhere to go. Small creeks had turned into enormous lakes; golf courses disappeared; houses in low-lying areas looked more like islands amidst the sea of water. It was then that the roads started to disappear. What started with some water running over the road, turned into a gushing river, which in turn led to erosion washing away the road to expose the culverts underneath. In some places, the culverts were picked up by the flood water and led downstream to be thrown away by the rush of the water.

So what does this have to do with potash? One would be hard pressed to find a potash employee that wasn't affected by the flood. Between fighting to save basements and volunteering to save community sewer systems, everyone near Mosaic's

K1-K3 mines, as well as PotashCorp's Rocanville mine were entrenched in a battle against Mother Nature. PotashCorp's Rocanville mine seemed to suffer the most. Employees that did manage to get to work on Monday June 30 did so by driving over half washed-out roads, only to discover on their way home that the road had completely disappeared. Safely getting to and from work was appearing to be a bigger threat than anyone could imagine.

Facebook and Twitter came alive with PotashCorp employees keeping each other up-to-date on the recent road closure of the hour. Within a few days it became apparent that there may be no roads to the mine. The towns closest to the mine site were discovering that they were becoming isolated, with no roads to get where they needed to go. Employees were driving detoured roads for an hour or more just to get to work, a drive that would normally take them 15 minutes. To thicken the plot, PotashCorp's regular summer maintenance shutdown was scheduled to take place. This is a time when hourly employees are unable to take holidays and sick days are strongly discouraged. How was shutdown going to take place when employees could hardly get to work?

PotashCorp temporarily suspended their operations on that Monday June 30, realizing that employees had much greater problems to deal with. But by Canada Day, operations were resumed to normal with employees being advised to call the security office before heading out to ensure they had correct travel information. Road conditions were still changing hourly, and a lot of employees were not in the clear.

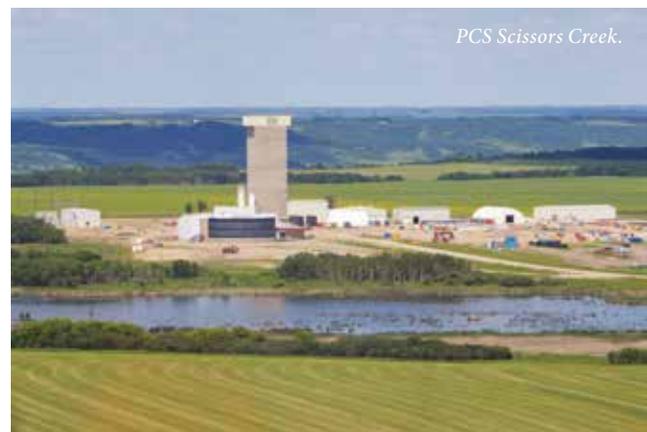
Like a bad dream, less than two weeks later on July 10, the rain clouds opened up on Moosomin, flooding the town again. Many who had started cleaning up from the first round of flooding, found themselves once again knee-deep in emergency efforts. It was like a cruel joke that threatened the sanity of the communities involved.

By this time, summer maintenance shutdown was underway at PotashCorp's Rocanville mine and not much could be done to change the situation. Employees were advised to take safe routes to work, even if it meant driving an extra hour to do so. Some who tried driving over water-washed roads found themselves in accidents that thankfully did not claim their life.

Through it all, communities banded together to fight their way through the flood-relief efforts. Mayors, councillors, town employees, and volunteers pitched in at a feverish pace to return basic needs to normal. Within a few weeks, almost all town sewer systems were running at normal capacity and best of all, roads were being repaired. Finally, after two months of detouring, mine employees were able to take their regular routes to work. Potash production was resuming to normal. Everyone could breathe a sigh of relief. ♦



*Mosaic K2.*



*PCS Scissors Creek.*

# Underscoring the importance of safety



PCS Allan.

## *Mining industry seeks to be the best*

By Melanie Franner

**T**he recent incident that saw 96 workers trapped underground for 30 hours at PotashCorp's Allan mine just east of Saskatoon has brought the issue of safety once more to the forefront of public - and industry - attention. The incident was apparently caused when a one-ton water truck caught on fire underground.

"This was the first incident in 10 years where miners were caught underground in the Allan mine," states Larry Long, general manager, Allan Mine, Potash-Corp, who adds that the mine has been operational since 1968. "From the standpoint of the mine rescue, everyone did a

great job. From an equipment perspective, we are investigating the incident to determine the cause of the fire."

As per usual, company representatives sat down with the Occupational Health & Safety (OH&S) people to review the event and look at "lessons learned".

### **Practice makes perfect**

"We regularly practice drills for these types of incidents, so when this happened, the workers just assumed it was another drill," explains Ron St. Pierre, president of United Steel Workers Local 7689. "There was no panic. Everybody

just did what they were supposed to do, which is to go to a shelter area or to create a dead-end zone area where there is no air circulation."

The burnt telephone cables meant that communication was lost with 14 of the 96 workers, necessitating that someone go down into the mine to physically verify their location. The burning equipment also affected the mine's air quality and only recently, over a week after the September 10th incident, is the mine becoming fully operational again.

Thankfully, the incident did not result in any injuries or fatalities.

According to St. Pierre, companies like PotashCorp invest significant resources in their in-house safety programs, money which he thinks could be better spent on the union's own OH&S committees.

---

*There was no panic. Everybody just did what they were supposed to do, which is to go to a shelter area or to create a dead-end zone area where there is no air circulation.*



*From left to right, Dr. Lyle Grant, co-principle investigator of the SIAST team; Madeline Press, project co-ordinator of the SIAST team; Jade Anderson, project co-ordinator of the U of S team; Chau Ha, a librarian researcher SIAST; and Dr. Valery Chirkov, co-principle investigator the U of S team.*

“We believe that spending money on any type of safety program is a good thing but that a lot of these resources could be better spent,” he explains.

St. Pierre goes on to say that the industry has made a lot of headway when it comes to reducing the number of mining injuries, but that it has yet to make progress on the number of fatalities.

“We’ve been mining potash in Saskatchewan for 50 years and we’ve had 52 fatalities during that time,” he says. “We’re averaging one fatality per year.”

### **The psychology of safety**

A new research study may shed additional light on mining safety - both the technical and psychological side of it.

The International Minerals Innovation Institute (IMI) announced \$786,000 in funding for a joint project between the University of Saskatchewan’s (U of S) Department of Psychology and SIAST. The project is intended to help make the Saskatchewan mining industry a world leader in safety.

“Safety is a primary concern in all aspects of our lives,” explains Professor Valery Chirkov, U of S, who will head up the study, along with SIAST nursing co-ordinator Lyle Grant. “Unfortunately, we don’t have a very deep, elaborative theory of safe human behaviour, or of why people continue to break the safety rules.”

Chirkov cites the example of people driving without a seatbelt or while texting. There are reasons why people chose to avoid safety measures, he says. He also cites the example of the Chernobyl nuclear power plant disaster in Ukraine.

“The atomic energy people who went in to investigate the incident coined the term ‘safety culture,’” he explains. “They found that safety wasn’t ignored so much on an individual level, but on an organizational level. And, that this played a factor in the incident. Safety culture is a pure social phenomenon.”

The two-year research study will begin with a broad screening of the global literature available on the topic and will

include an examination of six Saskatchewan mines in terms of their safety programs, practices, attitudes, and cultures. SIAST’s Nursing Department has expertise in nursing safety and the study intends to transfer that expertise over to the mining industry.

Chirkov’s team will focus more on the industry’s social, cultural and personal factors as they relate to risk behaviour and safety practices, including the theory of human behaviour and human motivation.

“This project gives us a very unique opportunity to make a very good contribution to the topic of safety - intellectually and practically,” concludes Chirkov. “This is what we are so excited about.”

The study also holds the potential for further investigation in a “Phase 2”, once the initial phase uncovers potential areas warranting further research.

Chirkov anticipates that the study will be complete in mid-2016. ♦

# QEMSCAN®: Specialized method of analyzing potash

By Dr. Lucy Hunt, PhD

Potash mining is an important contributor to the economic strength of Saskatchewan. Understanding the nature of potash resources is vital for optimizing its extraction and recovery in order to maximize the benefit from this non-renewable resource. The Saskatchewan Research Council (SRC) is at the forefront of developing new methods for ensuring accurate chemical and mineralogical analysis that help to enhance potash processing to improve product quality.

Individual crystals comprising potash ore range from very coarse, exceeding 10 centimetres, to very fine grain sizes (less than one millimetre). With the growing demand for the highest-quality potash, the mineralogical characterization of the ore can lead to significant improvements in processing efficiency of raw ore into a final product.

Quantitative Evaluation of Minerals by SCANNing electron microscopy (QEMSCAN®) is an automated mineralogy solution that provides quantitative mineral abundances, grain size distribution, mineral associations, and liberation characteristics from crushed mineral concentrates, core samples and thin sections. QEMSCAN® is most commonly used to characterize the processing requirements for metallic-based commodities and typically on finely ground samples.

The coarse grain size and water soluble nature of potash samples presents a unique challenge for accurate chemical and mineralogical analysis. Mineral specialists at SRC have developed a method for homogenising coarsely crushed material and mounting it in large volumes that provide enough material for a statistically significant sample size for reliable analysis. The

typical sample preparation method for QEMSCAN® creates a sample with a surface area that is much too small to accommodate the coarse potash grains. The newly developed sample preparation method used for potash at SRC creates an analytical surface area 10 times larger than the typical preparation method, and consequently can accommodate significantly larger grains. The unique sample preparation method requires a customized analytical protocol that has been designed specifically for potash samples.

The second major obstacle for accurate potash analysis comes from the conflict between the nature of potash and the requirements of the QEMSCAN® instrument. In order to collect accurate results, the samples must have a flat surface that has been polished smooth enough to remove sub-micron sized imperfections. Due to the water-soluble and often water-absorbing nature of potash salts and fine-grained clay minerals, potash samples require a preparation procedure that accounts for these complexities. Like the grain-size problem, considerable research efforts by SRC scientists has led to the development of specialized polishing techniques and storage solutions that maintain the pristine surface prior to analysis.

The same specialized sample preparation procedures can be applied to drill core, allowing for *in situ* analysis of the mineral liberation characteristics of potash without further sample processing. The output of the QEMSCAN® image not only allows the user to look at complex mineral relationships, but

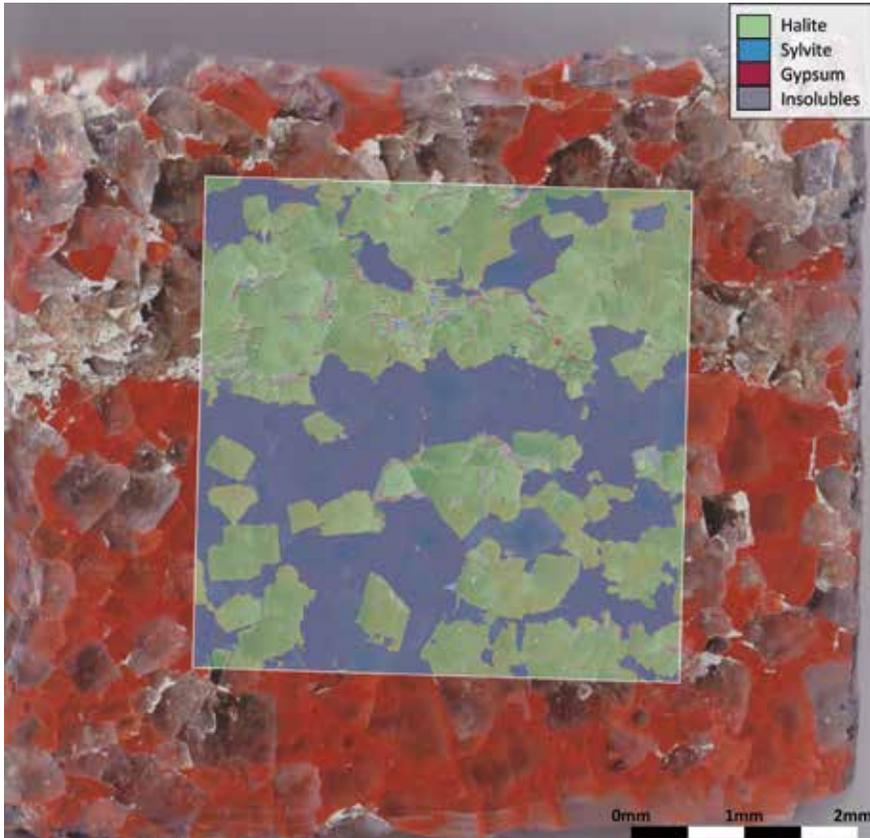


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A digital, false-colour image of potash mineralogy measured using QEMSCAN at SRC overlain on an optical image of the core. The QEMSCAN® image combines the quantitative mineral characterization with the original texture of the rock. PHOTO CREDIT: SRC

the computer-generated colour image can be overlain on a digital image of the core to allow for simplified visual identification of minerals and textures. The image above shows a section of potash core that was analyzed by QEMSCAN®. The combined image shows the red-stained sylvite matrix with clear, colourless halite crystals in coarse veins and distinct cubic crystals. Nearly all of the insoluble material, including gypsum, is concentrated along the grain boundaries of sylvite.

With the modal mineralogy of the soluble and insoluble fractions (including traditional and non-traditional potash minerals) determined directly from the drill core, and their relationships quantified, it becomes possible to see whether clays form around mineral edges, as inclusions within salt grains, as discrete pockets throughout the rock, or even as veins crosscutting the larger minerals. Given the major

impact the type, concentration and liberation of clay has on potash processing, this information can be used in establishing an optimal processing method for creating the best product possible.

Knowledge of the grain size distribution and mineral associations allows for the liberation characteristics of the salt to be constrained and an optimal crush size to be established. This may reduce both the time and expense needed for developing the most efficient, cost-effective mineral processing methods. Regular checks throughout the mining operation can ensure that any changes in the ore grain size and clay content or type are identified and understood so that extraction and processing can be adapted accordingly without significant downtime. Thus, the processing can be adapted proactively rather than reactively, which will allow for optimum production. ♦



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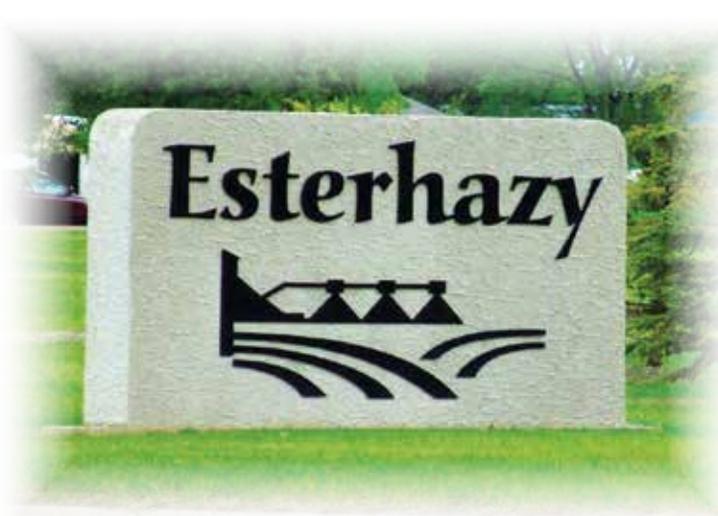
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# The potash capital

**E**sterhazy is a prospering industrial and agricultural community in the east central part of Saskatchewan, nestled between Kaposvar and Qu'Appelle Valleys. Close to 3,000 people work, raise families, and retire in town.

We are known as the “potash capital” because of the rich reserves located in the area. The Mosaic Company has three mines, and there is also PotashCorp’s mine south of town.

Esterhazy is a major service centre for the area, offering more than 80 categories of local and national franchise businesses that serve a trading area of well over 10,000 people. It is also a major centre for public services, including healthcare and education.

## ***Proud of our youth***

We have an excellent kindergarten to Grade 5 elementary school, P.J. Gillen, which has received national recognition for their physical education program. Esterhazy High School (EHS) Grades 6 to 12 provides a strong academic background for its students, where they consistently place well in the national math contest. Parkland College provides access to post-secondary education and training right here in Esterhazy.

## ***Proud of our healthcare***

Most healthcare needs are met right here in town by a dentist, doctors, medical clinic, a hospital, and a nursing home. The hospital houses healthcare providers in the areas of mental and public health, homecare, and physiotherapy. We are currently fundraising to build a new hospital and have received terrific support from the community and surrounding area. Maple Street Manor is a private personal care home. A holistic approach to wellness is provided by others, which include an optometrist, chiropractor, massage therapists, iridologists, Reike practitioner, chartered herbalist, and reflexologists.

## ***Proud of our growth***

A quick drive around town and one will see the effects of the boom in the potash industry, with new construction within residential, commercial, and industrial areas.

The town of Esterhazy developed the sylvite subdivision, offering attractive residential lots, as well as a subdivision of spacious lots for mobile homes. Private developers provide a variety of housing options by developing new subdivisions. Town council is very interested in working with developers to address our housing needs.

A new commercial area is found at the east entrance to town, with two new hotels and a restaurant. The town has created commercial lots in this very desirable location, offering high visibility, easy access to Highway 22, and close to hotels and restaurants.

In our industrial area, a few of the existing businesses have expanded Esterhazy, which is unique in that our industrial businesses offer a high level of expertise and secondary support, services and supplies for any size business, including mining, oil and gas, and agriculture.

## ***Proud of our recreation***

Enjoy our regional park all year round. Walk the nature trails in the summer and cross-country ski them in the winter. Golf nine holes (no tee times required on weekdays), then cool off in the modern, licensed clubhouse, or take a dip in the heated outdoor swimming pool. Esterhazy Arena, with its artificial ice, is a busy place in the winter for our hockey, skating, and curling clubs.

## ***Proud of our sustaining businesses***

A number of services are provided, including accountants, law firms, SGI insurance agents, investment brokerages, banking with a 24-hour ATM access, credit union, public library, post office, a weekly newspaper, a volunteer fire department, an RCMP detachment, airport and taxi service.

Esterhazy offers a satisfying blend of locally owned businesses and national franchises, such as Shop Easy, Big Way Foods, North American Lumber, Home Hardware, H&R Block, Pharmasave, PharmaChoice, The Source, Your Dollar Store with More, and the Bargain! Shop provides everything from farm, automotive, personal, and recreational products.

## Proud of our heritage

The Esterhazy Museum, built in 1910, is one of the historical focal points along with the Flour Mill, a national historic site built in 1907. The Saskatchewan Potash Interpretive Centre was built in 2007 and is the only one of its kind in Western Canada. The development and importance of the potash industry is explained with the help of interactive displays. A skateboard park and amphitheatre are also a part of the park. A five-minute drive south of town brings you to Kaposvar Church, built in 1906 and designated as a national historic event.

## Proud of our people

There are many service clubs for the area: Lions, Knights of Columbus, and the Royal Canadian Legion, just to name a few. Meet new people through the recreational clubs that offer a variety of activities: yoga, walking, golf, cross-country skiing, soccer, rugby, snowmobiling, horseback riding, bird watching, quilting, dinner theatre, and gymnastics, just to name a few. Other clubs include the Boy Scouts, Wildlife Federation, Gun Club, and 4-H clubs.

If you require more detailed information, please contact the town office and we would be pleased to answer any questions you may have. ♦



Esterhazy's Potash Interpretive Centre.



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## Saskatchewan Potash INTERPRETIVE CENTRE

- Learn how the six meter diameter mine shafts were developed 1100 meters down to the Potash ore deposit. The first successful shaft took five years to develop, through 10 rock formations, saturated with water, as well as one 80 meter quicksand formation.

- Learn how potash ore is moved from the mining area to surface, how it is refined to produce high grade fertilizer which is sold around the world.

- Book a tour for your next school field trip, senior club or professional organization. Guided tours are available May to August inclusive by contacting the Tourist Information Centre, 745-5406 8 a.m. to 5 p.m. Please contact the Town Office, 745-3942, in the off season to arrange a guided tour.

- Hours of operation: May – weekdays 8 a.m. to 5 p.m., weekend tours available upon request. June 01 to August 31 – Weekdays 8 a.m. to 5 p.m., Saturday 11 a.m. to 6 p.m., Sunday 12 p.m. to 6 p.m.



For more information please contact [town.esterhazy@sasktel.net](mailto:town.esterhazy@sasktel.net)



# Moose Jaw:



## Home base to world-class potash mines

*Belle Plaine ©Mosaic Potash.*

**M**oose Jaw, truly a city as unique as its name, is located in the agricultural heartland of Saskatchewan's economic boom, and next to one of the world's richest sources of potash. With a growing population of 35,000, the city is strategically connected to major North American markets by road and rail, and central to two world-class solution potash mines. The Mosaic Company is one of Saskatchewan's largest employers in the potash industry with a long history of community engagement and investment - its Belle Plaine mine only a short drive east of the city. Meanwhile K+S Potash Canada is building Saskatchewan's first green-field potash mine in four decades - that alone is cause for celebration! The K+S Legacy Project, costing \$4.1 billion, is one of the world's most advanced solution potash mines, and is located 58 kilometres north of the city.

Moose Jaw acts as the western anchor to the Moose Jaw-Regina Industrial Corridor, home to 24 per cent of the province's population and generating approximately 20 per cent of Saskatchewan's GDP. International heavy industrial giants have the capacity to locate anywhere in the world, but are attracted to the corridor by its many assets, including rail and highway infrastructure, major pipelines delivering natural gas and oil, wide-open spaces distanced from urban population, a sustainable supply of water, and proximity to a large workforce. Plentiful reserves of high-quality potash, low-cost natural gas, and grain crops (for ethanol production) are reasons these companies exist here.

Many of those who work in the industrial corridor call Moose Jaw "home" and all for good reason. Moose Jaw boasts one of the best small city lifestyles in

Canada and was recently named "One of the Top 15 Small Cities in Canada to Live In!" Moose Jaw really is a perfect place to raise a family with an abundance of educational, recreational, and cultural programs with top-notch schools, sports facilities, performing arts theatre, attractions and river parks.

"Moose Jaw has a quality of life second to none," says Mayor Deb Higgins.

Recruitment is a high priority for our two big potash mines, and the SIAST Palliser Campus provides them with hundreds of highly trained workers, with graduates in the areas of engineering technologies, building trades, and business administration, including co-op education work-experience programs.

Locally off-the-chart construction of single family and multi-family homes has helped to meet the demand for attainable workforce housing. Buyer con-

confidence in the city remains strong thanks to low interest rates, a strong job market and the quality of life Moose Jaw offers. Brand new neighbourhoods are being developed, including Iron Bridge, West Park, Westheath and Creekstone.

In recent years, Moose Jaw has experienced an economic boom with growth in virtually every category, including population, building permits, housing starts, investment, and job formation. Construction boomed in 2013 and 2014 with the value of the city's building permits up over 600 per cent from 2001. Capital investment, a key indicator of growth, is tied to several multi-billion-dollar mega projects driving growth unseen in the area in more than a century, including a \$100.1 million hospital; a new \$27 million mall, adding 70,000 square feet of new commercial retail inventory; and three levels of stunning new office space restored in the historic Ross School. Building lots are selling fast in Grayson Business Park, as well as in a privately owned industrial park as site selectors become more aware of local shovel-ready land costing as low as \$2.40 per square foot. New ag-value-added processing plants, power transmission lines, and expanded pipelines are making Moose Jaw a hub of activity with more good news on the horizon with a \$1.7 billion nitrogen fertilizer plant now proposed.

"Moose Jaw is definitely open for business!" reports Deb Thorn, economic development officer. "In fact, our city launched a new investment attraction incentive." The five-year commercial/industrial property tax phase-in applies an exemption to the increased assessment resulting from construction.

Building on its many Moose Jaw advantages, this city has earned its national reputation as the "the little city that could!"

**Moose Jaw -  
surprisingly unexpected. ♦**



Mosaic Place ©Mike Stobbs.



SIAST Palliser Campus. ©Erica Silzer.



Wakamow Valley Board Walk ©Erica Silzer.



# When safety and capability merge...

**T**hermal Systems is taking another step forward in assisting the potash industry by increasing its construction and maintenance services. The company is now offering full-service packages catered to the unique needs of its potash customers, as a “one-stop-shop” subcontractor.

Since 1985, Thermal Systems has been working side-by-side with the Potash Corporation of Saskatchewan (PCS), Mosaic, Canadian Fertilizers Ltd., Agrium, BHP Billiton, and K+S in potash mines all across the province. For these maintenance and new construction projects, Thermal Systems has been involved in completing the cladding and mechanical insulation work. A primary contractor at one of Canada’s largest potash mines has expressed their experience with Thermal Systems as, “It has been an absolute pleasure working with the guys from Thermal Systems. They conducted themselves in a very professional manner and carried out all the safety requirements to the highest standards.”

With the recent appointment of a new industrial division’s general manager, Thermal Systems has broadened its ideologies to better serve their customers.

Full-service, custom packages include demolition and removal, supply only, and/or supply and installation of the following:

- Cladding and roofing
- Mechanical insulation and custom-tailored removable/thermal blankets
- Metal decking
- Daylighting (Solatube tubular daylighting device and Kalwall translucent panels)
- Specialty products (louvers, doors, and corrosive-resistant FRP fiberglass panels)

“We have the flexibility to work multiple trades,” said Glen Kerr, industrial division manager at Thermal Systems. “We also have the capability to subcontract specialty work if needed.”



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Safety is our number one core value. We believe the formula to excellence resides in a personal commitment to safety through progressive HSE policies, procedures and a united company culture.

Connect with our team of experts and we will assist with your construction and maintenance needs.

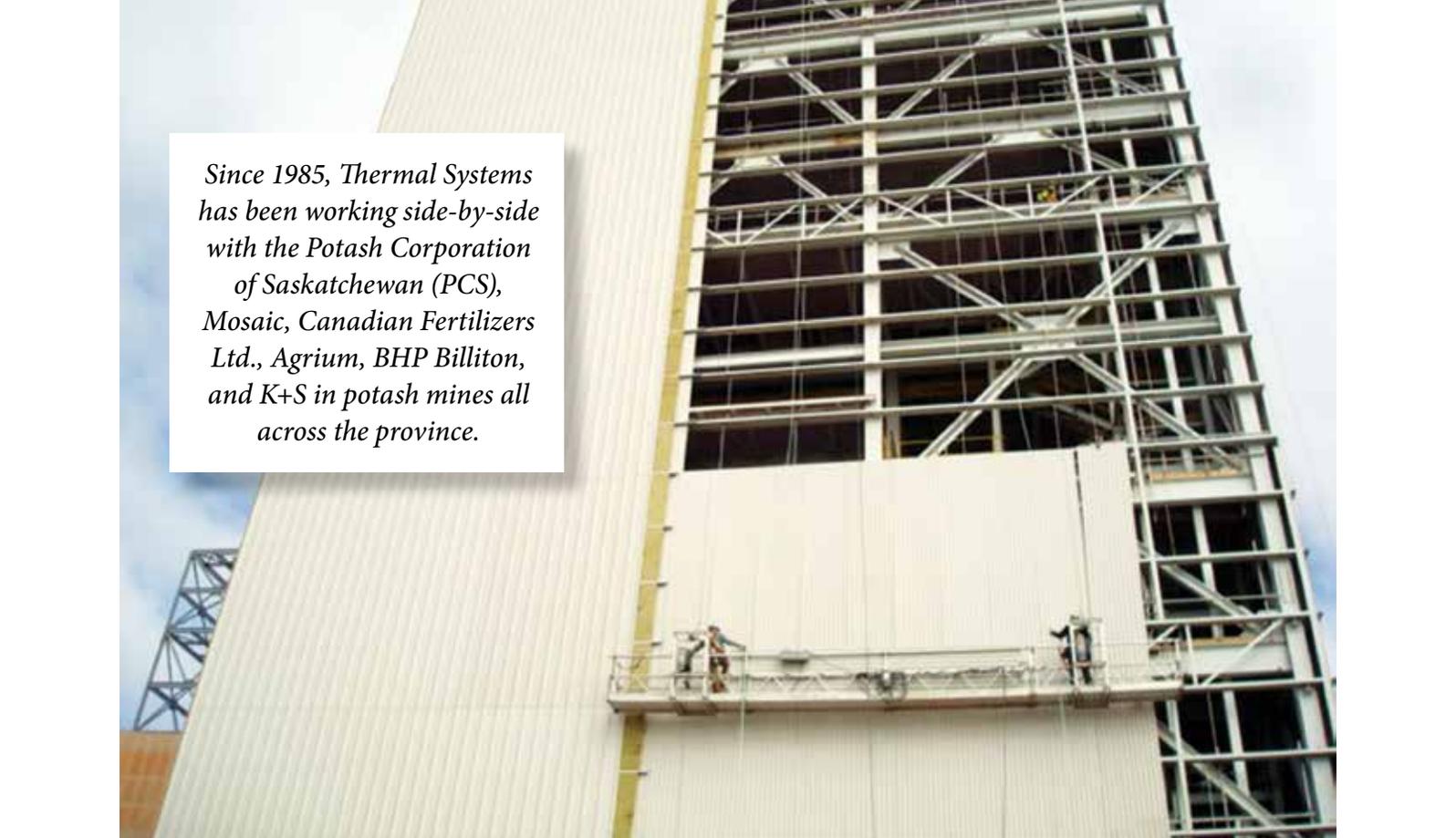
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*Since 1985, Thermal Systems has been working side-by-side with the Potash Corporation of Saskatchewan (PCS), Mosaic, Canadian Fertilizers Ltd., Agrium, BHP Billiton, and K+S in potash mines all across the province.*

By providing more services, custom-designed, and tailored to the needs of the potash industry, Thermal Systems can be more valuable for customers by maximizing resources and mitigating risk. Centralizing large scopes to one contractor reduces administration costs, allows for easier scheduling, and less manpower on the jobsite that results in overall project cost savings and lowered risk. Most importantly, safety procedures can be consistent and kept to a high level throughout all scopes of work on the project.

Along with the full-service package, the company remains committed to safety, hiring local personnel, and executing the projects to exceed customers' standards, with a goal of being the best subcontractor onsite.

## **Safety**

Thermal Systems believes the formula of excellence resides in a personal commitment to safety through progressive policies, procedures, and a united company culture.

"They [Thermal Systems] diligently strive to encourage safety in the workplace and respond appropriately to safety issues and concerns," said another potash client.

Safety is Thermal Systems' number-one core value. The company maintains an impressive safety record with a program that continues to evolve to meet the changing standards, regulations, and owner requirements.

## **Local manpower**

For past projects, typically 60 to 70 per cent of Thermal Systems employees were residents of Saskatchewan. Crews were generally combined with personnel from Western Canada and local residents.

"We now strive for 100 per cent local hire within the daily travel radius," said Kerr.

---

*Safety is Thermal Systems' number-one core value.*

---

## **Execution excellence**

With 30 years of experience in the potash industry, Thermal Systems continues to focus on project execution excellence. With exceptional local staff and field crews, Thermal Systems is able to assist clients by providing field-ready solutions for their specific expansion or maintenance projects.

Thermal's crews were described by a potash project engineer as "competent, experienced in an industrial setting, well trained, and alert."

The full-service packages will not only provide customers with a subcontractor who is trades flexible, but also will ensure the high-quality workmanship and safely executed projects that Thermal Systems has always been known for. ♦

# The evolution of MacLean Engineering includes you

By Laura Gregorini

**M**acLean Engineering marks its 40th anniversary in 2014.

Founded in 1973 by Don MacLean, MacLean Engineering & Marketing Co. provides engineering solutions to the global underground, hard rock, and potash mining industry.

Never stagnant, four decades of progress come from industry engagement, collaboration and innovation.

MacLean Engineering is known by major industry players for supplying fleet equipment with superior performance capabilities, reliability, and cutting-edge design.

MacLean is a technical innovator and his vision and willingness to create and adapt new technologies not only drove his company's success in the international market, but also greatly influenced the underground mining equipment scene.

"We've come this far because the mining industry supported us," says MacLean, a professional engineer and long-time miner.

MacLean said his initial mandate was to build a mining manufacturing company that combined skills and human resources, revenues, and mineral resources of Canada to produce additional wealth in the country.

"And that's what we continue to do," says MacLean, whose son Kevin has since taken over the reigns of the company.

The MacLean product line includes equipment ranging from ground support and ore flow facilitation to the complete Mine-Mate series of utility vehicles.

Corporate headquarters is located in

Collingwood, Ont., while the design and manufacturing of industry-leading products occur at three manufacturing facilities in Ontario: Collingwood, Barrie and Owen Sound.

As MacLean Engineering's underground mining product line-up expanded, so too did its customer outreach. In order to remain close to its customers, MacLean Engineering opened facilities across the country, in Val-d'Or, QC; Sudbury, Ont.; Thompson, Man.; and Creighton and Saskatoon, Sask. And abroad, the company operates out of South Africa, South America, Mexico, and Australia.

MacLean Engineering's product line is

ever evolving.

In 2008, the company entered a new market with its MacLean MV (Municipal Vehicle). The MacLean MV is ideal for commercial and municipal sectors that require a vehicle to carry a large variety of attachments for multi-functional purposes.

The MacLean MV utilizes a wide range of snow removal attachments in the winter, and then converts to grounds and road maintenance applications in the summer. To support the new business venture, MacLean Engineering acquired Kanlan Attachments, which designs and manufactures a unique range of attachments. The business now op-

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Bi-directional lube truck being commissioned in New Brunswick.



Cab forward unit being readied for shipment to Saskatchewan.



Don Maclean (right) and John Chomyshyn on a fact finding tour in northern Manitoba.



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Continental Mine & Industrial Supply is an application focused business based in Saskatchewan. We specialize in solving tough problems with practical solutions. Our mission is to provide 100% Customer Satisfaction for all requirements relating to the Mining, Construction and Industrial Business Sectors. This will be achieved by partnering with our customers and suppliers to ensure the most cost effective solution ranging from retail supply of equipment and components to optimizing standard equipment and ultimately providing a custom designed solution to meet their unique operational requirements.



erates out of MacLean Engineering's Owen Sound, Ont. facility.

Momentum continued when a major potash company approached MacLean Engineering to develop equipment that would respond to the challenges of the industry.

MacLean Engineering delivered its first two low-profile prototype vehicles to Saskatchewan in 2010. Working closely with its potash partners throughout the prototype period, with a view on constant improvement, MacLean Engineering developed a line of vehicles that feature low maintenance, heavy-duty industrial suspensions, with operator comfort and safety in mind, offering best-in-class ride quality. Designed to meet industry demands, the vehicles are designed and built to operate in the low back haulways, production panels, and belt lines.

MacLean Engineering now serves and supports equipment in the potash industry from eastern to western Canada, from standard cab bi-directional lube trucks, scissor lifts and pipe handler attachments in New Brunswick, to lower profile cab forward lube trucks, water and lube service vehicles in Saskatchewan.

As well, MacLean Engineering is set to launch its cassette truck system for the potash industry later this year.

And the story continues. MacLean Engineering will continue to grow and diversify, while leading the way in industry safety, reliability, and productivity. ♦

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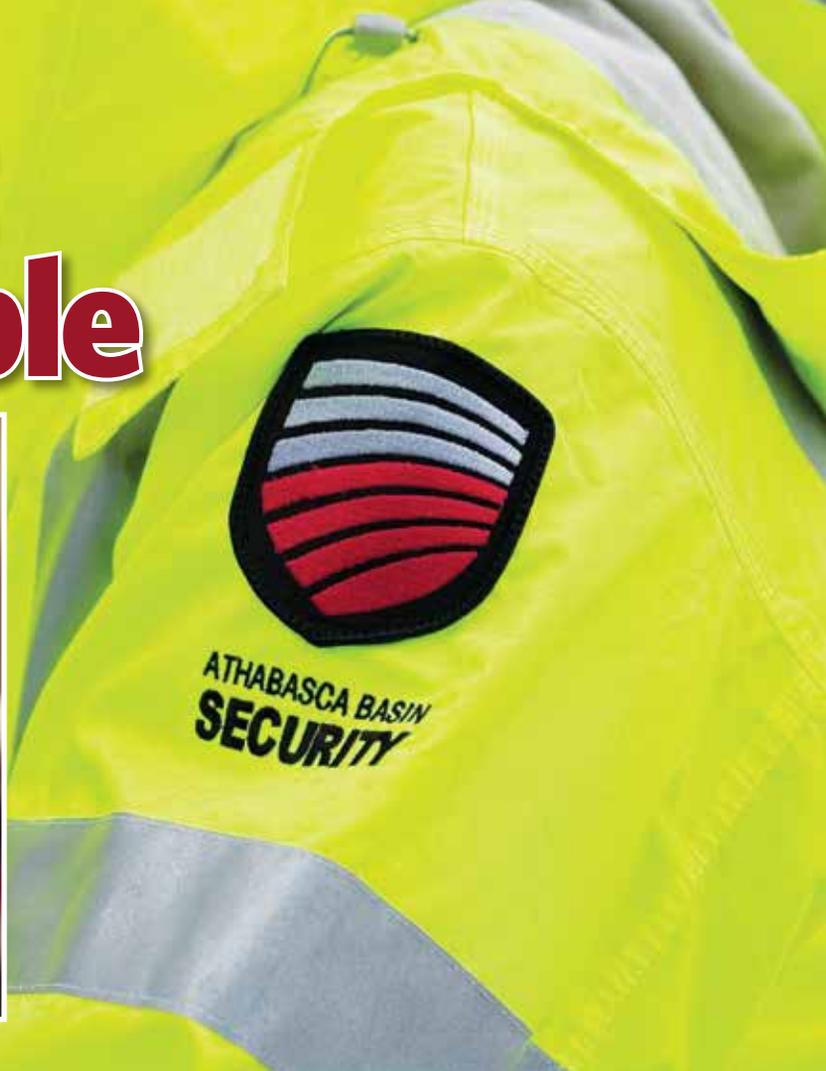
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# Investing in people



By Jillian Mitchell

**A**ward-winning security company Athabasca Basin Security (ABS) puts people first—always. Founded in 2002, the 100 per cent aboriginal-owned company recognizes that the future becomes sustainable when there is investment in people, and that in turn, successful people drive economic development. As a result of their people-first motto, the company has both attracted a great team and has paid out incredible dividends.

Founded as a physical security company for industrial sites across Saskatchewan and Alberta, ABS boasted an initial goal of sustaining employment for the residents of the seven northern communities it served. Today, the company has exceeded their initial expectations, currently employing 150 people and serving some of the largest mine companies in the area, including Mosaic, PotashCorp Saskatchewan, and BHP Billiton.

While many might associate security with protection or enforcement, ABS's philosophy focuses more on prevention. "Safety is a huge focus for us and for all of our clients," says Ron Hyggen Jr., the company's CEO. "So this year we got involved with Mission Zero Saskatchewan, which is a workplace safety [initiative]

to reduce any workplace injuries or lost time at any site. We've gone 381 days with no lost time accidents (LTA) companywide and have gone 738 days with no LTA in Alberta."

Their commitment to client requirements has garnered the ABS team valuable lessons in adapting to an ever-changing market, and the company has taken on opportunities not only to expand their business, but to grow with the client and adapt their skill set to suit the needs of the job at hand.

"In 2006 we moved into southern Saskatchewan. That's when we met Mosaic," says Hyggen. "We started there, opening and closing a gate, and at that time there was no such thing as security down there. Now it's a much different place—we use video surveillance, everybody has card access, and if there's an emergency, we know where people are."

Gone are the days of opening and closing gates. In recent years, the company has answered the call to be more diverse in its approach to security services. In addition to what one might expect from a security company, ABS has added end-to-end surveillance, drug-sniffing dogs, paramedic duties, first aid/CPR training, hearing and lung testing, drug and urine testing, and is

heavily involved in emergency response teams at sites like Mosaic.

While 2014 saw ABS's business grow and expand, so too did its commitment to community involvement. The company was a major sponsor of the St. Paul's Hospital Foundation event, Driving Fore Prostate with Mike Babcock and friends in Saskatoon, an event in support of the Leslie and Irene Dubé Urology Centre to bring awareness to prostate cancer. The two-day signature event featured a community breakfast followed by a charity golf tournament.

Hyggen shares that the company is happy to be in a spot where charity can take the spotlight more regularly. "We donated \$25,000 that brought in Mike Babcock, Tesa Virtue, and Scott Moyer. Overall we've raised \$252,000 for the centre. It's something different that we haven't done in the past, but we're finally getting to the level where we can actually start giving back rather than just focusing on growth." ♦



## KPMG's Mining practice

For today's mining companies, dealing with uncertainty has become a way of life. Asset management, commodity price volatility, social license, and financing strategies are just some of the issues that introduce challenges and opportunities into business decisions.

KPMG's Mining professionals assist organizations through all stages of the mining project lifecycle, from exploration to production.

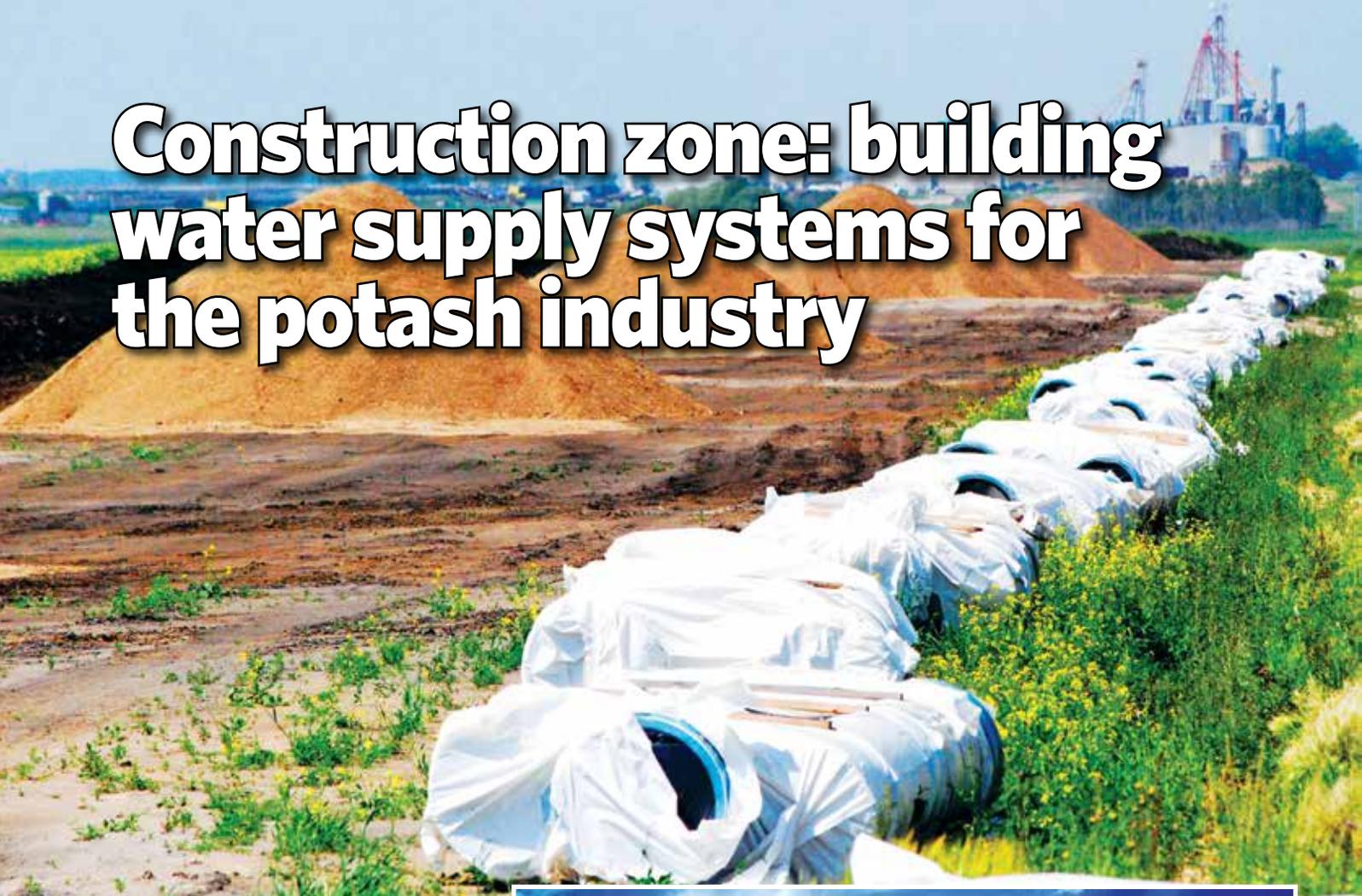
For more information on how KPMG's Mining professionals can assist your business, please contact us at 306-934-6200.

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# Construction zone: building water supply systems for the potash industry



**B**uilding water supply systems for the potash industry has been a major focus for SaskWater in recent years. SaskWater is Saskatchewan's commercial Crown water utility helping industry and communities access reliable and professional water and wastewater services.

SaskWater owns and operates non-potable water systems in the areas surrounding Saskatoon, Buffalo Pound Lake, and Regina. Over the past five years, SaskWater has focused on three major projects for three potash companies to help build our growing provincial economy and the expanding potash industry.

Beginning in 2009, SaskWater has worked with The Mosaic Company to provide non-potable water for their solution potash mine near Belle Plaine. To accommodate an expansion at the mine, SaskWater built a new pump station and intake on Buffalo Pound Lake and 18 kilometres of pipeline to connect with Mosaic's Belle Plaine mine site.



*750 mm pipeline install.*

SaskWater had existing infrastructure in the area servicing Yara Belle Plaine, Terra Grain Fuels Inc. and the Canadian Salt Company. Construction for the Mosaic expansion was completed in fall 2010, and the system was commissioned in 2011. Mosaic Belle Plaine is now SaskWater's largest potash customer by volume of water delivered.

K+S Potash Canada signed water supply agreements with SaskWater for potable water in 2011 and non-potable water in 2012 for their new Legacy mine site. The K+S Legacy Project is the first greenfield solution potash mine in Saskatchewan in nearly 40 years.

SaskWater completed construction of a new non-potable water supply system to the K+S site in 2012. Located 45 kilometres north of Moose Jaw, the Legacy mine also gets its water from Buffalo Pound Lake. SaskWater constructed a new pump station on the north shore of the lake, a new intake structure, metering

station, access road, and 6.5 kilometres of pipeline.

By the end of 2012, the new system was operational, and SaskWater began supplying non-potable water to the mine. Potable water service to the site also started in 2012 with the completion of another pipeline, a re-chlorination facility and a connection from SaskWater's Buffalo Pound North system. SaskWater also recently completed works to supply potable water to the Legacy Mine construction camp.

BHP Billiton Canada Inc. (BHPB) is working with SaskWater to construct a water supply system for their proposed potash mine near Jansen Lake. This is a conventional shaft mine, and once operational, will be the biggest potash mine in the world.

SaskWater signed the water supply agreement with BHPB in September 2012 and broke ground on the water supply system that December. Construction

of SaskWater's largest financial project ever continues through 2014. It is on schedule to be completed in 2015.

The water supply system consists of a pump station/intake at the Zelma Reservoir on the Saskatoon Southeast Water Supply (SSEWS) system, 94 kilometres of pipeline and a booster station. Upgrades to the SSEWS canal are required to maximize canal flow.

Going back more than 40 years, beginning with what is today PotashCorp's Cory mine, SaskWater has a long relationship with the potash industry. The corporation's other potash customers include PotashCorp Cory, Allan and Lanyon, and Mosaic's Colonsay and Agrium at Vanscoy. Supplying safe and reliable water services to these customers, combined with the new projects in recent years, demonstrates SaskWater's high level of confidence in the industry for the benefit of all partners. ♦

## SaskWater and Potash. Growing Together.

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A large, circular, elevated industrial thickener tank is the central focus of the image. The tank is light-colored with a blue-painted top edge. It is situated within a complex industrial facility with various pipes, walkways, and structural elements visible in the background. The lighting is bright, highlighting the metallic surfaces and the surrounding infrastructure.

# Westpro Machinery, your potash process technology partner

*Westpro TH138HC 42m (138ft) diameter elevated high-capacity thickener at a potash processing plant in Saskatchewan.*

**W**estpro Machinery Inc. is an innovative Canadian mineral processing technology company supplying a full range of process equipment to the mining, aggregate, and wastewater industries. Headquartered in Western Canada, Westpro has a depth of experience in the Canadian potash sector and has equipment operating in potash processing plants around the world.

From crushing run-of-mine ore through to brine solution recovery, Westpro manufactures a comprehensive range of process equipment and has the capability to design and manufacture turnkey modular processing plants. The company's customer-focused staff will work with you throughout the design process to develop equipment that is custom configured to deliver optimal performance in your process. Added services, such as equipment installation, commissioning, reconditioning, spare-parts, and process

consulting ensure that customers are delivered a complete process technology solution.

Westpro's equipment is proven to deliver excellent service in the potash industry, with installations in processing plants of all three of the largest potash producers in Canada. The company's mineral processing expertise and industry know-how are key advantages for customers looking for equipment such as attrition scrubbers, conventional flotation cells, grinding mills, and high-capacity thickeners.

Attrition scrubbers are a key step in the potash concentration process, increasing potash recovery rates by liberating clays and other insoluble material from potash ores prior to flotation. Westpro attrition scrubbers utilize the action of dual propeller mechanisms with opposing axial turbine propellers to produce the vigorous agitation required to ef-

ficiently achieve this liberation. These scrubbers are available in two, four and six-cell models, with engineered baffles between cells to optimally direct the flow of the slurry through the unit. Available capacities ranging from 0.024m<sup>3</sup> to 120m<sup>3</sup> make Westpro's product line one of the largest attrition scrubber offerings in the industry.

Westpro's conventional flotation cells have proven to be particularly popular in potash processing applications. These are external-aeration mechanical cells and are available in cell sizes from 0.08m<sup>3</sup> to 14m<sup>3</sup>. Westpro also manufactures a line of flotation tank cells with cell capacities from 10m<sup>3</sup> to 300m<sup>3</sup> for larger process plants. The company's experienced team of engineers analyzes each potash concentration application individually to design a customized flotation circuit that will provide the required KCl recovery rate in the most cost-effective manner.

# Your Process Technology Partner

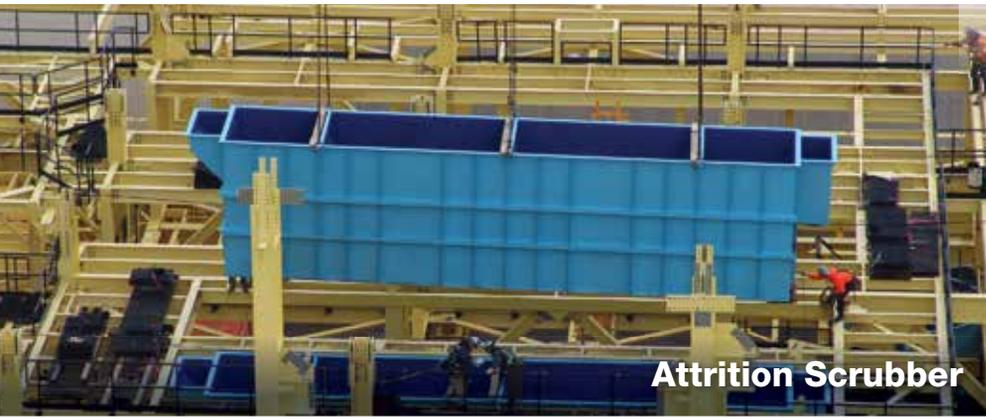
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Bank of Westpro FL300 8.5m3 (300ft<sup>3</sup>) Conventional Flotation Cells at a potash processing plant in Chile.

Nowhere is Westpro's commitment to innovation more evident than in the design of the company's high-capacity (HC) thickeners. Westpro's new generation hydraulic thickener drives are among the most efficient in the business, delivering superior power-to-torque ratios and powering both rake drive and rake lift from a single hydrau-

lic unit. Feedwell designs created using CFD technology enhance the processes of flocculant mixing, feed dilution, and feed distribution to improve dewatering performance. Innovations such as these make Westpro thickeners a premier option for dewatering solution recovery applications in the potash industry.

All of Westpro's equipment is designed with an emphasis on customer satisfaction and heavy-duty construction built to last in the demanding operating environments of mineral processing plants. For over 25 years, the focus on quality has been a cornerstone of the company's philosophy and is evident in the performance of every Westpro machine.

Delivering equipment to projects in 20-plus countries around the world (including the potash-producing centres of Canada, Chile, and Russia) has allowed Westpro to develop global procurement and fabrication partnerships, as well as industry-leading expertise in mineral processing technology. Regardless of the project scale, complexity or location, Westpro is ideally positioned to assist you with your potash process technology requirements.

Contact Westpro today by email at [sales@westpromachinery.com](mailto:sales@westpromachinery.com), by phone at 1-250-549-6710, and visit us at [www.westpromachinery.com](http://www.westpromachinery.com). ♦

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# A different kind of training

For the most part, the potash industry have been leaders in ensuring their ERT teams and employees have up-to-date training in various types of safety and rescue training, including confined space rescue, fall protection, high-angle rescue, and lock out/tag out, just to mention a few.

One source of danger that may have been overlooked at many sites is the potential for incidents working around water. Most, if not all, potash sites will have tailing ponds or holding ponds where workers can be at risk. Proper training and equipment are required for both working around these areas, and rescue procedures, in case of an incident.

Proper work protocols should be put in place, including:

1. Identify the hazards of working near a water source.
2. Complete a safe work procedure.
3. Work safely and be able to initiate emergency procedures should an accidental water entry occur, for both themselves and co-workers.
4. Proper use of water-related PPE.
5. Use of basic water rescue equipment.

Actual rescue team procedures and equipment would, of course, be more advanced and should include professional training.

For more information on safe working near water sources and water rescue courses, contact:

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219 Main Street  
Langham, SK S0K 2L0  
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# Keep calm and consult on

## *Tsilhqot'in Nation v. British Columbia* [2014 SCC 44]

By B. Bruce Harrison, lawyer, McKercher LLP Saskatoon

The Supreme Court of Canada in *Tsilhqot'in Nation v. British Columbia* recently recognized the existence of modern-day aboriginal title for the first time in off-reserve lands. The Tsilhqot'in Nation is a semi-nomadic group occupying a remote area of west-central B.C., nestled at the base of the Coast Mountains. The area was the site of considerable conflict between First Nations and European settlers during the 1860s, which resulted in the Tsilhqot'in's traditional territory remaining largely isolated for decades. The law provides that aboriginal title was not automatically extinguished at confederation and can be proven to remain effective over an area if: *i*) title was not ceded through treaty; *ii*) the First Nation has sufficiently and continuously occupied the territory; while *iii*) exercising a degree of alienable control.

The Tsilhqot'in decision has triggered considerable commentary in relation to existing and planned projects across Canada. In particular, the Court's suggestion that projects may be cancelled where aboriginal title is proven caused blood pressure to rise across the business community. But, hysteria aside, the real crux of the decision is where Chief Justice McLaughlin noted "Governments and individuals proposing to use or exploit land, whether before or after a declaration of aboriginal title, can avoid a charge of infringement or failure to adequately consult by obtaining the consent of the interested aboriginal group". Clearly, early engagement of potentially

affected First Nations is the name of the game.

Consultation to obtain consent is not a necessary evil, it is just good business. Gone are the days where the economic benefits of a project offered such a bountiful carrot that the views of local naysayers were disregarded. Now, obtaining a social license is as important as any government-issued permit to operate. Some mine developers are ahead of the law, as many have entered into agreements with First Nations on treated and non-treated lands without the compulsion of government or the courts. The

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*The Tsilhqot'in decision has triggered considerable commentary in relation to existing and planned projects across Canada.*

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benefits of early support are obvious: a motivated, accessible workforce; project certainty for financial markets; and an attractive platform for government officials to champion. One need only look at the uphill battle that proponents have fought when attempting to develop projects without First Nations' support to see these benefits in action. The smart money, as well as ethical investment funds, will always follow proponents with a record of engaging local stakeholders ahead of those without.

Acknowledgement of aboriginal's rights is not a uniquely Canadian issue. The suggestion that this decision puts Can-

ada in a competitive disadvantage for investment dollars ignores the fact that unresolved claims exist throughout Central and South America, Australia, Africa and Southeast Asia. The Supreme Court of Canada cited in its reasoning the Australian high court decision of *Western Australia v. Ward*. Similarly, the ill-fated Bill C-300 demonstrated that Canadian-based mining companies will be subject to the same scrutiny regardless of their ore body's locale. Courts and governments worldwide are clearly attempting to reconcile historical rights to the land with modern legal concepts in response to public opinion on the issue – a sentiment that is not contained by borders.

In Canada, the duty to consult lies with the Crown, but for practical purposes is typically delegated to proponents as part of their application to operate. However, governments will retain a significant role in the consultation process going forward. Royalty sharing, infrastructure investment and skills-training programs are all tools within the government bailiwick to facilitate project development. These may be particularly useful for potash developments, where initial investments bear fruit for a relatively longer period of time than in other industries.

The Tsilhqot'in decision is, at least, a strong indicator of where industry is trending in Canada. Proponents that can appreciate the benefits of First Nation's consent at the outset of their projects will certainly benefit from such efforts in the long run. ♦

# Resourceful

McKercher LLP has a specialized team of lawyers and support staff dedicated to providing advice to local and international clients in the oil patch, potash industry and other natural resource sectors. Our mining and natural resource practice includes specialized mining agreements, acquisitions & dispositions, financing, regulatory issues, First Nations & government relations, and litigation.

With offices in both major cities in the province, we are strategically positioned to take advantage of all that Saskatchewan has to offer. We are proud of all that we have accomplished and consistently work towards serving our clients with innovation and integrity. With roots tracing back to 1926, we know our province and the intricacies of thriving in the business landscape of the prairies.



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# Helping to grow our economy, one successful project at a time

## *Frontline Industrial Solutions*

Potash mining and processing has undergone significant growth and expansion in the last decade, creating many capital project management and execution challenges. Through the provision of project and construction management services, Frontline Industrial Solutions has been able to contribute to industry revitalization and expansion. Our unique service offering includes (but is not limited to): quality

control, cost control, and safety management, as well as supervision and complete project engineering.

Frontline's core team is comprised of experts specializing in both potash mining and processing, and is well suited to assist the industry with self-execution of large capital projects. We have provided project management services to most of the operating potash mines in Saskatchewan;

we take pride in supporting our clients in achieving their success, and we exhibit that by our commitment to add demonstrated value. With our combined expert knowledge of the mining sector (including engineering, construction, codes and standards, industry best practices, health and safety requirements, and cost control), and diligence in project management, we offer a truly unique, client-centered project management approach.

Frontline has been instrumental in supporting a host of projects. Here are a few key examples of projects that we've been involved in:

1. Drill program - we delivered a pilot-hole drill program, on budget and ahead of schedule using our in-house project controls, project management, and safety management services.
2. Fresh and feed water tank replacement project - we provided project and construction management services.
3. Construction of a concrete hot thickener for a crystallization circuit - we provided project management, construction management, and cost control services. Figures 1 and 2 show the massive thickener under construction.
4. Installation of a transfer reclaim system - we provided construction management, field coordination, and project engineering.

Frontline has established itself as a company with the depth and expertise to manage both large and small capital projects. Incumbent technical requirements and complex schedules have challenged us to develop a facility for effective risk management, translating into reduced negative impacts to project progress, budget, and down-stream operability.

Our company strength stems from our core team experience; this allows us to apply a customized level of diligence and rigour with respect to project management in order to best serve our client and their specific project needs. Maintaining breadth in our competency of project services creates an attractive scenario for project management professionals and related services, as the staff can continue to refine their basis of knowledge with support from peers. This ability to attract and retain high-performance specialists is key to our ability to provide the highest quality services to help clients manage and control their capital and maintenance projects.



Figure 1.

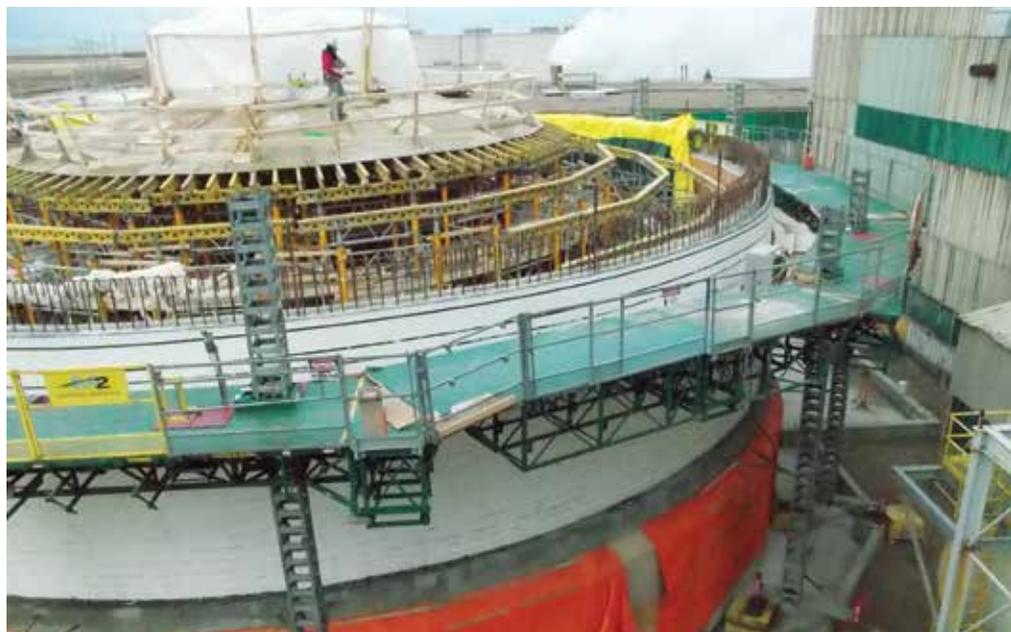


Figure 2.

Recently, Frontline has diversified its service offering to meet a broader range of client needs. We now offer asset management and engineering services to complement our project, construction and agribusiness services. We invite you to contact us to discuss your needs related to project management, engineering, and asset management. We would also like to thank The Mosaic Company for the use of the photos of their thickener during construction.

Frontline Industrial Solutions has been providing project specialists to the mining industry for nearly a decade, and many of our team members have been significant contributors to the potash industry for over 20 years. We are located in Saskatoon, where we focus on supporting both capital projects and sustaining capital initiatives in Western Canada.

You can contact us at (306) 956-3350, or at [admin@frontlineindustrial.com](mailto:admin@frontlineindustrial.com). ♦

Located just south of Circle Drive on Highway 11, Grasswood Junction is one of the province's busiest crossroads.



# Des Nedhe forges new paths

**B**ased out of Grasswood Junction on the outskirts of Saskatoon, Des Nedhe Development's offices are buzzing with activity. The 135-acre Grasswood property, owned by English River First Nation (ERFN), is home to Des Nedhe's diverse group of businesses in mining, construction, retail, property management, and real estate development.

It has been an exciting period at English River's economic development arm, with significant changes in both business organization and management.

"Des Nedhe is focused on developing long-term sustainable businesses," says Gary Merasty, who took on the roles of president and chief operating officer in 2013. "We know what's important to our province's mining companies - safety, reliable service, competitive pricing, collaboration with First Nations - and are excited to expand on our existing part-

nerships and develop new ones across Saskatchewan."

Merasty, formerly vice-president of corporate responsibility and communications at Cameco, is just one change to a management team that has added significant strength and experience. Former English River Chief and long-time council member Alfred Dawatsare was named chief executive officer of Des Nedhe in May of 2013. His hiring of Merasty brought extensive

experience in leadership and economic development, as well as essential knowledge of mining operations and government and industry relations.

Shane Shircliff, Rob Stanger, and Jamie Dickson joined Doug Reynolds and Kathy Berg soon after to round out an ambitious executive team with a wide variety of skills, strengths and experience, and a commitment to exploring new prospects across the province in multiple sectors.



L to R: Shane Shircliff, VP corporate development & finance; Kathy Berg, VP corporate services; Gary Merasty, president and COO; Alfred Dawatsare, CEO; Rob Stanger, VP construction & mining; Jamie Dickson, VP legal; Doug Reynolds, VP corporate & community relations

## **Tron Construction & Mining - Building the future**

Des Nedhe's largest business line is its construction & mining division, which includes Tron Construction & Mining (formerly Tron Power), a company that has nearly three decades of experience providing infrastructure and construction services to the mining industry. There has been much growth and activity at Tron since English River acquired its assets and management in 1997.

Tron teams have contributed to the development and maintenance of uranium mines and mills across Saskatchewan's northern Athabasca Basin region, and, more recently, at potash mine sites in the province's southern half. A commitment to aboriginal training has built a substantial northern workforce and contributed to economic growth and wellbeing in many remote communities.

Rob Stanger was named vice-president of Des Nedhe Construction & Mining

and president of Tron in August of 2013. Stanger has been involved in mining for over 30 years, including a lengthy stint with Cameco where he was involved in numerous projects, heading process development and regulatory compliance, civil design, major projects, and more.

Vice-president David Hemeon and senior project manager Garnet Senger complete Tron's executive, both with significant and wide-ranging experience in mining, construction, project management, and aboriginal workforce development.



*Tron teams have been providing infrastructure and construction services at Cameco's Key Lake Mill for nearly two decades.*

## **Minetec - Full-service mine supply**

A little further down Grasswood Road, Minetec (est. 2002) provides products and services to mining operations across Saskatchewan. Acquired by English River through Des Nedhe in 2009, Minetec is continually modifying and increasing its product line and inventory in order to meet the changing needs of companies

# MINETEC

## FULL SERVICE MINE SUPPLY

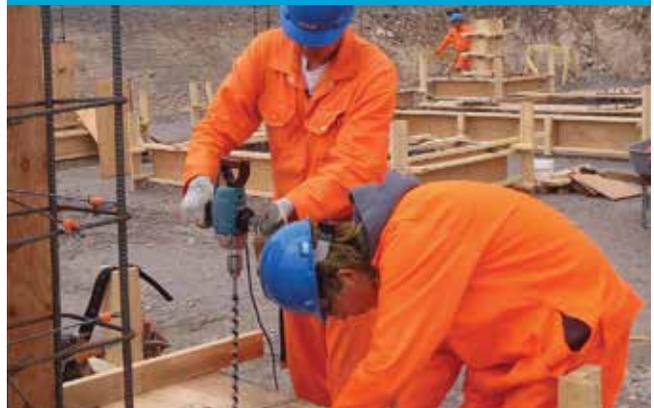


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An English River First Nation Company

# TRON

## BUILDING THE FUTURE



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An English River First Nation Company

Tron teams at work in the Saskatchewan north.



*L to R: Damon Tupper, sales manager; Ron Collette, vice-president; Lyle Gareau, territory sales representative; Marc Collette, operations manager.*

serving the mining sector. The company boasts the largest drill steel inventory in the province and unique custom, rebuild, recertification, and support parts in stock programs.

Minetec vice-president Ron Collette has dedicated his entire career to the mining industry, as mining engineer, project manager, executive, entrepreneur, explosives distributor, and more. Over the

years, he has gained a wide range of expertise in both underground and open pit mines and large-scale contract management, overseeing feasibility studies, mine and quarry management, procurement, and safety.

Marc Collette, Damon Tupper, and Lyle Gareau add extensive operations, procurement, inventory management and warehousing experience. The team's

distinct combination of hands-on experience in construction, mining, engineering, direct mine supply, and procurement policies and procedures enables Minetec to provide top-quality services and advice for the multitude of complex project conditions faced by the province's mining industry.

### **A continuing plan for growth**

"Our team and our companies recognize this as a tremendous time of opportunity in the mining and industrial sectors," says Merasty. "By building high-performing companies and training First Nations employees, we can form true partnerships with strong, successful and forward-thinking resource companies.

"The first step was to ensure Des Nedhe and our member companies are ready for the future. Today, we have the people and infrastructure in place and are looking forward to continued growth and development." ♦



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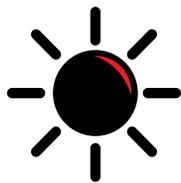
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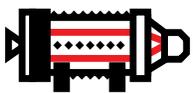
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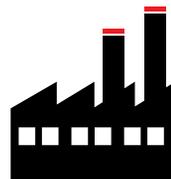
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# Norwest - A new commitment to the potash industry

The Norwest Saskatoon office, which opened on May 1, 2013, is located in the Broadway neighbourhood, situated close to the downtown business sector and the University of Saskatchewan. Professional

services offered from the Saskatoon office include geotechnical engineering, mining engineering, geological and hydrogeological field services, hydrology design support and environmental support. In addition to these direct offerings, our Sas-

katoon professionals work closely with other Norwest offices in Calgary, Vancouver, Salt Lake City, and Denver to provide the full suite of Norwest's services.

Norwest is a leading international energy, mining, and environmental consultancy.



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For over 30 years we have offered a wide range of services to the world's leading mining and energy companies, financial institutions, electric power producers, governments, legal firms, and regulatory agencies. Norwest's worldwide client base is served through offices located in the U.S. and Canada, and representatives in several international locations. Norwest's 250 professionals are experienced in every aspect of mining and energy project development – from initial exploration through closure. Our commitment to potash is emphasized by the new Saskatoon office, but Norwest also supports the potash industry in Utah, New Mexico and Arizona through our offices in Salt Lake City and Denver.

Examples of our recent work in the industry include:

- Field project management for exploration drilling programs, including a 25-borehole program, a 19 drill-hole program and a 39 drill-hole program.
- Project management for a freeze ring drilling program, totaling 55,667 metres of drill hole.
- Installation and testing of an industrial water supply delivering 32 litres per second.
- Injection testing and long-term monitoring to obtain baseline Interlake formation aquifer properties for future site injection wells.
- Analysis of how groundwater pressures may be causing shaft liner failures.
- Groundwater modelling to assist in mine water inflow issues.
- Operations and maintenance management support for a Canpotex speed run.
- Follow-up operational support of an underground potash mine.
- Technical evaluation of seepage from a waste impoundment.
- Evaluation and modelling of using reflux classifiers in potash processing.
- Alternative study of a shaft versus incline for an underground potash mine.
- Preliminary study for surface-mineable potash deposit.

- Resource evaluation of a brine-type potash deposit.

In addition to our extensive experience in the potash industry, we offer expertise in other types of evaporite mining, which are very similar to potash in terms of both mining and processing methods. Norwest personnel have decades of experience with bore mining, continuous haulage, ground support in bedded deposits, conveyors, as well as broad experience with a wide variety of gravity

mineral separation methods and material handling.

Norwest is unique in that most of Norwest's senior staff has held engineering and management positions in mining and energy companies prior to entering the consulting industry. This allows us to offer an innovative yet practical approach to our assignments.

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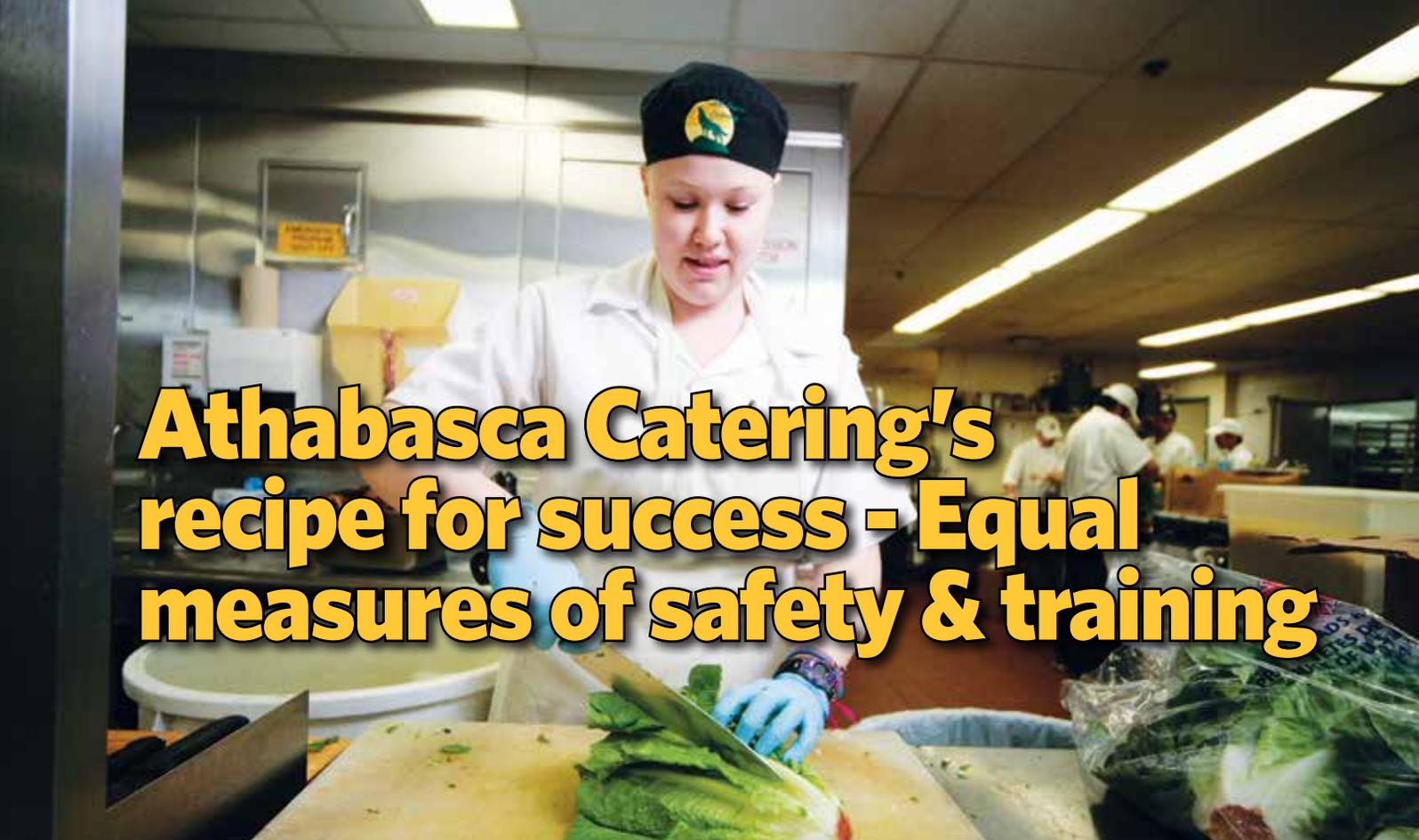
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# Athabasca Catering's recipe for success - Equal measures of safety & training

By Kevin Danchuk, manager of business development & marketing

**A**thabasca Catering Limited Partnership is a 100 per cent Northern Saskatchewan First Nation owned and operated company with over 20 years of proven successful service to the mining, construction, and resource industry in Northern Saskatchewan. Our ownership group includes the five First Nation partners of English River, Hatchet Lake, Black Lake, Fond du Lac, and the Lac La Ronge Indian Band. We operate remote industrial workforce camps and lodges in settings ranging from 20 to 950 beds, at nine different locations in Saskatchewan. Our clients include Cameco Corporation, Areva Resources, Valard Construction, and Golden Band Resources; previous clients include SaskPower, Shore Gold, and Woodland Cree Logging.

In 2011 Athabasca Catering successfully completed and attained a Certificate of Recognition (COR) for our safety program, since that time we have continued to mature our safety culture through development of policies, procedures and training. Immediate benefits of making safety a part of how we work were evident. By reporting all incidents (with all pertinent information), and including near misses, we analyzed the data and developed work procedures, training and safety requirements to eliminate the most dangerous and obvious situations head-on. As this process continued, and procedures, policies and training evolved, we were able to next focus on other less-common incidents.

To properly manage work-related injuries, we found it essential

to have consistent and timely worker compensation claim management policies and procedures. Effective claim's management requires a strong and practical modified work program (MWP) that encourages employees to work through an injury in a controlled and productive setting. It's essential to ensure they receive proper medical assessment and care, their concerns are heard and responded to, and then appropriate supervisor oversight is provided. This involves coordination of the employee's medical professional, the employee's supervisor, and most importantly, the employee's involvement. Our worksites are remote, and many of our employees reside in the remote communities of Northern Saskatchewan. These MWP challenges are best responded to with strong communication between the three parties and a clear-stated goal of fully returning the employee back to their former position as quickly and safely as possible. Although we have not been able to eliminate all incidents from happening (yet), we have achieved some impressive milestones, including two years no lost time incidents at the end of April 2014.

The best safety program prevents employee injuries, and we remain focused on attaining zero injuries. We are developing and training all our employees using work procedures that are vetted by our safety department with critical input from the employees themselves, our management team, and our occupational health & safety committees. By investing in training, we greatly reduce the frequency of injuries and gain the added benefit of improved



*Athabasca Catering’s managing director Mike Icton accepts Million Man Hour with No LTI from senior safety officer Chuck Sherburne.*



*Athabasca’s COO Ray Edwards accepts COR certificate.*

production. When our executive management’s safety commitment is witnessed by our workforce it impacts all our employees in all our worksites. This is further reinforced as coordinated daily toolbox safety meetings become the foundation of a strong safety culture. As we bring new workers into our remote locations, our safety program “transitions” to a safety culture as senior employees mentor new employees ensuring their safety.

Our commitment to training makes sense for several reasons; firstly, employees recognize the company’s investment in training and safety is ultimately to their benefit and well-being; secondly, a well-trained employee is a more productive employee; and finally, a well-trained employee understands the procedures and works in a safe manner protecting themselves, the co-workers around

them, and our clients. Some examples of training we provide our employees includes: WHMIS, foodsafe training, WCB claims management, Level I & II occupational health & safety committee training, first aid, and JHA training. In addition, all of our management personnel attend our mandatory Level I & II (32-hour) professional supervisor training.

Our commitment to safety can be seen at all levels of our operations; from a small remote camp kitchen to our Saskatoon corporate office, we expect safety to be at the forefront of everything we do. Athabasca Catering is committed to “mission zero” and a proud signatory to this program.

So clearly, equal parts of training and safety are truly Athabasca Catering’s recipe for success. ♦

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# C&V Portable Accommodations: *Building for the future*

**C**&V Portable Accommodations (C&V) has been designing and manufacturing re-locatable buildings in Calgary, Alberta since 1977. The company services several industries, including oil and gas, mining, forestry, and construction. C&V is able to handle design, building (custom and rental), purchasing, leasing, renting, transporting, and servicing of all equipment.

## **New expanded facility**

C&V has operated at 6633 86th Avenue S.E. in Calgary, Alberta for 37 years. In August 2014, the company moved to a brand-new, innovative 80,000-square-foot manufacturing facility blocks from its original plant. The new facility is located at 285062 Frontier Road in Rocky View County, Alberta just outside of southeast Calgary.

C&V's new facility allows the company to increase production of both custom and rental units. Clients have the opportunity to see units being built in-shop and can keep up-to-date on the status of their projects.

New product offerings are available due to the increase in production space. C&V now offers large office complexes and camps, as well as self-framed steel buildings.

## **Products and service**

C&V offers clients the ability to design and manufacture custom equipment for specific purposes, or rent accommodation units from their large fleet of pre-built units.

C&V has become experts in customer service by partnering with clients to work very closely with them to design cost-effective, functional and comfortable equipment. C&V buildings can be outfitted with any amenities needed from C&V's manufacturing facility. C&V supplies first-aid kits, eyewash stations, kitchens, washrooms, offices, sleeping areas, and recreational spaces. Units

can have metal gable-style roofs or low-slope rubber membrane roofs depending on client requirements. Communication and telephone lines (Cat5E) come standard in every C&V building, making them complete turnkey solutions. C&V offers complete logistics services to all clients, including delivery, on-site set-ups, and maintenance of all products.

C&V portable structures are built to code by C&V's tradespeople. These codes include:

- Alberta Fire Code 2006
- Alberta Building Code 2006, Part 10
- National Plumbing Code of Canada 2010
- Natural Gas and Propane Installation Code CAN/CSA - B149, 1 - 10
- Canadian Electrical Code Part 1, C. 1-12
- CSA Certified and Labeled for "Electrical Features Only" for Industrial Unit
- CWB Certification to: CSA Standard W471-09 (Certification of Companies for Fusion Welding of Steel)

## **Solutions**

### **Encana - Pine Lake Gas Facility**

Encana purchased custom C&V buildings for their gas compression facility in Pine Lake. The facility included offices and control centres and was custom-designed and built by C&V. The facility needed to be in place quickly to keep up with demand. C&V worked with Encana to design a solution for building a new facility that met their deadlines and was within budget.

C&V's solution was to build doublewide facilities one half at a time to ensure the facility was completed on time. The remaining halves of the units were constructed the following year. By partnering with C&V, Encana was able to take advantage of C&V's custom design and manufacturing offerings, but also meet the deadline and stay within budget.

### **ConocoPhillips - Custom 10-man camp**

ConocoPhillips used C&V's camp offerings when they purchased a custom 10-man camp for their site. C&V was able to work with Conoco to understand the site needs and create a unique unit that included sleeping quarters for all staff members (included queen-size beds and big-screen TV's in each room), bathrooms, workspaces, and a recreation room that was complete with a full gym and billiards table.

Using an innovative layout and floor plan, C&V was able to combine an executive sleeper, site office, recreational unit, and remove step-ups from bathrooms all in one unit. Conoco was able to save on rental fees by building one unique building that encompassed all of their requirements. C&V's trusted transporting partner handled the delivery of the unit removing the need for Conoco to find a third-party trucking service.

### **Conoco - Cessford, Alberta Gas Site**

Conoco's Cessford, Alberta project needed an update to the gas site due to aging office space. Having had success working with C&V in the past, Conoco contacted the company to update the gas site.

C&V worked with Conoco to develop a custom building and site plan. C&V's custom manufacturing representative Jay Stiller designed a custom pile layout that strategically removed materials, accomplished the functional needs of the site, and cut pile resource costs in half for Conoco.

The final deliverable consisted of a custom 84-foot-by-68-foot office that included several workstations, a boardroom, bullpen area, and kitchen, all at a lower cost than originally budgeted.

C&V provides complete camps for all drilling rig sites. C&V offers bundled options for site offices, operator camps, and drilling camps to ensure all staff on the rig are able to have a modern and innovative area to work, relax and sleep.

### **C&V's new line of self-framing steel buildings**

C&V's new product line of self-framing steel buildings expands on the company's wood-frame structures, allowing C&V to offer a complete range of building options. Clients can view projects at any stage of the design and manufacturing process. Clients are consulted regularly in the design stage and can physically view the project being built in C&V's facility. Changes to design can be made in real time, at any stage of the building process, due to C&V's manufacturing capabilities. Final units are turnkey-ready for clients when delivered to site by C&V.

C&V offers a two-year structural warranty on all their buildings.

*C&V can be contacted by phone or email. Please visit the company's website to find a sales rep that can assist in building a unique structure for any job requirement at [www.cvportable.com](http://www.cvportable.com). New website coming soon! ♦*

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# Capturing aerial imagery with unmanned aircraft



Use of unmanned aerial vehicles (UAVs) has increased dramatically over the past five to six years and has shifted from mainly military to increasingly commercial purposes. Early on during this shift, SRK Consulting recognized that the ability to capture aerial imagery with small UAVs would enhance the specialist services it provides its earth and water resource clients and could offer substantial project benefits.

SRK has closely followed the advancements in commercial UAV systems. Following in-depth research, the company's

geographic information systems (GIS) staff from Saskatchewan and Nevada decided to collaborate on designing and building a UAV platform with off-the-shelf components. The goal of this UAV initiative was to prove the concept of a cost-effective solution that would enable SRK to offer its exploration and mining clients significant savings in time and money. After months of developing and testing the UAV platform and associated standard operating procedures, SRK has created a system that performs on par with other commercial systems at a fraction of the cost.

The system's data output includes orthomosaic images, Digital Surface Models (DSMs), and point cloud data. While the scope of potential applications for these data types is unlimited, for potash and other mining projects, SRK considers the data to be particularly valuable in change detection and the monitoring of construction and tailings deposition. The DSMs also enable volume analysis and calculations for bare-ground structures, such as open pits, borrow pits, material stockpiles, and coarse tailings management areas.

Not only does SRK's UAV platform help its clients acquire high-quality data, but, having designed, built, tested, and calibrated its own equipment, SRK is well equipped to troubleshoot any malfunctions and quickly conduct repairs with minimal downtime.

Because of the need to ensure public safety, most jurisdictions require authorization of UAV use. SRK has obtained a Special Flight Operations Certificate for potential work at 16 project sites within Transport Canada's Prairie and Northern Region, including most of Saskatchewan's currently operating potash mines.

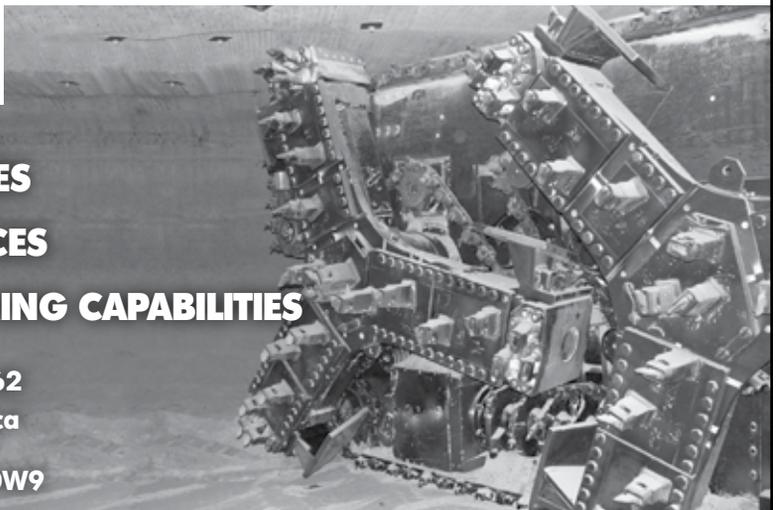


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The short-term roadmap for SRK's UAV initiative includes implementing additional platforms and sensor technologies, such as infrared and LiDAR. The company is testing a prototype multi-copter platform that will facilitate collection of water and other samples in hard-to-reach or potentially unsafe areas. Also under development is a boat platform and related sensor technologies, such as instruments for measuring water depth, temperature, and quality.

As technology develops, UAVs will be able to access and gather information from more remote locations and harsh terrain. They offer a unique, cost-effective way of obtaining high-quality data, while improving workers' health and safety. Given the extensive opportunities presented by UAVs, they are becoming standard tools in the commercial sphere and have broad applications in the mining industry.

**About SRK Consulting**

SRK Consulting is an independent, international consulting practice that provides focused advice and solutions to clients, mainly from earth and water resource industries. For mining projects, SRK offers services from exploration through feasibility, mine planning and production to mine closure. Please see [www.srk.com](http://www.srk.com) for more information. ♦

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# Keeping up on legislation - Drug and alcohol testing

By Arlene Jorgenson

**H**ealth and safety professionals in the mining industry need to ensure they keep up on legislation, which may affect their substance abuse prevention policy. I will discuss two issues that have been in the news.

## **Random drug and alcohol testing**

An Alberta arbitration board has concluded that the random drug and alcohol testing policy imposed at a Suncor Energy Oil Sands operation was an unreasonable exercise of the employer's management rights.

The policy was introduced in May 2012 as part of a comprehensive safety program. Random urine testing was utilized to prevent impairment at work.

The arbitration board agreed with a previous Supreme Court of Canada decision (*The Irving Case 2013*) that an employer can-

not unilaterally impose random drug and alcohol testing even when the work is high risk, unless there are "extraordinary circumstances". Those extraordinary circumstances would be if alcohol and drug abuse is known to be pervasive.

In this situation, the evidence of the high rate of alcohol and drug use in the Fort McMurray region, the results of previous testing and information about prior accidents was still ruled not specific enough.

The issue of urine testing not being a good enough indication of impairment, especially for marijuana abuse, came up again.

Action point:

- Unless you are a transportation company complying to US DOT Part 40 regulations or something similar, there is no place for random testing in Canadian safety-sensitive industries - remove any reference from your policy.

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### **Marijuana for medical use**

Health Canada (HC) is out of the business of licensing prescription marijuana. This past spring they changed their policy and have divested themselves of the whole licensing overseeing procedures. They clearly state on their website “Dried marijuana is not an approved drug or medicine in Canada. The Government of Canada does not endorse the use of marijuana.”

There is no safe place for marijuana of any kind for any reason in a safety-sensitive workplace. A medical review officer (MRO) will never pass medicinal marijuana in a safety-sensitive role. This will not change even if de-criminalization of small amounts of marijuana happens.

Action point:

- Employers need to have a clear policy statement on how medical marijuana will be handled in the workplace in safety sensitive and non- safety sensitive positions.



- Contact us for a free medical marijuana policy statement.

Keeping up on legislation, best practice, and technology changes in the complex world of medical-legal drug and alcohol testing shouldn't be a full-time job. Your program consultant or third-party administrator (TPA) should keep you informed and educated so you're confident of compliance in every way.

*Arlene Jorgenson BSN, RN, COHN-C is vice-president of client services and quality assurance for Wellpoint Health Ltd., a full-service occupational health consulting company specializing in drug and alcohol testing, pre-employment medicals and disability management. For more information, contact Arlene at 1-877-374-9079 or [ajorgenson@wellpoint.ca](mailto:ajorgenson@wellpoint.ca). ♦*



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# Applied Industrial Technologies teams up with Koeppern Service Canada to service the potash industry

**A**ppled Industrial Technologies (Applied) has been successful at providing solutions and creating value for our customers in Canada for over 60 years. As one of North America's largest industrial distributors, Applied supports the maintenance repair operations (MRO) and original equipment manufacturing (OEM) operations of businesses in virtually every industry segment, providing a wide range of bearings, mechanical power transmission components, material handling, lubrication, and specialty products.

With Canadian headquarters in Saskatoon, Saskatchewan, Applied prides itself in understanding customer requirements and having the technical staff to provide solutions that make the customers more efficient and productive. Applied continues to look for innovative opportunities to enhance product offering and increase service levels to committed customers. One such opportunity was realized in late 2013, when Applied teamed up with Koeppern Service Canada (Koeppern) to distribute their compactor parts across Canada.

Having commenced operations in Canada in 2010, Koeppern began serving the Canadian potash industry by supplying replacement parts and technology consulting, as well as installing and maintenance servicing for Koeppern compactor machines in service at the many potash mines in Canada. With a large territory and increasing demand for technical support, Koeppern realized that they required a larger infrastructure to support customer requirements. Koeppern began investigating alternatives that would allow them to continue to provide tech-



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# *Putting the squeeze on Potash*



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nical support for their product, while at the same time ensure timely delivery of those same products.

This is where Applied came into the picture. Having served the potash industry since its inception in Saskatchewan, Applied had the technical expertise and knowledge of all the potash customers in the area. Full life cycle distribution has always been a strong point of Applied's offering and when Koeppern was looking for someone to assist them in warehousing and distributing their technical products, Applied was a perfect fit. Applied and Koeppern reached a distribution agreement making Applied the exclusive distributor of Koeppern compactor parts in Canada. To enhance the partnership, Koeppern moved its existing technical support office and parts inventory into the existing Applied service centre located at 3077 Faithful Avenue in Saskatoon. Koeppern's technical group now works hand in hand with Applied's technical sales group to create optimal solutions for their compactor customers. Applied warehouses all the Koeppern compactor parts and utilizes the existing logistics system to create shipping synergies of all products being shipped to the end user potash customers. Local compactor component inventories in Saskatoon allows for expedited delivery should the need exist.

This distribution agreement has allowed Koeppern to dedicate more time to technically support Koeppern compactors in service at potash mines, while Applied manages the distribution

of Koeppern parts. Customers will be able to realize the benefits of Applied and Koeppern working closely together with the goal of improving service levels to all potash sites. ♦



Koeppern potash compactor.



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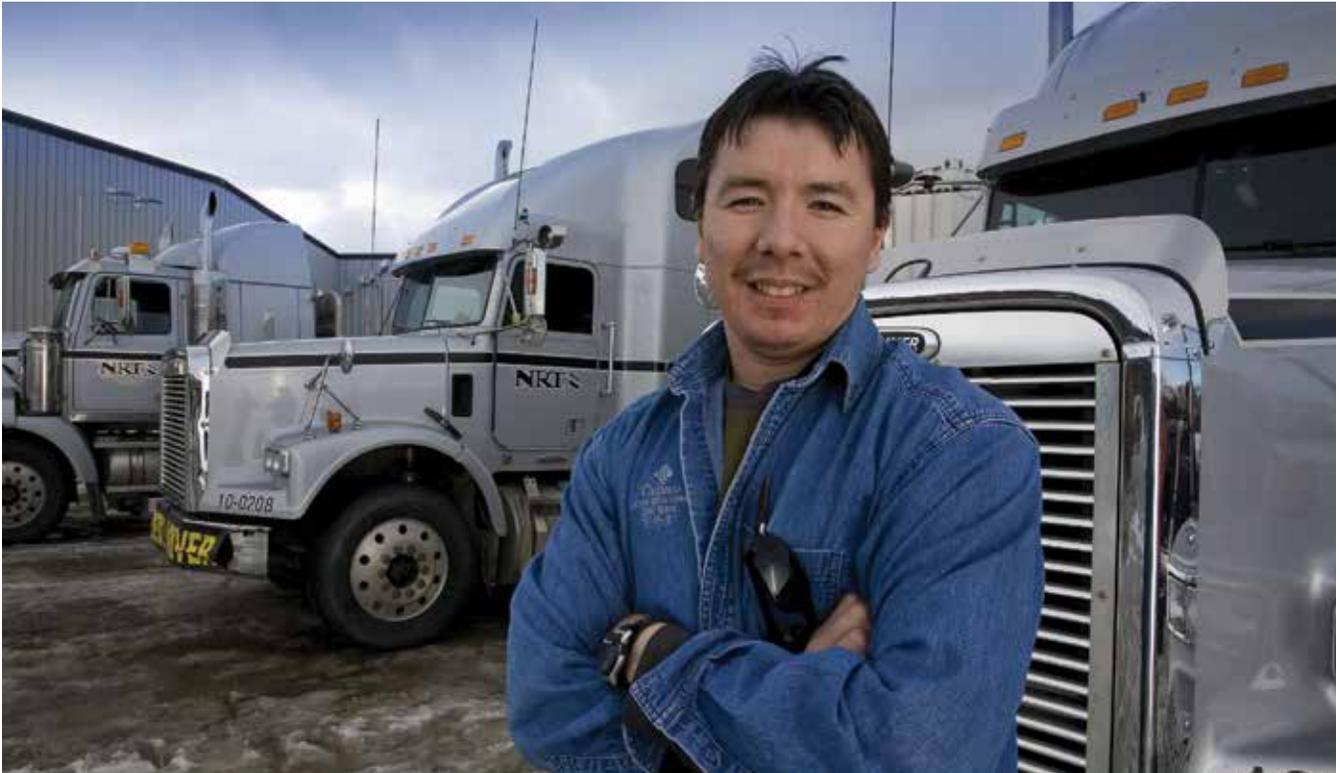
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Visit [economy.gov.sk.ca/job-grant](http://economy.gov.sk.ca/job-grant) to learn more about program criteria and how to apply.

Canada



Funding provided by the Government of Canada through the Canada Job Grant.

# Bridging the aboriginal gap



**A**n exciting new business venture is upon the Battlefords region.

By the end of September 2014, SITE Energy Services, a fully integrated environmental, infrastructure and access for oil, gas and resource development company, will sign a partnership deal with Battlefords Agency Tribal Chiefs Inc. (BATC) and First Alliance Construction to execute potash work, such as civil earthworks site preparations, pipelines and environmental projects in the Saskatchewan Battlefords region. With the increase in aboriginal population in the region and a culture base developing, SITE recognizes the potential new hires it could acquire, thus aims to set up these individuals with the means to provide for themselves through becoming introduced to the potash workforce. Recognizing the potential success of embracing the local aboriginal people, providing them with the proper training and skills, this partnership aims to get the people in the aboriginal community into the workforce, making it the first relationship of its kind in Saskatchewan.

Due to the high unemployment rate in the Saskatchewan, there was without question the opportunity for something to be done to help get these people onto their feet. BATC is an aboriginal liaison specialist whose success lies in sending high-quality workers into the workforce. They are accessible around the clock and fully aware and sensitive to members' customs, traditions, and practices. They are continuously searching for innovative solutions to create more partnerships that will contribute to the success of their clients who are en-

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## *BATC is an aboriginal liaison specialist whose success lies in sending high-quality workers into the workforce.*

---

tering the workforce and provide services to their industry partners. BATC believes SITE has this experience and was excited to break into the aboriginal community with the help of SITE's industry power, strong client base and solid reputation. SITE values this partnership because BATC provides the means and has the facilities to train these workers, prepares them to become "work ready", and finds a way to have them delivered straight to site.

Initially when a client arrives to the training facility, he or she is assessed internally using the stoplight system. Red means that there are still barriers to move forward such as: no driver's license, addiction, lack of exposure to the workforce, and so forth. Amber indicates training must be completed to increase skill and literacy level; and lastly, green, indicates they are work ready.

Ed Standinghorn, director of industry relations for BATC, has discovered the company shares the same vision with the Canadian government and has taken a strong appreciation for increasing the overall wellness of the Battlefords aboriginal community. In fact, according to an interview with Standinghorn, the government has recognized BATC is responsible for the decrease in individuals on welfare and "now holds those at BATC experts in the field of getting First Nation aboriginals to work."

Partnering with First Alliance Construction allows a 100 per cent aboriginal-owned company to get the recognition it needs to eventually become self-sufficient itself, and SITE will aid in its development with access to equipment and so forth. With the help of SITE's industry knowledge and processes, it will allow First Alliance

Construction to grow and become not only well known in the area, but also a reliable, trusted contractor in the region. The initial goal was to train and prep 100 workers labeled as "work ready", however, now two years later, 800-plus workers have gone through the program. The continuing growth of

this partnership is strong, healthy, and backed by driven individuals who take pride in what they do. The partners involved have worked hard to establish and maintain a high level of trust, credibility, and responsibility, which points to the possibility of future successes in near sight. ♦

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# The carriage of potash under international maritime regulations

By Captain Guy Fortin, MSc. maritime management

All cargoes carried in bulk by sea are subject to international maritime regulations, and potash is no exception.

The governing legislation that oversees safety of crews, vessels, and consignments is the Safety of Life at Sea Convention (SOLAS), which was introduced a short time after the sinking of the HMS Titanic in April 1912. The International Maritime Organization (IMO) ensures that this convention has been revised as required. Primarily intended to promote

safety, it regulates safety equipment, safe navigation, and radio communications, as well as the carriage of various cargoes.

In January 2011, the SOLAS Convention was amended to mandate the International Maritime Solid Bulk Cargoes (IMSBC) Code to provide the appropriate regulations for the carriage of solid bulk cargoes, thereby highlighting some practices previously implemented on a voluntary basis only, such as the Shipper's Declaration.

Although SOLAS previously required shippers to declare characteristics of cargo being offered for carriage, the IMSBC Code now requires shippers to present more precise information before loading to enable proper stowage and safe carriage of cargo. Even though it was mandatory to declare the property of potash and most fertilizer cargoes, their free-flow (shifting) capability was often disregarded.

Another cargo with the same free-flowing characteristic as potash, is grain. For

a long time, it was known that this lack of cohesiveness could represent a hazard when transported in bulk. For this reason, the International Grain Code, a regulation that defines acceptable conditions of stability and stowage, was developed.

What is the relationship of grain to potash? When developing the IMSBC Code, it was obvious that some of the cargoes carried in bulk were also free flowing and that a certain proportion of them had an angle of repose similar to that of grain. The angle of repose is the slope angle at which a non-cohesive cargo rests—in short, the shifting hazards are the same as those for grain and that the same regulation should apply.

To deal with this reality, the IMSBC Code identifies cargoes that are deemed to be non-cohesive. Potash, potassium chloride, and most fertilizers fall into this category. Moreover, if the non-cohesive cargo offered for transportation has an angle of repose similar to that of grain—

meaning less than or equal to 30 degrees—then stowage must adhere to the International Grain Code requirements. This asserts that the fewest possible numbers of cargo holds will be left slack, that all the other loaded holds will be filled to capacity, and that the sum of the heeling moments caused by the shifting of the cargo do not exceed an allowable value that would ensure that the vessel retain its stability at all times.

The preparation of a stowage plan for a non-cohesive cargo under the International Grain Code adds to constraints already in place. Often, a vessel that was able to load a certain quantity of cargo with an angle of repose greater than 30 degrees would not be capable of taking in the same tonnage if this angle is less than 30 degrees. Having this information at hand as early as possible in the trading process is therefore paramount to determining the right ship for the right amount of cargo to be carried.

Fortunately, as the industry's knowledge about this reality grows, information on the angle of repose is more often readily provided. Having the right cargo information implies that crews can carry out their tasks in safety—confident that they will return to their homes and families at voyage's end.

*Captain Guy Fortin is the manager of cargo operations at Fednav International Ltd.*

*Fednav International Ltd. is a division of Fednav, an international ship-owning company headquartered in Montreal. Its principal activities include the transport of bulk and general cargo worldwide. The company has offices in Antwerp, Barbados, Hamburg, Rio de Janeiro, London, Singapore, and Tokyo, as well as regional offices in Canada and the United States. Fednav also has terminal, logistics, ice analysis, and shipping agency services and divisions. It employs 260 people and nearly 2,000 crew members and stevedores. ♦*

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# Growth and prosperity in Saskatchewan for Carson



Carson Energy Services is operating with several locations to serve you in and around Saskatchewan and Alberta. With our branches throughout the province from Alida, Estevan, Carlyle and Halbrite, to Swift Current, Lampman and White City, Saskatchewan, and many others, including Wainwright, Alberta, we have the equipment and manpower available where you need us. Divided into four areas, we have the Bakken area run by manager Lionel Pouliot at 306.458.2583; Border area, run by manager Quinn Olson out of Wainwright at 780.842.4220; central area out of White City, Saskatchewan currently operated by manager Len Kaskiw at 306.779.2200; and Lampman area run by manager Steve Smith at 306.487.2281. Ron Carson is heavily involved in our entire operation as president of this region, and Dale Ziegler from Francis, Saskatchewan is our newly promoted vice-president of the Plains Region.

With over 40 years in business, we still offer the same service that you expect to receive from a respected, experienced company in Saskatchewan. That is, we meet or beat business expectations every time. We do it safely and we do it better with the best employees in the world; many of who have over 20 years of experience in oilfield construction and maintenance, pipelines and horizontal directional drilling. Dale Ziegler, vice-president of the Plains Region, explains why we maintain and continue to expand our presence in Saskatchewan.

“Carson Energy continues to make sure that we deliver exactly what our customers need, when they need it. Saskatchewan is a place of growth and prosperity. With business picking up, especially in the Bakken area, this is an exciting time to be a part of this

province. I believe our continued growth and prosperity, including our new state-of-the-art building in White City, Saskatchewan, is a symbol to the community and our customers that we’re here to stay – that we believe in Saskatchewan. Carson Energy will help to make sure that our customers receive the service they’ve come to expect, the best in the industry. We look forward to continuing to provide that exceptional service.”

Carson’s business lines consist of second-to-none field construction, including compressor stations, battery installations, module and skid fabrication, and many others. We have exceptional pipeline construction experience in all types of conditions up to 30 inches in diameter. These capabilities include hydrostatic testing, trucking, excavation, and investigative digs. Our horizontal directional drilling division can install from one-inch cable up to 36-inch pipe and operates primarily for water and sewer lines, gas and oil lines, telecommunication and fibre optic lines, and in conjunction with our other teams on flow lines and pipelines as required. Our newest division is the electrical and instrumentation group offering electrical services, including project management, compressor stations, pumping stations, modules, MCC buildings, and process skids and oil batteries, as well as gas plants capabilities. All of our groups have hydrovacs available ranging in size from single axle to tridem axle. Carson Safety Services can offer courses and services to make sure that your jobs are completed right and on time, in the safest way possible.

With the best employees anywhere and equipment resources that are second to none, we are a one-stop-shop for anything you might require for your upcoming projects, and we look forward to serving you. ♦



# Experience you can count on.

Carson has set up shop in the middle of potash country, building an 85,000-square-foot facility on 22 acres on Highway 1 East to attract the attention of new and existing potash clientele. The small town roots remain the same, with loyalty, hard work, and safety at the top of our priority list. Adding an Area Manager with over 29 years experience in the potash mining industry right in the heart of potash country means that Carson is ready to meet and exceed your business requirements. When it comes to delivering projects on time, on budget, and with the highest degree of safety and quality, you can count on Carson to get it done.



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# Import Tool Corp. Ltd. proudly serves Saskatchewan's oilpatch

Import Tool Corp. Ltd. was founded in Edmonton in 1952 by Don Wilkin and Delbert Lewis Jr. as a liner hanger and cementing equipment oilfield service operation. From those early days, Import's business philosophy was simple: provide the Canadian oilpatch with the best-quality tools and on-site services by representing world-class manufacturers and attracting exceptional personnel.

Sixty years later, Import Tool is proud to exclusively represent BakerHughes liner hanger tools and Davis-Lynch/F.E.T. cementing equipment, and to employ the best-trained and most conscientious staff in our history. Although our relationships with our customers, suppliers, and employees have never been better, Import is committed to continuous improvement in every area. It was also a conscious decision to avoid the "diversify

or die", "go public" and "move to international markets" band-wagons, and instead put our collective efforts into improving tool application and operational quality.

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*Although our relationships with our customers, suppliers, and employees have never been better, Import is committed to continuous improvement in every area.*

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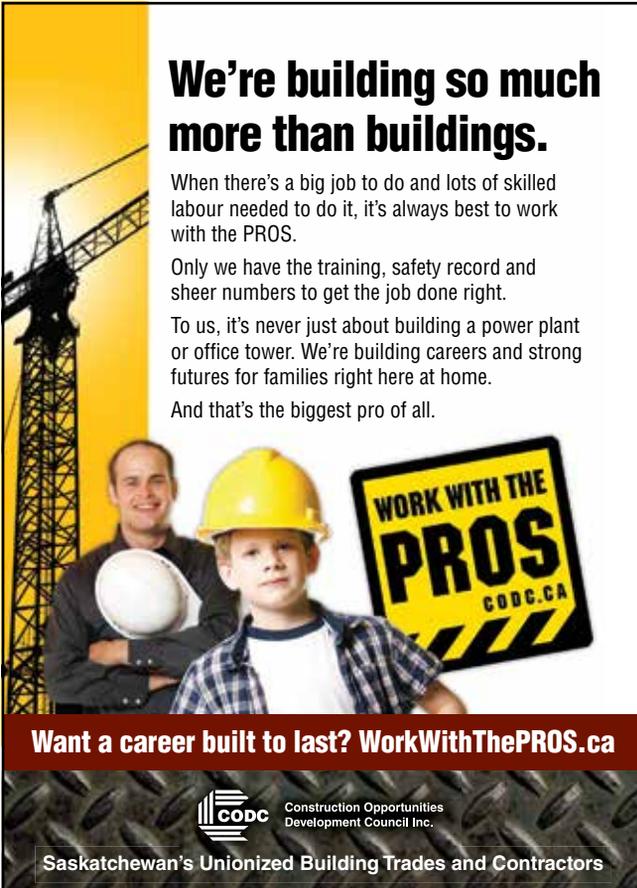
The year 1988 saw a management buy-out, which has resulted in an ownership made up of individuals from the operations, sales, and administration areas. It is this partnership model that is largely responsible for the continued growth and quality improvements at Import Tool.

Import's head office and major shop facility is located in Edmonton, with a sales office in Calgary. We like to say that we have some "depth" too, as we have completed over 95 per cent of all producing wells off Canada's East Coast through our St. John's facility. Many of these wells are as deep and technically sophisticated as any in the world.

SAGD represents a key part of Import's business portfolio. Our ultra-high-temp liner-top packers are used by the majority of SAGD operators and thanks to initial designs by our own Terry Ostapovich and on-going research and development, we are confident that we will continue our premier position in this growing and important area.

While horizontal liner systems represent the majority of our work for over 40 operators in Saskatchewan and Manitoba, we are also experienced in providing tools and services related to potash solution wells.

Interestingly, Import Tool operated a small shop in Estevan in the late 1960s. We're now thrilled with our newly completed shop facility on Devonian Street and intend to be a real part of the Estevan and southeast Saskatchewan business communities for years to come. ♦



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# Boilermaker...

*More than just a drink!*



When you ask a Boilermaker about having the same name as a drink, it will literally be the 100th time they will have had to smile politely at your humour. It's a sad fact that most people outside our Red Seal profession are woefully unaware of the skill and complexity that our job description entails.

There are two main specialties that boiler making divide into: the welder and the mechanic. Both skill sets work together on new construction, maintenance of existing structures, and managed demolition. We build equipment within refineries, pulp and paper mills, and power plants (including nuclear). We construct and service storage tanks, pressure vessels, and, yes, industrial boilers.

The boilermaker that has chosen the path of welding will master an expansive number of techniques, including mirror welding (when mirrors are used in blind spots) and team welding (partners working on either side of a weld at the same time), and ply their skill in an impressive range of mediums. Mechan-

ics are responsible for bringing the tools and equipment together on the job site, by either mechanical or physical means, in the preparation for welding and/or installation. This involves the interpretation of blueprints, working with crane operators, and the measuring and fitting of raw materials.

A successful student applicant will be excited to learn that their three to four years of community college training will be covered by their local union hall. They will be sent out as apprentices following their initial year of school and progressively increase their earning potential with each year's successful completion of training. Students effectively "earn while they learn". Becoming a Red Seal boilermaker, however, does not signal the end of learning. The union hall is able to offer courses to upgrade and maintain skill sets as demand and industry evolve at their state-of-the-art facilities in Winnipeg, Regina, and Thunder Bay. Safety training is given utmost consideration with boilermakers. Members are trained and certified in confined space, fall arrest, H2S alive, and WHMIS: to name a few of the examples of mandatory courses offered. Boilermakers deserve the well-founded sense of pride exhibited when telling friends or family, "I built that" when pointing out completed structures.

We pride ourselves on delivering accuracy and skill together with meeting goals of zero incidents on job sites and completing projects on or before the promised deadline. Boilermakers teaming skill and trade to make a better tomorrow. ♦



# International Brotherhood of Boilermakers Local 555

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# Global mineral industry to converge on Toronto for exploration and mining's largest annual convention



## 2015

**WHERE THE  
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The Prospectors & Developers Association of Canada's (PDAC) International Convention, Trade Show & Investors Exchange is set to once again take place in downtown Toronto from March 1 - 4, 2015. The PDAC convention is the industry's largest annual event that provides a world of opportunities for attendees to learn about the latest trends, technologies, and personalities shaping the mineral exploration and mining sector.

The convention attracts investors, analysts, mining executives, geologists, prospectors, and government delegations from all over the world. In 2014, more than 25,000 people attended the convention for the fourth consecutive year.

"Canada leads all global countries in mineral exploration spending, and since Toronto is the global capital of mining finance it makes sense that we host the industry's most important networking and educational event here," says PDAC president Rod Thomas. "We're looking forward to another banner year for the PDAC convention."

Over the past 83 years, the PDAC convention has grown exponentially, and this year is no exception as PDAC 2015 will be extending into the North Building of the MTCC to host additional exhibit space, as well as the Core Shack. Entrance to Trade Show North will be complimentary during the inaugural year, and show hours have been extended to ensure attendees can cover both the North and South buildings of the MTCC.

The PDAC 2015 convention will feature a series of topical short courses, workshops and technical sessions designed to

showcase the challenges and trends facing our industry. New additions include a session on Plan Nord, a course on the geology of copper, and a keynote session that explores the role of retail investors in the junior mining sector.

"The convention is designed to help the sector find the creative answers it needs to meet the challenges it faces," says Thomas. "Programming reflects economic and industry trends, and aims to provide networking and educational opportunities to encourage a healthy mineral exploration industry."

PDAC 2015 convention highlights:

- Technical program featuring 19 sessions by industry experts
- Trade show featuring over 500 exhibitors promoting technology, products, and services
- Investors Exchange featuring over 540 exhibitors—free and open to the public
- Prospectors Tent featuring maps, samples, and claim results of independent prospectors
- Core Shack featuring more than 60 of the latest mineral discoveries from around the world
- Corporate Social Responsibility (CSR) event series
- Aboriginal program including the Aboriginal Forum and the Skookum Jim Award
- Student program, including the student-industry networking luncheon and the student-industry forum
- Topical short courses and workshops
- Popular ticketed events including luncheons, the awards evening, and the gala

PDAC is a national association representing the mineral exploration and development industry. The PDAC has more than 10,000 individual and corporate members, and encourages the highest standards of technical, environmental, safety and social practices in Canada and around the world.

*Early registration deadline is February 6, 2015.*

*For more information about the convention, or to register, visit [www.pdac.ca/convention](http://www.pdac.ca/convention). ♦*



**2015**

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# Underground conveyor innovation at its finest



*The brand-new single 150HP alignment-free combination belt drive.*

**W**est River Conveyors specializes in new underground conveyor equipment, but can “rebuild anything” as demand for rebuilt equipment rises.

West River Conveyors, located in the Appalachian Mountains in the most southwestern part of Virginia, has specialized in building underground conveyor systems and equipment since its inception in 1981. The company began as a rebuild and repair shop and grew rapidly to become a leader in custom-built and custom-designed underground conveyor systems. Now competing with large-scale conveyor manufacturers, West River continues to up the ante in conveyor innovation.

As demand rises for refurbished and more economical conveyor equipment, West River has met that demand with

new, innovative products and ideas to make customers’ already-existing products better. In recent months, West River engineers and production planners have worked with more customers to refurbish their equipment with upgrades and additions to make it more functional, while also cost-effective for their operation. Because coal and potash markets have become volatile in recent years, most companies are looking for ways to cut costs when purchasing conveyor equipment without jeopardizing quality. Pete Savage, VP international sales for West River Conveyors, said “close collaboration with customers during the design or redesign phase has helped make our products superior to our competitors. We work very closely and are easily reached when customers have questions or ideas for their product design. It is important for us to remain committed to listening to customers’ needs.”

Most recently, West River engineers refurbished several 60-inch belt width Dual 500HP Voith TPKL conveyors for a St. Louis-based coal company that included use of their power bases, but added significant upgrades to the pulleys, width and structure of the conveyor. Shop foreman Ryan Lester said, “This project was extensive and required our fabricators to spend a large amount of time making it all happen. The pulley shafts were modified to shorten the overall width of the drive and new, MSHA-approved lagging was installed on the pulleys. All of the components on the power bases were removed, inspected, and repaired as necessary.” The customer wanted several add-ons to the conveyor to include a uniquely designed “V” bottom-dribble chute that allowed for centre flow of material off of the conveyor. In the end, additional guarding was constructed to enclose



the drive for safety. Projects like this one have allowed West River to maintain a competitive edge in the conveyor manufacturing market. Joe Street, VP sales and co-owner of West River said, "In a time when many conveyor equipment companies are downsizing, we are continuing to grow because of the quality of our equipment, competitive pricing, and the added personal touch."

A few months ago, West River launched a brand-new alignment-free combination belt drive that uses readily available, less expensive components - just another example of how West River has met the demand for companies looking to cut costs. This innovative drive puts a streamlined spin on the conventional combination belt drive that allows for ease of installation and use, and quick transport from one location to another. This particular drive pairs a belt drive and take-up unit together on one skid in the popular alignment-free design. This new type of conveyor drive has already been purchased by several of West River's customers since building the first one in March of 2014.

West River offers a complete line of conveyor equipment to include belt drives, take-up units, transfer stations, tail sections, starters, and other uniquely designed equipment. Currently, West River is working on several partnerships in Canada to expand business into the Canadian mining market. Joe Street added, "although we are already selling our products in Canada, we want to sell more. We are very eager to assist new and larger companies with their conveyor product needs by providing them with quality equipment and a level of customer service that is unmatched anywhere else." This year alone, West



River representatives have spent countless hours in Canada to learn more about the market, establish vendor relationships, and work towards assisting Canadian mining companies with quality conveyor products.

West River's customers have praised the superiority of the products offered. As mine markets and regulatory envi-

ronments change, companies large and small are looking for ways to cut their costs. Having a conveyor supplier that can provide quality new equipment and rebuild your old equipment with care and caution is one way to be cost-efficient.

*Learn more about West River's products at [www.westriverconveyors.com](http://www.westriverconveyors.com).* ♦

# A letter from Tribal Chief Felix Thomas...

## To Bill Doyle and Mike Hogan:

*Improving the quality of life of First Nations*



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Gentlemen, I would like to personally thank and congratulate both of you for the contributions that you have made while serving at Potash Corporation of Saskatchewan (PCS) to improving the quality of life for all of us that call Saskatchewan home.

Your leadership and investment in the Saskatoon Tribal Council (STC) programming is, and will continue to touch the lives of our aboriginal youth. Whether it is serving and supporting our inner-city youth programming or investing in our community schools through nutrition programs or advanced mathematical curriculum, PCS is there.

The partnership that was forged between PCS and STC some four years ago continues to grow stronger year by year. I credit you, Bill, for embracing a shared vision of greater First Nation participation in Saskatchewan's potash industry. That was a seminal moment. And Mike, I thank you for being such a strong and active supporter of our partnership. There will always be a spot for you at the White Buffalo Youth Lodge Christmas Dinner.

Our industry partnership rests on a solid foundation of trust, respect, and understanding and it will continue to benefit our First Nation stakeholders for many years into the future. I am proud of our partnership and honoured by your personal contribution to the partnership.

*Thank you gentlemen, sincerely,*  
Tribal Chief Felix Thomas  
Saskatoon Tribal Council ♦



*Mike Hogan and one of the City of Saskatoon's finest serving Christmas Dinner 2013 to over 800 people at White Buffalo Youth Lodge.*

# Proven equipment for the complete potash process

By Jack Logue, director of sales (NAFTA) and Phil Schaefer, regional sales manager, TerraSource™ Global

**T**erraSource Global crushers have been sizing potash in New Mexico, Utah, and across Canada for over 50 years. TerraSource Global crushers are also installed in the South American and Russian potash mines.

World demand for potash continues to increase dramatically as the standard of living rises in the developing world, increasing the need for food, and therefore, the potash for manufacture of fertilizers. This demand has driven expansions in recent years throughout the world, and TerraSource Global has been the leader in the supply of crushers for the increased potash demand.

To meet the requirements and demonstrate the ability of the equipment, TerraSource Global has been involved in extensive testing in a variety of machines to prove the capabilities, flexibility, and efficiency of our crusher designs. Their Demonstration and Development Center test lab is equipped with a full-size version of each of the crushers used in their potash installations and can be modified in a variety of configurations to meet the individual needs of each customer.

All of the TerraSource Global brands (Gundlach, Jeffrey Rader, and Pennsylvania Crusher) are employed throughout the potash processing flow sheet. Included are installations both underground and on the surface. TerraSource Global crushers and feeders are employed for crushing the raw ore in primary and secondary applications, wet process circuits, and through to the compaction circuits and finish product sizing. Several models of TerraSource Global machines are used depending on the specific size requirements and condition of the ore.

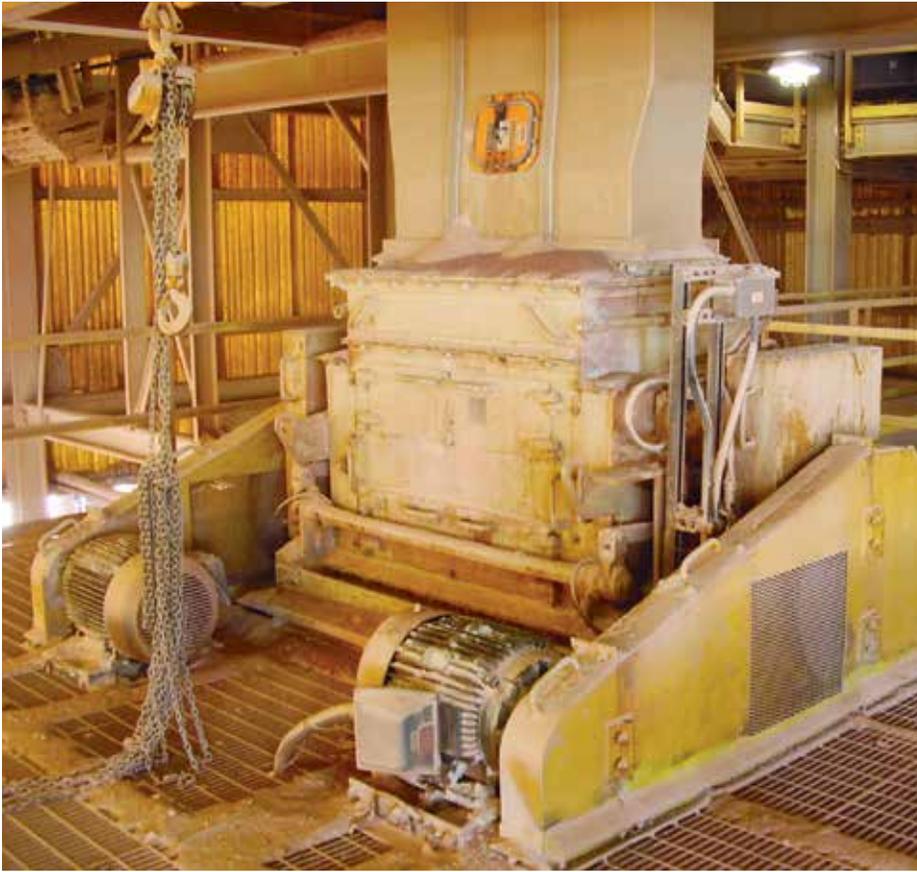
All three brands have equipment reducing the raw ore, including Pennsylvania Crusher brand Reversible Impactors, Gundlach-brand two-roll and four-roll crushers and the Jeffrey Rader brand Flextooth® crushers and vibrating feeders. On the wet side of the process, both Pennsylvania Crusher-brand reversible impactors and Gundlach-brand Cage-Paktors® are used to crush a mixture of ore and brine. This solution is then wet screened to begin the ore-cleaning process. The Cage-Paktor® has been proven to be an excellent choice for sizing oversized material from the sizing screens, as extensive testing has shown the Cage-Paktor® produces higher yields than hammermill-type crushers.



*Gundlach 2030D two-motor drive, four-roll crusher in Utah.*



*Pennsylvania Crusher CAL 15044A impactor in New Mexico.*



Gundlach 2050D two-motor drive, four-roll crusher in New Mexico.

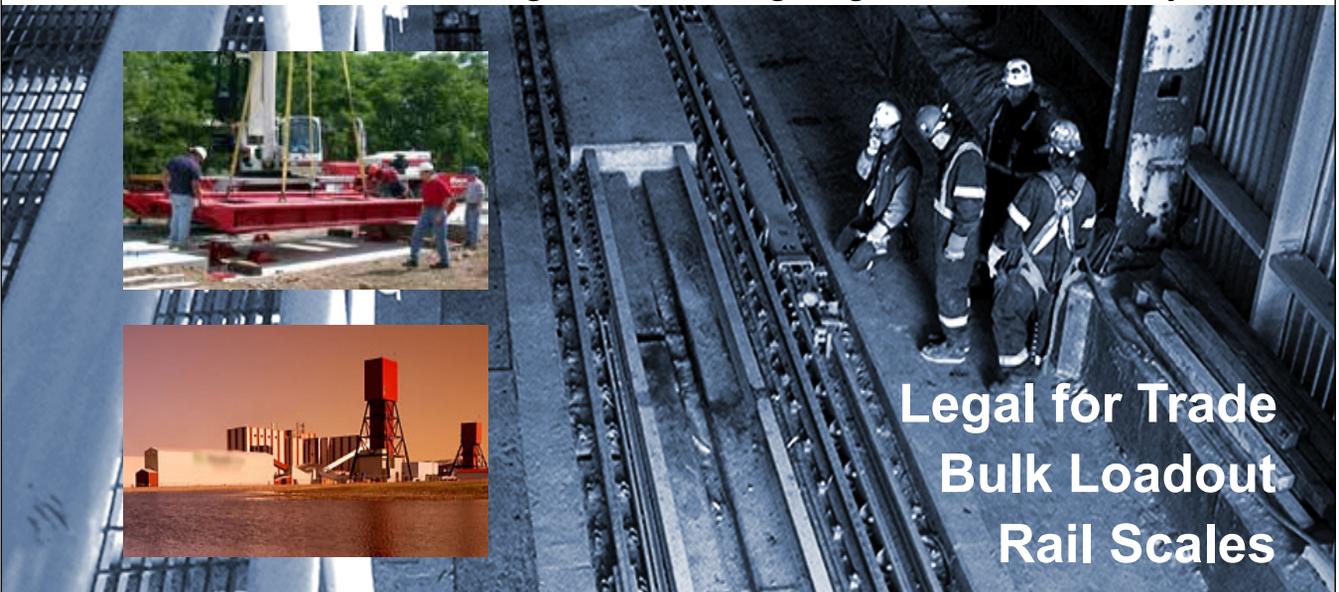
On the compaction side of the process, detailed testing proved that roll crushers, both single stage and double stage, proved to be excellent selections to break the flake from the compactor. The crusher not only breaks the flake, but also sizes the material while minimizing the generation of unwanted fines. Adjustable rolls allow changes in output sizing during operation if needed.

The Gundlach-brand Nanosiz-R® is a unique version of our roll crushers, offering bi-modal (shear and compression) crushing. These machines are used as "polishing" crushers for sizing near-size oversize material into specification. These units employ relatively large diameter alloyed iron rolls.

With more than half a century of experience in the potash sector and installations around the world, TerraSource Global's brands are proven leaders for potash sizing and feeding. ♦

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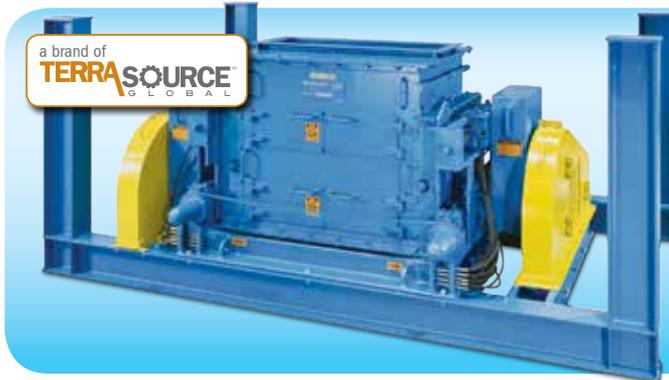
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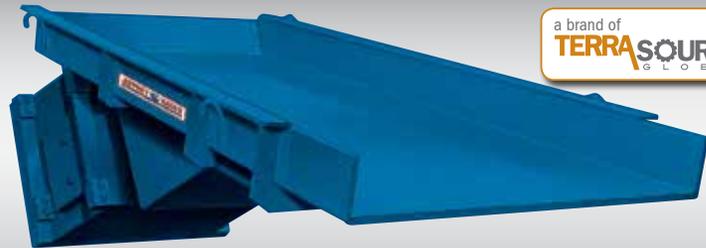
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Tartan Canada Corporation (“Tartan”) has been providing safe, high-quality, cost-effective maintenance and construction services to industrial and resource customers in Western Canada since 1953. Our services include plant and field maintenance, shutdowns, construction and fabrication. Tartan is able to provide open shop and union services through our operating entities, Tartan Industrial Contractors Ltd., LML Industrial Contractors Ltd (“LML”), and Arc Line Construction Ltd.

LML has been proudly serving some of the largest companies in the refining, power and potash sectors in Saskatchewan and Alberta since 1991. LML provides quality, cost-effective solutions for plant maintenance, shutdowns, construction, scaffolding, and insulating projects.

### **The LML advantage**

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- Deliver high-quality cost-effective services
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LML is pleased to announce that we now offer industry-leading services for the extraction, cleaning, and replacement of heat exchanger bundles. This helps enable us to provide complete turnaround and heat exchanger solutions to ensure maximum reliability of your complex equipment.

Tartan prides itself on providing quality workmanship through proven systems and processes which are executed by a skilled and experienced workforce. Our goal at Tartan is to understand our customer’s needs and respond effectively. Our experience, adaptability, and responsiveness turn project opportunities into long-term customer relationships. ♦



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# Global acquisition of local leader in potash manufacturing industry

Standard Machine was established in 1967 when Gary Porter started the business as a one-man machine shop. He grew the company into a provincial leader in the machining industry. His son Greg Porter took the business to a global market. The reputation of the company caught the attention of Timken and subsequently was purchased by them in May of 2013.

Gary and Greg's vision of what Standard Machine stands for is still inherent in the culture. The attitude of letting Standard Machine take care of things for the customer is still true. The shop itself is a 125,000-square-foot facility that has vertical integration.

"Gary Porter was never satisfied with sending work outside of our facility," says Trevor Nixon, director of sales for the potash sector. "That is how our shop came to excel at gear cutting, gear grinding, fabrications, heat treating, and mechanical work. He was never satisfied with either the service or quality of the subcontractors that we had perform this work years ago. Today, we have total control over all manufacturing operations, and by avoiding outside processes we can ensure quality and efficiency. Our loyal customer base has come to trust us to be able to take care of things for them worry free."

Standard Machine's world-class reputation in the potash industry was one of the key reasons that Timken had interest in the company. The shop is aligned with all aspects of the potash mining cycle. From manufacturing of mechanical parts in underground borers, conveyor gearboxes, hoisting parts, to the manufacturing of surface operations in compaction units.

"We have large milling capacity, a 25-foot vertical lathe, fabrication solutions, gear cutting and grinding that aligns with the entire potash production. We have even figured out how to use our gear-grinding equipment to provide a ground surface finish for reduced glazing and improved performance," says Nixon.

Timken is a company that has been around since 1899. This long history now recently includes the company moving into the service side of the industry. With the purchase of crane, motor and gearing companies in the U.S., this marks a major investment, not only in Canada, but into the Saskatchewan potash industry. This investment helps Standard Machine with more solutions in the potash industry. Standard Machine now has the capacity for bearing repair.

"One area that this would be beneficial to potash companies is the reduction of costs with compaction unit repairs. Standard Machine can now take care of the entire compaction roll assembly assessment. Not only with the assessment of the roll itself, but with the assessment of the bearings and bearing housings. This could lead to significant reduction in repair costs to the end user," he adds.

Standard Machine has grown alongside the potash industry in Saskatchewan for the last 47 years. The acquisition of Standard Machine by Timken will benefit the global potash industry for many years to come.

Hamilton Gear Ltd. (dba Standard Machine) ([www.standardmachine.ca](http://www.standardmachine.ca)), based in Saskatoon, Saskatchewan, Canada, serves end users in Canada and the western United States, offering gearbox service and repair, open gearing, large fabrication, machining and field technical services. ♦





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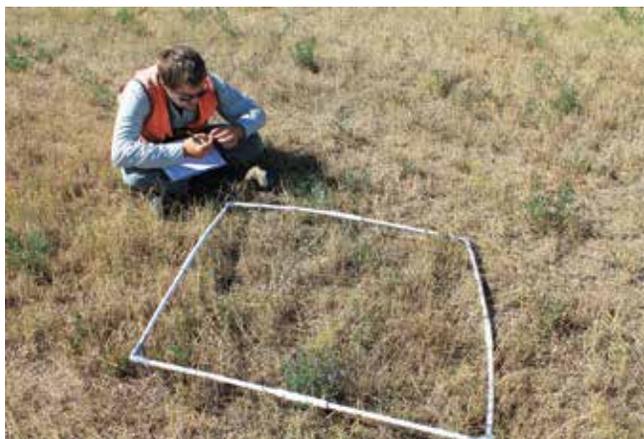
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# CanNorth: Working the potash industry for a greener future

By Miranda Molnar



With the pervasiveness of the potash sector in Saskatchewan, a province that leads the world in potash mining and processing, environmental services related to this sector are key to its continued prosperity.

Canada North Environmental Services (CanNorth), a Saskatoon-based, 100 per cent First Nation-owned environmental consulting company with a well-known specialization in mining developments, is actively engaged in the potash industry at all levels. From project design right through to construction, operations, and decommissioning phases on an as-needed basis, CanNorth assists companies in both preventing and mediating environmental issues and concerns. With the company's rich, 30-plus year history in mining and other sectors, there are many reasons why potash companies are turning to CanNorth for their high-quality, professionally delivered, and cost-effective services.

CanNorth attracts many new and returning clients based on the company's extensive experience with regulatory issues: CanNorth assists clients in achieving their project goals while ensuring that appropriate mitigation measures and regulatory processes are observed. CanNorth has a strong background in acting as a liaison and skillfully manages communications between multiple parties. CanNorth's commitment to a collaborative and positive relationship with regulators and proponents leaves clients more than satisfied with CanNorth services that go above and beyond primary objectives.

Another attractive feature of CanNorth is its demonstrable emphasis on health and safety. All of CanNorth's staff, including management, field staff, and office staff, has embraced the culture of safety. In 2013, CanNorth earned the respected OHSAS 18001 certification for health and safety, and is also a member of ISNetworld. CanNorth is committed to achieving the highest level of occupational health and safety standards, and to applied and continual improvements. Further, CanNorth has earned ISO 9001 certification for quality management and ISO 14001 certification for environmental management and stewardship. Combined, these three quality management systems provide CanNorth with the foundation and the trajectory for the highest quality product possible.

*Canada North Environmental Services (CanNorth), a Saskatoon-based, 100 per cent First Nation-owned environmental consulting company with a well-known specialization in mining developments, is actively engaged in the potash industry at all levels.*

Another major benefit to working with CanNorth is its wide range of services provided. Through its newly expanded Terrestrial, Aquatics, Hydrology, Heritage/Archaeology, and Geomatics divisions, CanNorth offers over a dozen areas of expertise. Services that are especially relevant to potash and other mining developments include environmental baseline inventory assessments, environmental risk mitigation planning and environmental monitoring, habitat evaluation and restoration recommendations, wildlife surveys, including breeding bird and species-at-risk assessments, vegetation assessments, amphibian and fish salvage/relocation, aquatic and fish population studies, aquatic toxicology, water-quality investigations, hydrological monitoring and modelling, Heritage Resources Impact Assessments, Phase 1 Environmental Assessments, and GIS/mapping services.

In 2013, CanNorth moved into its new 21,000-square-foot headquarters on Wheeler Street in Saskatoon, overlooking the picturesque Silverwood Golf Course. With the newly expanded space and interdisciplinary divisions, CanNorth is poised for further expansion into both local and international

markets. CanNorth's interdisciplinary team offers the technical skills and knowledge to protect the environment, meet regulatory requirements, and benefit clients. The range of services, the quality of delivery, the emphasis on health and safety, and the ability to collaborate successfully between project proponents and regulatory bodies make CanNorth an obvious choice for environmental service needs. ♦



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# Proven partner for potash industry

By Michelle Ward

Founded in Alberta in 1956, and proud to be 100 per cent Canadian owned, Park Derochie has experienced continued growth and diversification of services to become one of Canada's premier specialty trade industrial contractors in all forms of industrial and large commercial coatings, fireproofing, mechanical insulation and spray foam insulation, as well as scaffolding, abrasive blasting, containment, and maintenance programs designed to meet our customers' needs.

Park Derochie has worked with and applied product from several of the large coatings manufacturers, and believe our expertise allows us to provide accurate recommendations regarding products to be utilized for numerous and varied applications.

Aside from offering clients 50-plus years of expertise in our other services, Park Derochie Coatings (Saskatchewan) Inc. president and general manager Doug Barker is proud of the company's association with renowned global corporation BASF The Chemical Company, and having attained certification as an approved applicator of BASF Spray Foam products, as well as associations with International, Devoe, HDIM & Carboline coatings products, to name a few.

Since establishing our operation in Saskatchewan in April 2010, Park Derochie has developed strong relationships within the potash industry with various shop coating, field coating and spray foam insulation projects at Mosaic, PotashCorp of Saskatchewan, Agrium, and now K+S Legacy project facilities throughout Saskatchewan. The work varies from new construction to regu-

lar maintenance work. Our goal is to provide our clients with a budget and then supply highly skilled crews to ensure quality, safety, and budgets are met on each and every job.

With an expanding customer base in the south, Park Derochie Coatings (Saskatchewan) Inc., (based in Saskatoon) is in the process of expanding its' operations into the Regina area to better serve and minimize costs to clients. A new shop will be erected by late fall 2014 on just over five acres on the north end of Regina.

## **Why choose Park Derochie as your contractor?**

### **Safety**

Park Derochie is proud to be an industry leader in safety and our WCB experience ratio, which is consistently lower than the industry average, speaks to our dedication to protect people and the environment.

For client convenience, Park Derochie is a member of prequalification management companies, such as ISNetworld, PICS and CanQual.

### **Quality**

Providing uncompromising, quality workmanship to clients is a strong component within the company's core principles of business ethics. Adhering to the stringent standards set out by

the Society of Protective Coatings (SSPC), the BASF Raising Performance to New Heights® program, and guided by ISO 9001-2000, their quality management system is designed to meet the specific requirements of the client.

### Loyalty

Park Derochie was built on the principles of strong work ethic, commitment to customer satisfaction, developing a skilled, dedicated workforce and a belief that loyalty begets loyalty. Those principles hold true today.

### Equal opportunity employers

Park Derochie is an equal opportunity employer and encourages hiring and training of any qualified individual regardless of gender or ethnicity. Preference is given to candidates who most closely meet the knowledge, skills, and competencies required. We are proud, for example, to have several long-term superintendents, general foremen and foremen of aboriginal descent (including women) as part of our diverse workforce, and our current (PD Saskatchewan) workforce has more than 13 per cent aboriginal content. As a company, we promote, encourage, and financially support continuous learning for all employees, at all levels and provide mentors for trainees in numerous trades. ♦



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# Powder coating: Covering your assets

In every industrial sector, powder coated materials have emerged as the new standard. Products requiring an attractive and corrosion-resistant coating to withstand environmental elements are now being powder coated. One reason that many industries have expanded their specifications to include a powder coated finish is because of its consistent performance in regard to corrosion resistance and the fact that it looks great. The mining industry, as witness to this durability and quality, is no exception to the acceptance of these superior coatings and has continued to specify powder coatings in recent years.

Saskatoon Custom Powder Coating (SCPC) was established 13 years ago by three partners in Saskatoon to meet the growing demand for a top-quality corrosion-resistant finish with exceptional durability. With the combined experience of all three partners, exceptional staff, and the co-operation of their powder

suppliers, SCPC came alive with an initiative to see powder coatings as a standard paint specification within the mining sector.

Saskatoon Custom Powder Coating has sandblasted and powder coated a great many projects for the Saskatchewan mining industry. There are powder-coated products in every potash and uranium mine in the province. Projects such as transformers, electrical skids, conveyors, structural steel, motor bases, belt guards, gratings, stairs, and safety railings, just to name a few, have been powder coated and are currently in service. Powder coatings are making an impact and the mining industry is responding positively to what it is seeing due to the advantages being realized, such as cost savings and increased durability during shipping and handling.

Powder coatings represent the evolution and continual improvement in the coating industry. Just as mining equipment



*one voice*  
for all  
potash workers

The Sask Potash Council is an umbrella organization representing approximately 3500 unionized potash workers from the currently producing potash mines in Saskatchewan. The Council's membership includes members from the United Steelworkers (USW), Communication, Energy & Paperworkers (CEP), and from the Rocanville Potash Employee's Association (RPEA).

Our guiding principle is to build cooperation between our constituent unions; act as a communications vehicle enabling the bargaining of improved collective agreements and strengthening our collective capacity representing the health and economic well being of members working in the potash mining sector.

It is important as a Council that we work together to face the challenges before us today and develop strategic plans that address the needs of our members and the communities in which they live, building a better tomorrow for our families.

Working together to strengthen advocacy and improve legislation concerning workplace Health & Safety and Worker's Compensation are key to dealing with these challenges. Collectively we are making a difference for our members and the communities in which they live.

***Sask Potash Council – ONE VOICE FOR ALL POTASH WORKERS***

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*Saskatoon Custom Powder Coating has sandblasted and powder coated a great many projects for the Saskatchewan mining industry. There are powder-coated products in every potash and uranium mine in the province.*

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and mining techniques have evolved and improved over the years, so too have the corrosion-resistant coatings. The quality, durability, and diversity of powder coatings is continually evolving and improving and this simply cannot be ignored. Many major agricultural equipment manufacturers have adopted powder coating as their preferred coating process, and the mining industry is now recognizing the advantages and value in this technology, and many facilities are reaping the rewards.

SCPC has developed a solid relationship with Akzo Nobel Coatings to ensure that the powder coating systems we offer will provide the same or improved performance to the existing coatings, which the mining industry has relied upon in the past. Akzo Nobel Coatings supplies both wet coatings and powder coatings worldwide, particularly here in the

Saskatchewan mining industry, with brands such as ICI Devco and International Paints. The Interpon Powder Coating products supplied by Akzo Nobel include zinc-rich epoxies, chemical-resistant epoxies, polyurethanes, high-temperature coatings, and anti-skid coatings. While the liquid coating technologies continue to provide outstanding corrosion resistance, powder coatings are emerging as an advantageous option for many different projects. Our customers can be rest assured that if Akzo Nobel Coatings manufactures the products, the finished product will meet or exceed their existing wet paint specifications.

Since inception in 2001, SCPC has been able to provide outstanding service to the mining industry by continually expanding their process equipment and production area. This internal growth created the opportunity to handle larger mining parts, equipment, and structural pieces for mine expansions in the province and in being available as an integral partner with new mines being built in Saskatchewan.

*More information about our company and the powder coating process is available on our website. We welcome you to contact us for more information and to see if powder coating is an option for your next project. Please visit us either at [www.custompowder.com](http://www.custompowder.com), or on Facebook. ♦*

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# (Em)powering safety and people

Concept was incorporated in 1997 and is headquartered out of Calgary, Alberta with offices across Alberta and Saskatchewan. Concept's team of nearly 600 trade and technology professionals makes them not only one of the largest, but leading electrical contractors in Western Canada. Concept's scope includes electrical, instrumentation, data, controls, HVAC, plumbing, security, and fire life safety.

Concept's industrial division provides a full range of electrical and instrumentation services in the oil, energy, process, and mining sectors. Their projects range from facility construction and maintenance, such as the Discovery Lodge project at BHP Billiton's Jansen potash mine development in Saskatchewan, to plant turnarounds, substation construction, skid and modular building construction, and much more.

The highlight of Concept's work activity in potash is the Jansen Discovery Lodge located at BHP Billiton's Jansen Potash mine. This facility is the largest Canadian contract in the history of ATCO Structures & Logistics, and is a flagship project for their business. The lodge houses 2,586 workers, and will feature 59 two-storey dormitories, a full-service gymnasium, theatre and other high-end amenities, with an 85,000-square-foot core and 30,000 square feet of pre-engineering buildings. Each of the dormitories have private bathrooms, a flat-screen TV, telephone and Internet. Concept is the electrical contractor on-site ensuring the delivery of all of the electric services for this project. This includes 25kv utility distribution, underground ductbank, lighting systems, HVAC controls, 600V and 208V power distribution, fire alarm and many more system installations to this multi-faceted facility.



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"The Jansen project is one of the largest contracts Concept has been involved in to date, currently nearing 150,000 on-site man hours, and will continue to evolve," says Shaun Howdle, general manager of industrial for Concept.

So what is the secret to the success at Jansen? One of Concept's core values is safety, and together with ATCO Structures & Logistics, they have created a world-class safety system at the Jansen site. Concept has received the safe contractor award three times on this project through their exceptional commitment to safety on the project, the only contractor to do so. Concept is engaging safety through the frontline workforce, not only focusing on supervisory or management roles. Training courses are being offered on-site for leadership in safety excellence (LSE), supervisor training, slow start program, lessons learned, and incident case analysis method (ICAM).

"Concept has fully embraced the heightened safety culture at the ASL Jansen construction site, they have demonstrated a commitment to keeping workers safe, the ability to focus and provide HSEC leadership among major contractors," says Pat Cain, senior project manager for ATCO Structures & Logistics.

The success of the Jansen project is also largely attributed to sustainable work opportunities and First Nations engagement of residents of the area. This is an initiative that both Concept and ATCO have identified as a key part of the de-

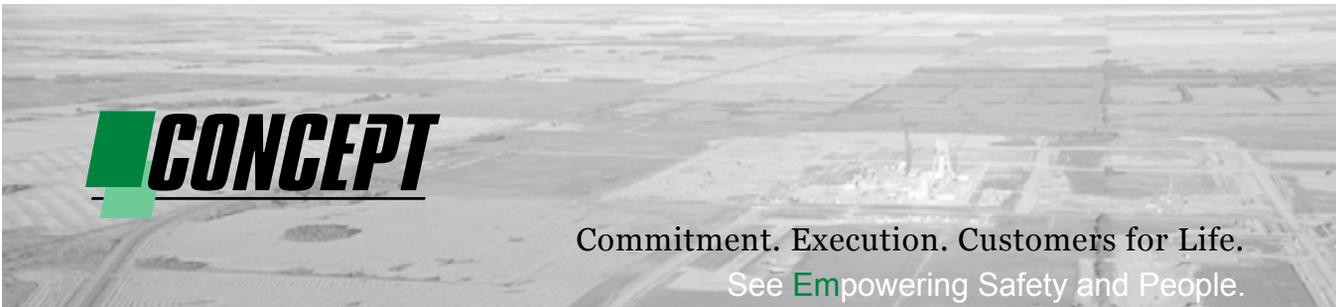
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livery of this ongoing project. Concept has just finalized a Memorandum of Understanding with the Woodland Cree in the Wood Buffalo area in northern Alberta, and is engaged with Daystar, George Gordon, and the Kawacatoose First Nations at the Jansen Mine site for employment and community outreach initiatives. Our integrity and ability to recognize the impact of resource-based industrial development creates a focus on community. Concept is developing collaborative partnerships with the communities surrounding the Jansen site, and many other areas, and is working together with local bands on employment strategies as part of our ongoing First Nations engagement strategy.

Concept is looking forward to further development of these successful partnerships and continues to reach out for new relationships throughout the potash industry. ♦



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“ Concept's industrial division provides a full range of electrical and instrumentation services in the oil, energy, process and mining sectors. Their projects range from facility construction and maintenance, such as the Discovery Lodge project at BHPB's Jansen potash mine development in Saskatchewan, to plant turnarounds, substation construction, skid and modular building construction, and much more.

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Please visit the Commercial Sand Blasting and Painting website at [www.csbp.ca](http://www.csbp.ca). ♦

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# Potash growth fuels manufacturing growth in Saskatchewan

By Ken Cenaiko, P.Eng, president, Croatia Industries Ltd.



50 HP Toshiba CNC Horizontal Boring Mill - 44,000-pound capacity.

The recent expansions in Saskatchewan's potash industry are fuelling a renaissance in the local manufacturing and support industries. Miners have been investing in larger equipment, more tech-

nologically advanced to meet worldwide demand and competitive forces. To meet customer and original equipment manufacturer's specifications, the local supply chain has reciprocated with its own investments.

Croatia Industries Ltd. has operated in Saskatoon for over 38 years supporting clients in potash and uranium, forestry, oil and gas, as well as industrial sectors. Along with engineering support, Croatia Industries offers a team of skilled ma-



*Vertical boring mill turning 170-inch diameter dryer tire.*

chinists, millwrights, and welding personnel. A founding member of the Saskatchewan Industrial and Mining Suppliers Association (SIMSA), Croatia Industries Ltd. has recently added significantly to its existing capacity.

This year, following the installation of a new six-axis Toshiba CNC boring machine, the company purchased a new four-axis CNC lathe with capacity to machine work pieces 63 inches in diameter and a 30-foot length. Supplied with a 20-horsepower milling head, and the most advanced computer technology available, Croatia Industries can now machine complex turning and milling geometry in a single setup to decrease delivery times with increased accuracy. Croatia Industries worked closely with its European supplier Gurutzpe, a leader in the manufacture of heavy-duty CNC lathes to custom design the machine to meet the full potential of Saskatchewan's diverse potash needs. With the ability to handle a 15-ton load without additional support, complex radii, threads, keyways, drilled and tapped holes and pockets can be machined without removing the component from the lathe. The advanced computer system allows large threaded holes on the face of a shaft or flange to be milled by interpolating the cutting tool in

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*This year, following the installation of a new six-axis Toshiba CNC boring machine, the company purchased a new four-axis CNC lathe with capacity to machine work pieces 63 inches in diameter and a 30-foot length.*

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several axes simultaneously. With the potash industry adding compaction shafts over 40 inches in diameter, the additional capacity is intended to maintain Croatia Industries as the first choice of customers with large work-pieces to machine.

Of course, implementing such new technology to an experienced workforce requires a significant investment in human resources and training. Currently, 20 percent of Croatia Industries workforce is indentured as either machinist apprentices or engineers in training. Croatia Industries has a COR (Certified Safety Program) in place for the protection of its employees and customers alike, and the company is

currently upgrading its quality program to the ISO9001:2008 standard. Croatia Industries supports healthy lifestyle choices by providing healthy cooked meals daily to all personnel.

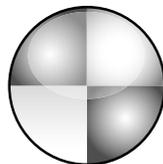
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*For additional information, please visit [www.croatiaindustries.com](http://www.croatiaindustries.com).* ♦

# Not Everything Big and Green in Saskatchewan Plays Football



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# Workmanship makes the difference...

By Sebastien Allard



*Fitting prepared for lining.*



*Close up of the wear-compound lining material.*



*Completed piece with glossy interior finish.*

There's no secret that the potash industry has seen a cooling-off period recently after a decade of rapid and concerted development. Like any hot commodity, high prices attracted new players and encourage existing operators to expand, and in some cases, double existing capacities.

Many projects were building on existing infrastructure using current or older technologies, while others tested the technologies taken from other industries.

One constant throughout all projects, however, was the issue of abrasion and corrosion and their destructive effects. Several standards were developed to protect against those effects and ensure a safe working environment. Those standards included special paint specifications for exposed surfaces on equipment, but also lining specifications for equipment that would also see the effects of wear.

Kalenborn Canada Inc. has had no shortage of experience with the potash industry having supplied a variety of lining solutions over the last three decades. Abresist® basalt linings for tailings pipelines, Kalocer® alumina ceramic linings for hoppers and transfer points, Kalmetall-W for screw conveyors, and most recently epoxy-lined fittings for various slurry transport pipelines.

Many of the pipefittings that see heavier wear are lined with ceramic or basalt, while the straight pipes are typically made of high-density polyethylene (HDPE) or plastic. These different materials pose a challenge in that they often create varying inside diameters, which can have adverse effects on flow dynamics in a pipeline. Operators have gotten around this issue by lining inlet and outlet sections with these wear compounds or epoxies.

Wear compounds and epoxies have long been used by the potash industry as patching compounds for their "quick fix" corro-

sion-resistant properties, but have recently become a favourite because of their surprising wear-resistant characteristics. Although fairly straightforward in their formulations, epoxies do require care in their application.

Kalenborn Canada Inc. was chosen for a large piping project in New Brunswick because of its attention to detail and quality workmanship. This project involved over 1,100 pipes and fittings of diameters ranging from two inches/50 millimetres to 32 inches/800 millimetres. The lining of pipes and equipment with wear compound requires careful attention to detail and a strict adherence to set procedures.

Surface preparation is essential as an initial step to ensure correct adhesion of the glues to the steel surfaces. Sandblasting to correct SPF depths must quickly be followed by the application of a primer coat so as to avoid re-oxidation of the surface being lined. The wear compound is then applied by hand and smoothed out to an even glass-like finish, avoiding as much as possible the creation of pockets or "dimples". It is also important to maintain the targeted ID of the lining, particularly at the end of each piece where it mates to the next pipe, fitting, valve, or other piping component. The wear compound is allowed to cure and the remaining unlined surface is sandblasted and then coated with the appropriate three coats of paint.

Applying wear compound, much like other trades, is a fairly straightforward and simple procedure. Applying wear compound correctly is an art requiring the correct type of personnel with the right kind of experience. Paying a premium for quality materials only to have them fail because of poor workmanship is unfortunately a common refrain when times are good and demand is abundant.

*Sebastien Allard is the territory manager at Kalenborn Canada Inc. He can be reached at 514-426-0460. ♦*

# NCSG

## Helping Saskatchewan rise to new levels



In 2011, NCSG Crane & Heavy Haul Services (NCSG), formerly Northern Crane Services, opened a Regina branch to offer crane rental services, heavy lifting expertise, and specialized transportation solutions to the growing Saskatchewan market. A local branch allows NCSG to better service its existing customers and project sites in the region, including those belonging to Saskatchewan corporate heavyweights CCRL and Yara Belle Plaine.

The success of the potash industry has definitely played a role in the demand for lifting and heavy haul services throughout the province. From the grassroots development and expansion of mining sites, to the construction and maintenance requirements of its supporting process facilities, NCSG is in a position to meet the potash industry's needs with a modern fleet of over 285 mobile cranes up to 1,350 ton in capacity, an extensive line of heavy haul equipment, and a large active workforce to draw from within both the Saskatchewan and Alberta operating engineers union locals.

NCSG's president and CEO Ted Redmond has a mandate to ensure that NCSG is the crane and heavy haul services provider of choice throughout the mining and energy sector in western North America.

"With the extensive capital expenditures being made in the potash and other industries, Saskatchewan's GDP grew at 4.8 per cent in 2013, making it one of Canada's fastest growing provinces," said Redmond. "We want to be in a position to service the resulting lifting and heavy haul requirements generated by the many projects underway in the province."

Not only does NCSG have an impressive list of project references within mining operations, but supplying crane services to the burgeoning mining industry is also not new to NCSG's Saskatchewan branch manager Boyd Adamack. Adamack is a native of Saskatchewan and learned the crane trade there prior to moving to Fort McMurray. This boots-on-the-ground leader worked his way through the ranks from crane operator to branch manager. Adamack managed crane work at oil sands mining projects such as Kearl Lake, CNRL Horizon, and Syncrude Aurora.



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*The success of the potash industry has definitely played a role in the demand for lifting and heavy haul services throughout the province.*

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“Whether we’re required to assemble and place mining equipment or overhaul a conveyor train, our clients at any mining site expect the same thing and that’s a focus on providing good customer service and a strong commitment to safe operations. I was excited by the opportunity to bring what I’ve learned servicing the oil sands mines to the Saskatchewan mining industry, potash or otherwise,” said Adamack.

In just three short years, NCSG’s mobile crane services have been contracted to work at over eight mining sites throughout Saskatchewan. That, coupled with the branch’s success servicing refineries, steel mills, and grain elevators, has added significant revenue to NCSG’s 2013 Canadian crane operations.

With a newer, bigger branch location being constructed across the street from its current location in White City, the expanding Regina area branch has its own fleet of cranes readily accessible for both taxi and project work throughout the province. Adamack also works closely with NCSG’s Edmonton-based

heavy haul division, NCSG Crane & Heavy Haul Trans Tech Inc. (NCSG Trans Tech), to increase the services he can provide his customers to include delivering their over-dimensional components such as vessels and modules from fabrication sites right to the crane’s hook. When crane lifts are not possible or practical, NCSG Trans Tech provides jack & slide services to move, load, offload, and weigh heavy loads.

Many mining sites are often located on the traditional territorial lands of First Nations communities, and NCSG has been working to identify and initiate relationships with aboriginal communities. Hoping to grow the tight labour market for crane operators, NCSG also sees these relationships as a means of attracting candidates from First Nations communities, one of the fastest growing demographics in the country, into the trade through NCSG’s apprenticeship program. NCSG has already established exclusive partnerships with both the George Gordon First Nation and the Whitecap Dakota First Nation in Saskatchewan, including working in partnership at a mining location at McArthur River.

With the future growth expected in Saskatchewan and the potash industry, NCSG is anticipating further growth in its Saskatchewan operations and is committed to adding the equipment and people necessary to support this growth. ♦

# Who's talking trash around the southwest?

By Lindsay Alliban



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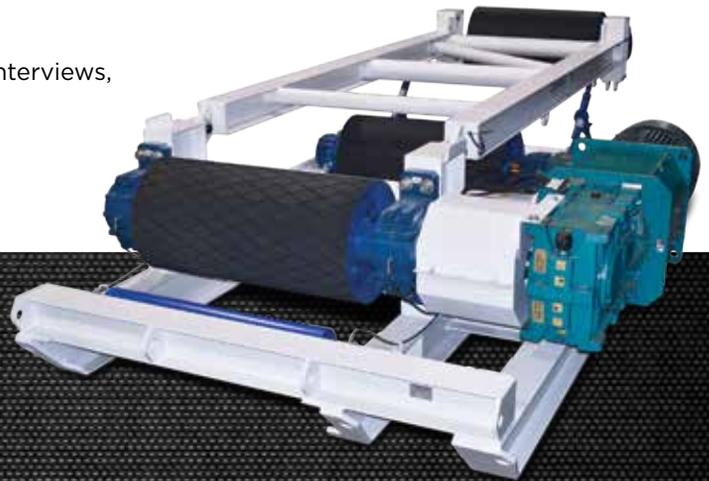
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