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TOP MARKS IN CANADA**



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Tim Gitzel speaks with employees at Cigar Lake at a celebration of the first ore production.

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COVER PHOTO

As commodity prices emerge from the supercycle, mining companies in Saskatchewan continue to upgrade, develop and enhance their operations. With some of the best geology and supporting policies on Earth, they are powering through the challenges and finding the opportunities... not unlike a Tour de France champion. Optimism is their driving force.

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A MESSAGE FROM SMA EXECUTIVE DIRECTOR – PAM SCHWANN EXPLORATION – THE QUEST TO DISCOVER



Mineral exploration is a game of hide and seek, with science tools like geophysics and geochemistry helping uncover the layers that hide the deposit. The high stakes world of mineral exploration, the important role exploration plays as the research and development phase of the mining cycle and the state of exploration in Saskatchewan and Canada are laid out in our two feature stories in this edition of ORE. The success of a mineral exploration program is typically the result of coincident factors; an understanding of the geological framework of an area; an ore deposit model that fits the geological framework, favourable commodity prices, infrastructure access, security of mineral tenure and successful financing.

The mineral exploration game is filled with optimistic players – they have to be, as the discovery of a mineral deposit and bringing it into successful production is against the odds. Reviews of exploration projects have found that the proportion of exploration targets that end up as profitable mines is very low; ranging from 1 in 24 for targets in existing, prolific mining areas (brownfield) and ranging from 1 in 1,000 (0.01%)

to 1 in 3,333 (0.03%) for new exploration targets (greenfield) targeting world-class deposits. Although he was speaking about space exploration, he could well have been referring to mineral exploration when American astronomer Seth Shostak, expressed “exploration occasionally rewards those who accept its risks, usually with new resources.” Rewards of a successful diamond exploration program are beautifully crafted and showcased in eARTh; while the Ore Deposit Model series describes the formation of these gemstones.

While advances in technology have facilitated finding mineral deposits at greater depths in the earth, technology plays an important role in other aspects of the mining business – including the use of drones for efficiently laying out mine plans, to the adoption of technology as a business strategy for Athabasca Basin Security’s work at minesites. ORE’s Tagging Along segment spotlights a geological engineer and describes how technology is embedded into his daily work routine.

Exploring is about asking why and searching for the answer. When a company explored why they were having certain injuries reported and what could be done to prevent these injuries, they discovered a very innovative and successful solution, as described in the Flex Time article. Exploration has also been called the engine of innovation – the Environment article Return to Nature describes the search to find the best way to mimic Mother Nature’s vegetation regeneration in a sand-dominated environment of northern Saskatchewan.



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SODIUM SULPHATE

Have you ever driven past the town of Chaplin, between Moose Jaw and Swift Current, and wondered about those large piles of white stuff on the side of the road that look like snow? That is sodium sulphate, a mineral that forms part of a variety of products you use every day.

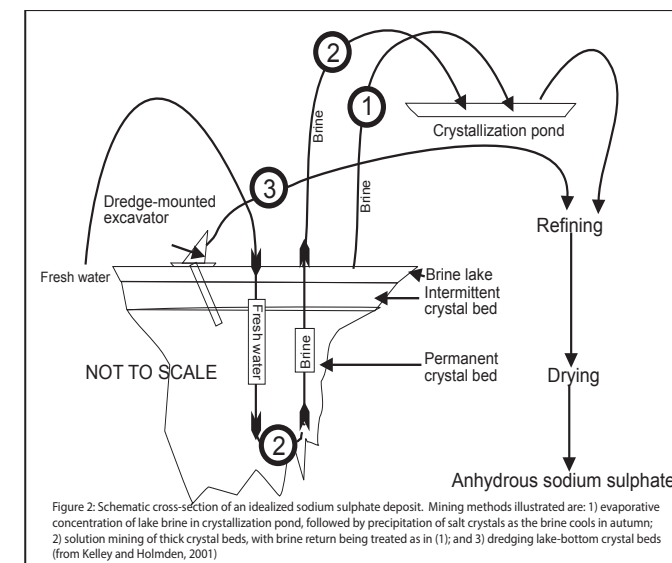
What is Sodium Sulphate, and What are its Uses?

In Saskatchewan, sodium sulphate (NaSO_4) is a processed commodity – sometimes referred to as glauber’s salt – derived from a variety of naturally occurring evaporite minerals, which crystallize at or near surface in many seasonal and permanent restricted bodies of water. These alkali lakes dot an area extending across northwestern North Dakota, northeastern Montana, southern Saskatchewan and east-central Alberta in the northern part of what is known as the ‘Great Plains’ (Figure 1). In its raw mineral form, pure sodium sulphate is called thenardite, but the commodity can be produced from a variety of sodium- and magnesium-bearing evaporite minerals such as mirabilite, bloedite, and epsomite.

Sodium sulphate is primarily used in detergents, carpet fresheners and deodorizers, livestock mineral feed, plate glass, textile dyeing, and in the manufacture of pulp and paper products and industrial chemicals.

How Does Sodium Sulphate Form?

Sodium sulphate deposits form in groundwater-fed, hypersaline lakes within isolated, internally drained basins. The Great Plains area contains thousands of such basins, filled by either seasonal (playa) or perennial bodies of water. Active groundwater seeps and springs on the margins of the lakes, and in the lake beds, feed mineral-rich waters into these closed-basin systems. During the warm, dry, windy summers, ongoing evaporation and crystallization concentrates the lake brines; some playa lakes can dry out completely each year. Perennial saline lakes, which don’t dry up, can also precipitate evaporites when the outside temperature gets cold enough that the lake water can no longer hold the minerals in solution and they crystallize out of solution through a process known as ‘freeze-out’. The minerals produced from these processes form seasonal or intermittent crystal beds, which may be partially or wholly dissolved the following spring and summer. Partial seasonal dissolution results in a net accumulation of permanent crystal beds that are typically 1 to 5 metres in thickness, but may be much thicker. Some of these beds are of exceptionally high grade, containing in excess of 90 per cent salts of sodium and magnesium.



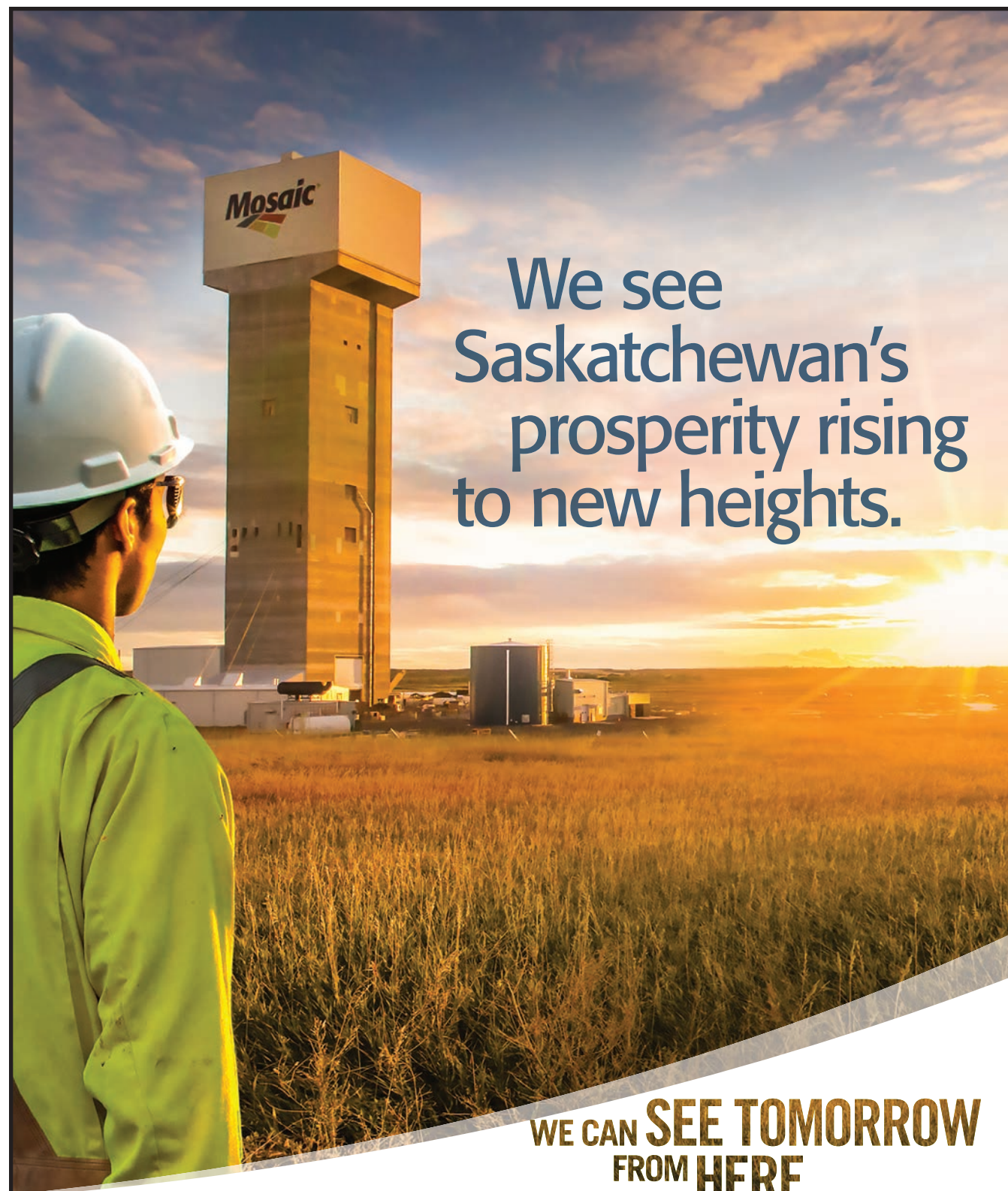
Sodium Sulphate in Saskatchewan

The discovery of sodium and magnesium sulphate salts in alkali lakes in Saskatchewan resulted from the search for potash during the First World War. The earliest attempt to produce alkali salt was in 1918 to 1919 at Muskiki Lake, northeast of Saskatoon. Production peaked in the province in the early 1980s. Of the more than 20 companies that have been involved in development work at various locations in Saskatchewan over the past 97 years, only two operations are active today. Saskatchewan Mining and Minerals Inc. have operated a facility at Chaplin Lake, in southwest Saskatchewan, since 1948, producing high-purity anhydrous sodium sulphate as a final product. In 2009, they reached the ten million ton mark in total

production over that 60 year span. Big Quill Resources Inc. (a division of Compass Minerals Canada Corp.), which operates near Wynyard, in east-central Saskatchewan, combines potash and sodium sulphate to produce agricultural grades of potassium sulphate, a specialized low-salinity fertilizer, used for chloride sensitive crops such as citrus plants.

References:

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10 TRENDS

CHALLENGES MEET
OPPORTUNITIES: MINING
COMPANIES POWER THROUGH
THE SUPERCYCLE AFTERMATH

In a global market where volatility is the only constant, mining companies across the spectrum are embracing innovations as they adjust to a new "velocity of change."

The commodity supercycle may be over, presenting many challenges; but along with the challenges come opportunities, say mining experts from top financial companies.

"There is no doubt that mining companies operate in complex geographies where they face increasing challenges in responding to regulatory and compliance requirements," wrote Philip Hopwood, Deloitte Touche Tohmatsu Ltd. Canadian and Global Mining leader, as a preface to his top 10 mining trends report.



"At the same time, they have an imperative to adapt to changing market conditions adopting new innovations as they seek to produce more for less cost, in a world where volatility market conditions are the new normal."

Hopwood said miners must "rethink their traditional operational processes and consider their cultural approach to costs."

"Volatility is the new stability," he said in an interview. A mining company today must "ride the waves of geopolitical uncertainty" with an agile organization that has the flexibility to accommodate whatever the market might throw at it, he said.

"When things became uncertain, prices were dropping, they really put the brakes on their spending in a big way. That's okay for a couple of years, but eventually you have to do something. You can't just stop spending."

"The miners then started embracing innovation as a means of starting to reduce their costs. We call it innovate to survive."

Leigh Derksen, a partner with Deloitte in Saskatoon, noted that the trends identified are world-wide, but "the global trends are very much local trends as well."

"If you grouped the first three trends, they all deal with the challenge of innovation," said Derksen. "I do see that as being key."

Different mining companies will require different innovations, said Derksen. For example, a large potash company developing a brownfield expansion into a "mine of the future" will need different innovations from an exploration company or a company building a greenfield mine.

In addition, survival of the junior companies is also an important part of the overall picture.

"If you take out that piece of it, you jeopardize the future. We've seen some exploration from juniors. We need exploration to fuel tomorrow's opportunities."

Derek Meates, partner with KPMG in Saskatoon's mining group, said the risks and trends identified by his company are different for the three main groups of resource players in Saskatchewan.

Meates said KPMG's 10th annual mining forum chose three "clear winners" among the 10 risks: Commodity price, operating costs and capital costs. They affect the established global players in Saskatchewan differently from the big players just coming in, and from the juniors.

"We're fortunate in Saskatchewan to have a few industry leaders, and they are in a position of strength with low cost assets, compared to other players in the industry. They have most of their existing capital programs

complete," said Meates.

"If you look at those three risks, they are in a slightly different position, because they have most of their capital projects completed. The real focus for them is sustainable operating cost reductions. That helps them deal with the commodity price risk."

Some of the larger players are not yet fully into the Saskatchewan market, but are global mining houses.

"Their focus has to be on capital costs," said Meates. "They're trying to work out when they enter the market, which links in again with commodity price. They haven't yet finished building or are thinking about building. They are in the capital cost, management and optimization phase."

Juniors are in a very different position, he said. "We've actually got quite a good mix in Saskatchewan, (but) they are having tough times, and those risks are really quite different. Liquidity has to be the number one risk for the juniors. For them, it's cash flow to survive."

Meates, who is KPMG's uranium expert, said the future for the big companies is still wrapped around long-term megatrends. For potash, the trend is the growth of the middle class in Asia. For uranium, it's energy demand from China, which is building nuclear reactors.

"If you believe the longer term fundamentals, they haven't

Deloitte's top 10 challenges and trends for 2015:

1. The pursuit of operational excellence
2. Innovation: the new key to survival.
3. Reducing project power costs.
4. Dwindling project pipelines: Companies must balance investor and analyst expectations with maintaining project pipelines.
5. Financing's great disappearing act: the implications of the drop in financing means juniors must find new solutions, such as pooling resources and finding foreign investors.
6. Survival of the juniors: Junior companies should get their assets in order and consider options from partnership to joint ventures.
7. Seeking new skillsets: finding and training the new generation of talent.
8. Riding the wave of geopolitical uncertainty: response strategies from lobbying for greater policy clarity to leveraging mining associations.
9. Balance competing interests.
10. Engage with government.

changed," he said. "It's just getting from where we are today to that point. How long that will take is the unknown."

For all miners, the planning agenda must include a strategy around the "sheer velocity of change" and the interconnectivity

of risks, he said.

"You can't look at commodity price on its own, you might have to look at commodity price and if you're building a project, commodity price plus community relations," said Meates.

"If I was a junior, I have operating costs combined with liquidity risk. Have you mixed that (velocity of change) with your strategy, and consciousness around that connectivity of risk? It's not one in isolation. That's what companies are really starting to do."

KMPG's Insights into Mining report says companies must hope for the best, but plan for the worst, over the next three years at least.

The Human Factor

For all the experts, skill development and community relationships are extremely important for all mining industry players.

"Seeking new skill sets – dealing with the human capital side – has been an important trend over the last few years," said Derksen.

"There's also the generation issue. If you look at the number of mining engineer graduates, it's very, very low. There is going to be a gap here that is going to have to be plugged. You can't talk about innovation without talking about the consequence on human capital."

It is also crucial for mining companies to work with communities, and in Saskatchewan, particularly First Nations.

"The effort being made by many of our Saskatchewan mining companies is great," said Derksen.

Meates said relationships with First Nations are crucial,

KMPG's Insights into Mining report says companies must hope for the best, but plan for the worst, over the next three years at least.

- | | |
|--------------------------------|--|
| 1. Commodity price risk | 6. Permitting risk |
| 2. Controlling operating costs | 7. Community relations |
| 3. Controlling capital costs | 8. Environmental risk |
| 4. Resource nationalism | 9. Capital allocation |
| 5. Liquidity risk | 10. Life of mine planning and reserve estimation |

and that Saskatchewan seems further ahead on this file than many jurisdictions. Still, he warns, "it's not something you can take for granted."

Innovation encompasses changes in the ways mining firms hire and encourage the new generations of workers, said Hopwood.

Businesses must embrace diversity, which means attracting and training more First Nations people and encouraging gender diversity, said Hopwood.

"It's how you attract people into the industry. This is an industry that's embracing cultural diversity. The women in mining initiative, that's absolutely the way to go."

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SASKATCHEWAN TAKES AN “A” IN FRASER INSTITUTE MINING SURVEY



It was great timing for Bill Boyd when the Fraser Institute declared Saskatchewan the second best jurisdiction on Earth for mining investment attractiveness.

The Prospectors and Developers Association of Canada (PDAC) conference in early March closely followed the February survey release. The high ranking gave Saskatchewan's economy minister great fodder for his speech and one of his famous jokes at the province's PDAC reception.

"It was an absolutely packed room with people from around the world, interested in Saskatchewan, the mining opportunities, and certainly in networking with people in the mining industry who already have investments in Saskatchewan," said Boyd in an interview. "What it illustrated to me was

there is tremendous interest worldwide in our province.

"People were certainly aware of (the Fraser report). I certainly mentioned it in my speech. I think they know that Saskatchewan is a good place to do business.

"We're pleased that the Fraser Institute has recognized Saskatchewan as the top jurisdiction in Canada and second in the world to invest in exploration and mining activity."

"I think they look first of all at the resource, I think they look at the stable royalty regimes that we have here in Saskatchewan. I think they look at the hardworking people we have here in our

province. All of those things say to them it's a good place to do business."

Saskatchewan, with a ranking of 83.6, was Canada's best jurisdiction, but was edged out on the global scene by Finland, with 83.8.

"We're very happy we're number one in Canada," said Boyd. "We're a little surprised Finland beat us out as far as the world is concerned. I joked at the PDAC conference that I

think it was the Russian judge who let us down."

The Fraser Institute Annual Survey of Mining Companies was conducted from Aug. 26 to Nov. 15, 2014. The institute sent the survey to about 4,200 exploration, development, and other mining-related companies around the world, many of them among the biggest and most active globally.

The institute received 485 responses, allowing it to evaluate 122 jurisdictions. Canada ranked well in the survey, with Manitoba, Newfoundland and Labrador, and Yukon also in the top 10.

Saskatchewan Mining Association president Neil McMillan said he was very pleased to see the ranking, but also unsurprised. Saskatchewan's geology and political stability are two very good reasons for attracting mining investment, he said.

"The mining industry is very comfortable with the provincial government, firstly because of the security of title," said McMillan. Mining companies in Saskatchewan have the assurance that title to their properties is safe, unlike in other jurisdictions where development progress is crucial to maintaining title.

making sure there is informed decision making on policy and regulatory issues as that supports a positive investment climate."

The only survey indicator where Saskatchewan fared less well was on availability of labour and skills, placing 39th.

"We continue to be a world leader in uranium and potash production."

"We're well advanced relative to most jurisdictions in terms of relationship with stakeholders," such as Northern communities, said McMillan. "We have very constructive and stable governing bodies in Saskatchewan that reduce the risk for companies who employ their capital here.

"The approach that the government has taken to resource development and production in Saskatchewan is constructive, one of the best in the business.

"We have the geology, we have a very healthy political environment, and we have a very substantial core of mining super-entities. There's an infrastructure that's built among the companies."

Pam Schwann, executive director of the SMA, said the organization is always working with government to advance positive policy for mining investment.

"We're pleased that the Fraser Institute has recognized Saskatchewan as the top jurisdiction in Canada and second in the world to invest in exploration and mining activity," she said in an interview.

"We work with our members and with government on

"I think that's a concern," said Boyd. "The labour force we have here is an incredibly hard working group of men and women and as a result of that people certainly feel the resource is strong there. However, the availability of labour is a concern.

"We are certainly taking steps as a government to try to address that. We are certainly running trade missions around the world to seek people we might need in all areas of Saskatchewan. We're increasing our apprenticeship training seats to try and attract more people into the trades which will then, of course, flow into businesses like mining operations."

Boyd said improving labour availability includes attracting immigrants to Saskatchewan and engaging First Nations workers. Cameco Corp., for example, has set the bar high for aboriginal employment, said Boyd.

The SMA is just completing a labour market study, its third in the last seven years. The study identifies occupations where there is a gap between the number of workers needed and the number of workers available. in the next 10 years. That helps inform

post-secondary institutions and government on where they should be directing funding. For the mining sector this includes additional technology and technician training, more apprenticeship seats and mining-related engineering courses.

McMillan agreed that labour availability is a concern, although he believes it is not as serious as depicted in the survey. His main concern is transportation.

"Transportation is clearly a major problem for the mining sector in Saskatchewan," he said. "Railways are moving much more oil. They have limited capacity, and make more money moving dense product because they charge by the tonne.

"That's one of the biggest challenges. The rail issue is completely unresolved in my mind. Particularly the potash industry has a big challenge there. We have to try to make sure we can get those issues resolved."

Schwann said the SMA has provided a submission on the Canadian Transportation Act and done advocacy at the federal level "to make sure the federal government understands, because of the increased investment in the potash sector, we're looking at potentially doubling potash production. We need to make sure we have locomotive power...to get our products to market."

Schwann also said that the geological potential of the province is in her view stronger than respondents to the Fraser survey indicated.

"When the typical respondent thinks about geological potential, they're looking more at the conventional base metal or gold potential, rather than what Saskatchewan is known for, which is uranium or potash

deposits. We score 11th in geological potential, but I'm not surprised, because it's really a function of who is responding and most aren't exploring or developing potash or uranium properties – that is a Saskatchewan specialty.

"We continue to be a world leader in uranium and potash production, and that we continue to discover and bring world class deposits into production speaks to the main conclusions of the report, which is that Saskatchewan is the number one jurisdiction in Canada to invest."





Members of the Northern Saskatchewan Environmental Quality Committee learn about managed tailings at Key Lake.

CAREFUL CONTAINMENT

TAILINGS FACILITIES IN SASKATCHEWAN BASED ON SOUND ENGINEERING DESIGN

A safe, effective tailings management facility begins life before a mining company has even scratched the surface of the earth.

In Saskatchewan, absolutely nothing happens in mine development until a thorough environmental assessment is done at site, and that includes a full evaluation of the tailings management facility (TMF).

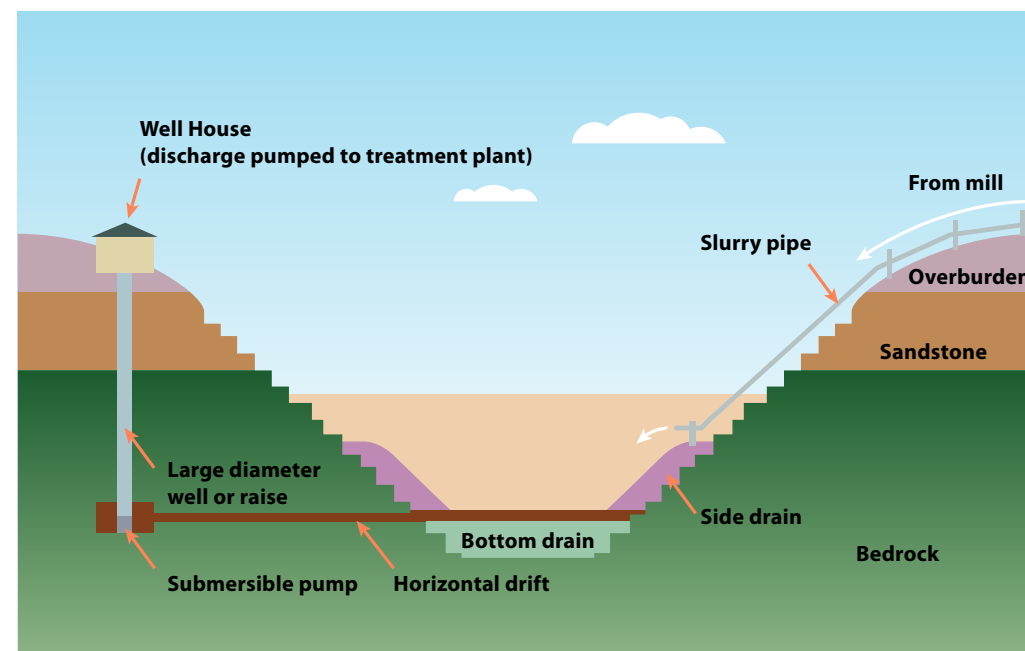
"Tailings facilities are all made to contain mining waste, so in that respect they're all the same. Tailings are a by-product of mining," said Brad Sigurdson, manager of environment and safety for the Saskatchewan Mining Association. "How you construct them (TMF) and where you construct them is very mine specific and material specific."

"A lot of it is based on the geology. In the Mount Polley

situation, one of the lessons learned was that the geology wasn't fully understood when the facility was constructed."

The government-appointed expert panel struck to investigate the event said evidence

layer. GLUs are sediments that have been deposited into glacial lakes.



Sigurdson was referring to the failure of the copper and gold mine tailings facility at Mount Polley in British Columbia on Aug. 4, 2014.

showed the breach resulted from a failure in the foundation of an embankment that occurred in a glaciolacustrine (GLU)

Their report indicated that foundation investigations failed to identify this layer and to recognize that it was susceptible to failure

when subject to the stresses associated with the tailings embankment.

In light of the Mount Polley tailings dam failure, many people have asked whether a similar event could occur in Saskatchewan. This article addresses that question by providing information about the processes, regulations and evaluations that are in place in Saskatchewan to ensure the integrity of tailings facilities, to protect the environment, people and property.

Prior to a mine being approved to operate, an environmental assessment report must be conducted by the operator and approved by the government(s). Part of this report focuses on the TMF and its characterization.

At the outset of a mine operation, companies are also required to have an approved decommissioning and reclamation (D&R) plan in place for the entire mining facility, along with providing financial assurance to the province to ensure that there are financial resources available to carry out the plan should a company not be able to carry out its decommissioning and reclamation obligations. D & R plans are required to be updated at least once every five years and the financial assurance updated accordingly. Financial assurance has been a regulatory requirement for mines for almost 30 years.

Once the mine's life ends, the operating company must demonstrate that they have carried out the actions of their approved D&R plan including ensuring that TMFs be returned to nature to the greatest extent possible. Mines on Crown land are also subject to the Reclaimed Industrial Sites Act, which lays out the process for post-closure

monitoring and additional funding contributions for addressing unforeseen events and post-closure monitoring and maintenance.

Sigurdson noted that while each plan is site specific, Saskatchewan geology generally contributes positively to tailings management. Potash tailings, for example, are located in above-ground facilities that are well contained by the naturally low permeability tills found in Southern Saskatchewan. The brine within the tailings dyke itself is carefully managed and monitoring wells are installed outside the tailings dyke to monitor for brine migration from the facility. In the case of potash mines, tailings will be disposed of in brackish geological formations hundreds of metres below surface.

For northern mines, D&R plans for aboveground TMFs will have a soil cover and be re-vegetated while in-pit TMFs will either have a vegetated soil cover or remain as a small pit lake. All active uranium tailings facilities are engineered "in-pit" facilities, constructed below ground and occupying mined out ore pits, so there is no risk of tailings dam failure, as was seen at Mount Polley.

Wes Kotyk, executive director of the Ministry of Environment's environmental protection branch, said his ministry paid attention to what happened at Mount Polley, and evaluated Saskatchewan sites to see if there were any similar issues.

"We were comfortable that sites in Saskatchewan were being properly inspected and monitored," said Kotyk in an interview. "With the combination of our compliance inspections and the mining companies requiring third party inspections of their dykes

through the use of qualified professionals and the requirement to report back on the safety of them.... we felt with that there were adequate controls in place. And, to add to that, the designs of the tailings management areas at sites in Saskatchewan are typically different from the B.C. situation.

"The Mount Polley tailings failure was a serious incident and it did raise the flag, so we did ensure that we talked with the companies to ensure they were doing their inspections, having their consultants inspect

their dykes, and that things were in order."

Considering all of the province's environmental checks and balances, and rigorous design evaluations, Kotyk said it is highly unlikely that a Mount Polley-like tailings release could occur in Saskatchewan.

"I think we are rigorous in our inspections and the sites are rigorous in monitoring their tailings management areas," he said.



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STATE OF GLOBAL ECONOMY AMONG THE CANADIAN MINING INDUSTRY'S TOP ISSUES

Brendan Marshall | Director, Economic Affairs, Mining Association of Canada

Despite a positive long-term outlook for Canadian metals and minerals, and robust economic contributions, 2015 will be a challenging year for the Canadian mining industry based on findings from the Mining Association of Canada's latest Facts & Figures 2014 report.

The report, which draws on the most recent data available from the federal government (mostly 2013), reveals the mining industry contributes greatly to the Canadian economy in a number of important ways. Despite the volatility seen over the last couple of years, Canada's mining sector contributed \$54.0 billion to the national GDP in 2013 up from \$52.6 billion in 2012. Mining industry exports accounted for 19.6 per cent of the Canadian total in 2013, which is down slightly from the 20.4 per cent seen the previous year.

A bright spot remains the industry's strong employment figures. According to Natural Resources Canada definitions and data from Statistics Canada, the mining industry employed more than 380,000 people in 2013, accounting for one in every 47 jobs in Canada. As well, more

than 3,400 companies in Canada supply goods and services to the industry, which further extends the economic and employment reach of the Canadian mining industry. Saskatchewan, for example, accounted for 17 per cent (\$7.2 billion) of Canada's total mineral production value in 2013, as well as led the country in resource capital expenditure with \$4.7 billion invested in 2013. The Fraser Institute's 2015 global mining survey's ranking of Saskatchewan

as the most attractive jurisdiction in Canada for mining investment, and second most attractive jurisdiction globally, indicates this strength persists.

Nationally, Canada slipped from the world's top destination for exploration spending in 2012 to the second spot behind Australia in 2013. Canada's percentage of global mineral investment dropped from 18 per cent in 2011 to 13 per cent in 2013, which

is indicative of the fierce competition for global mineral investment. In 2013, exploration investment also fell year-over-year by 41% to \$2.3 billion. Spending intentions for 2014 anticipate investment levels to drop even further to \$2.1 billion, approaching the low of \$1.9 billion seen in 2009 during the global recession, indicating further challenges in this key sector of the mineral industry.

Looking forward, key issues for the Canadian mining industry in 2015 include:

1. State of the global mining economy: Recent uncertainty over the short-term global economic outlook, particularly the softening of China's growth, caused commodity prices to decline in 2014 and volatility is expected to persist in the year ahead. Despite challenges, the prevailing view is that the industry's economic prospects over the long term remain strong.

2. Lack of critical infrastructure: Mines require infrastructure like roads, ports, railways and power grids to operate,

which are often not available in remote and northern regions of Canada. Immense opportunity for mining development lies in Canada's northern regions, and would provide significant socio-economic benefits to northern communities.

3. Complex regulatory environment: Recent years have seen significant changes to the regulatory regime for mining in Canada. As regulators transition to the new regulatory regime, it is crucial that mining projects are

reviewed once, and that various federal requirements, along with Aboriginal and public considerations, are integrated into a unified, robust and timely process with meaningful consultation. This will ensure projects are reviewed effectively, yet efficiently to avoid costly and unnecessary delays due to overlap with other provincial reviews.

The full report can be found here: http://mining.ca/sites/default/files/documents/Facts_and_Figures_2014.pdf



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.



THE INNOVATION PIPELINE

MINING COMPANIES EMBRACE INNOVATIONS



Northlands College Mine School students have access to simulators, a high-tech training tool considered a top 10 innovation in mining.

Challenging times bring innovation, and the global mining sector is fully embracing new machinery, new processes and new technology to ensure a strong future.

From better transportation to high-level training, these innovations will variously make mining safer, more cost-effective and environmentally friendly. As an added advantage, some of these innovations will also expedite bringing resources to the surface faster.

Mining Global magazine recently highlighted the top 10 innovations in mining, in its November, 2014 edition. Here are the top 10 innovations they cited:

10. Automated tunnel borers

The concept of automated tunnel borers isn't new. Since 2012, Rio Tinto has been working with the Centre of Excellence in Mining Innovation (CEMI) to build shafts and tunnels at a faster rate as part of Rio's Mine of the Future

initiative. Together, the two have designed a new tunnel boring system that is currently being implemented at Rio's Northparkes Mine in Australia.

The future of autonomous boring is anticipated to be seen regularly in coming years.

9. Ore processing

In addition to eco-friendlier ways, the mining industry is pushing for newer and more improved methods for ore processing. One new process, which has the potential to be maximized across the mining sector, is Copper NuWave™.

Designed and implemented by Rio Tinto, the technology maximizes mineral recovery while reducing waste. It also has the ability to cut water and energy consumption. The company is currently testing the technology at its Kennecott Utah Copper mine in the U.S.

8. Simulation technology

The use of mining equipment simulator systems is on the rise in recent months

as companies utilize the innovative technology to train operators. The use of simulation technology has a wealth of advantages including aiding in recruitment processes, improvements in productivity and reaction times in emergency situations.

Within the next few years, the use of mining simulation technology could very well be utilized across the mining spectrum.

(Simulators are being used extensively at the Northlands College Mine School at Air Ronge, Sask.)

7. Revitalized excavator

One of the more anticipated innovations for the mining industry is the revitalization of excavators. Companies like Volvo and Doosan are helping to make the excavator of the future bigger, smarter, safer and more powerful. Together, the two have designed some of the most futuristic concepts that could very well come to fruition in the next few years.

6. Automated rail system

Rio Tinto is already working on commissioning the world's first automated, long distance, heavy haul rail network for the mining industry, but it won't be the last. The benefits of an automated rail system include enhanced safety and efficiency as mining companies can rely on the innovative technology to safely and securely transport minerals to their required destinations.

5. X-ray diffraction equipment

Already being utilized by a small group of mining companies, including diamond miner ALROSA, x-ray diffraction equipment is on path to become a global necessity. The equipment, which is currently used in diamond recovery, is an important method for the identification of phases in raw materials, for process control during ore beneficiation, and for the quality control of final mineral product.

4. 3D Mapping

3D mapping is another technological advancement that is expected to make a big splash in the mining industry within the next few years. Companies like Rio Tinto, which has already implemented the software at its West Angelas mine in Western Australia, are using the innovative technology for their advantage to improving the way they dig up commodities as well as cut cost.

(Closer to home, the Saskatchewan Geological Survey utilizes 3D mapping technology to model the

geology and uranium mineral deposits of the Athabasca Basin.)

3. Alternative energy

Utilizing alternative energy is something most industries are working to implement on a larger scale. The mining sector is no different.

Harmony Gold has been on the forefront of using alternative energy, most notably solar. The company is working to use mine-impact land and tailings to pilot biocrop procreating in the form of giant king grass and sugar beets to generate natural gas as a fossil fuel substitute. The

initiative could lead to more companies utilizing innovative sources for alternative energy.

2. Safety equipment

Safety equipment in the mining industry has progress considerably in the last decade. As the sector moves towards automation, companies are implementing more advanced technology to secure employees remain as safe as possible.

At this year's NSW Minerals Council Health and Safety Innovation award ceremony, the top honour for innovation went to Centennial Coal for their Fit-for-Purpose

Underground Boot. The mining boot is designed to provide ankle support and sole stability, comfort and full prevention of water ingress.

Another safety innovation that has the potential to sweep the industry is SmartCap. The technology, which works to combat fatigue, utilizes sensors on the wearer's forehead to monitor signs of fatigue and assess their level of alertness.

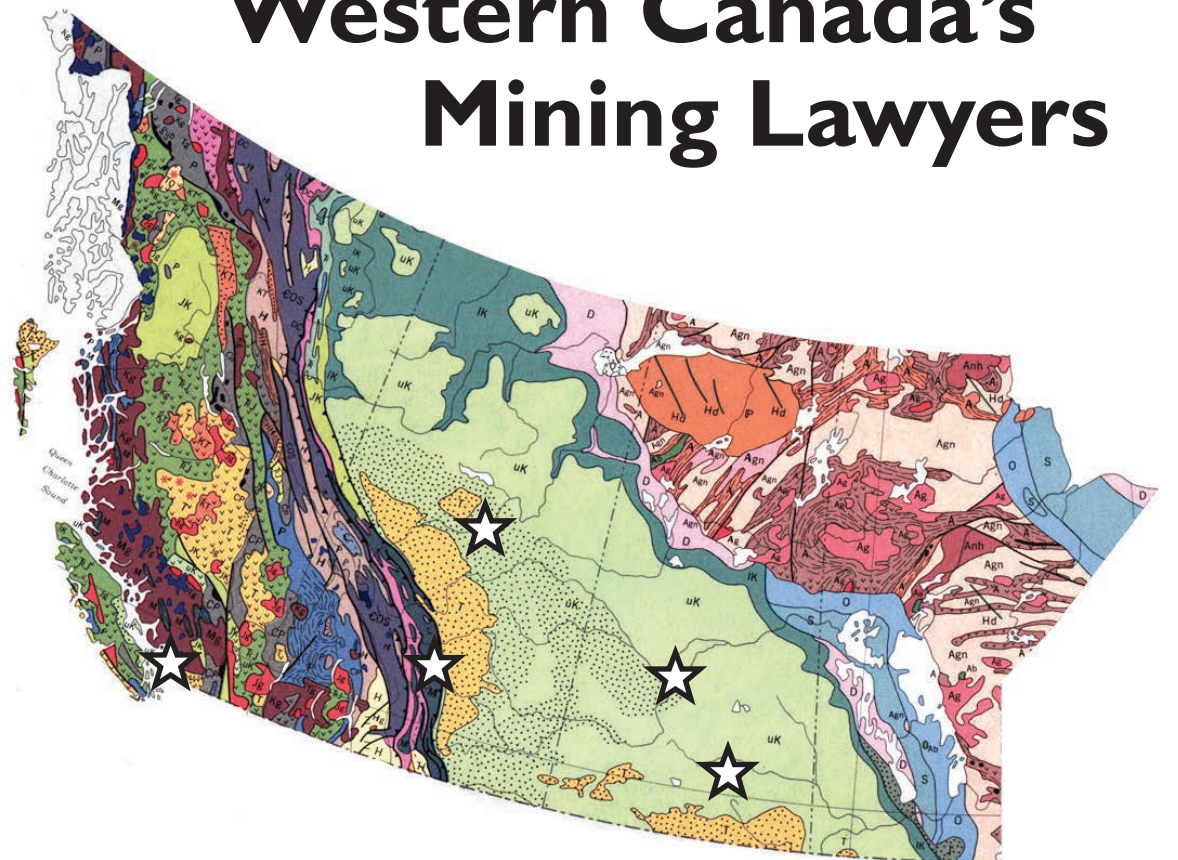
1. Autonomous mine site infrastructure

The number one mining innovation set to turn the industry upside down

is autonomous mine site infrastructure.

Rio Tinto, which is the first company to envision the idea, has already launched initiatives towards its Mine of the Future. The three main components of mining include drilling, haulage trucks and long distance railway systems. Rio Tinto is working to automate all three in unison with operations. The system, which is set to be controlled by one main operational facility, will allow miners, ports and rail systems to be operated from a single location.

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eARTh

Her name hangs on street signs in Saskatoon and her paintings hang in galleries as far away as Ottawa.

Grace Mary Isabel Hogg, born in Oxbow in 1900, lived most of her life in Saskatoon where she studied art under some of Western Canada's best known artists of her time: Elizabeth Rankin at Saskatoon Normal School, Ernest Lindner at Saskatoon Technical School, as well as Augustus Kenderdine and Eli Bornstein at the University of Saskatchewan. Active in the Saskatoon art scene in the 1940s, '50s, and '60s, Hogg also attended Emma Lake Summer School.

"I enjoy sketching from nature, where I obtain my inspirations for colour, form, line, movement and mood," Hogg is quoted as saying in Biographical Dictionary of Saskatchewan

Artists: Women Artists, by Marketa Newman.

Her contemporaries included Dorothy Knowles, Wynona Mulcaster and Reta Cowley. Like Cowley, Hogg used a loose cubist structure in her watercolours influenced by Bornstein.

"She would have been one in a group of artists who were documenting cityscapes and landscapes in and around our city and is part of the legacy of a strong and vibrant arts community within our city and province that continues today," says Linda Stark, gallery manager at The Gallery/art placement inc., located in Saskatoon. "She was especially drawn to industry on the fringe of nature, the two butting together."

Hogg's watercolour paintings, including some of potash



mines, can be found in private and public collections, including The Mendel Art Gallery in Saskatoon, the National Gallery of Canada in Ottawa and the Saskatchewan Arts Board in Regina.

In 1999, Art Placement held an exhibition featuring "Artists

of Erindale," displaying works of art of those Saskatoon artists whose names have become familiar street names in the Erindale neighbourhood: Hogg, Cowley, Kenderdine, and Bornstein.

Hogg died in 1989.

Photo courtesy of Richard Moroz

DIGGING DEEPER TO ENVISION THE FUTURE OF MINING

What will Saskatchewan's mining industry look like in the next 50 years?

It was the perfect question to ask students across Saskatchewan, in the second annual Digging Deeper Challenge as the Saskatchewan Mining Association celebrates its 50th anniversary this year.

Students engaged in the challenge prepare videos related to the mining industry, and then are judged on content, production and delivery. The winners receive cash prizes, up to a total of \$2,250.

Kate Grapes Yeo, education outreach co-ordinator for the SMA, can't wait to see what the young people of the province come up with.

"It will be very interesting," said Grapes Yeo.

"We give them some ideas and things to think about. For example, what minerals is Saskatchewan producing now? Do you think we'll be producing the same minerals in the future?"

"The students have to think about how large our resources are, and what will the demands be in the future.

"Consider nickel-metal hydride batteries, used to power hybrid cars. The "metal" in the batteries is lanthanum, a rare earth element. As hybrid cars become more common, we may be mining rare earth elements in Saskatchewan. Diamonds also have potential. Students could also take a look at the



Trevor Berg, SMA President, left, and Don Morgan, Minister of Education, right, present a prize to Ecole Massey School Grade 7 students in last year's Digging Deeper Challenge.

location of our mine sites, and think about the logistics of mining."

"What new technology is going to be developed in the next 50 years that might allow us to mine more economically, or mine deposits we haven't been able to mine before? How can we mine more sustainably?" asked Grapes Yeo.

The Digging Deeper Challenge was established last year by the SMA as an educational project that links to the Saskatchewan school curriculum and was modelled after a similar project sponsored by the Ontario Mining Association called "So You Think You Know Mining?" Support for the classroom helps to build students' awareness of the importance of mining in the province, and the career opportunities available.

"It's creating more informed future decision

makers and employees," said Grapes Yeo.

The Digging Deeper Challenge is geared toward students in Grades 4 to 12, although anyone can participate. Last year, there were 19 entries representing 95 students, most of them in teams of four.

In Grade 4, students start looking at rocks, minerals and erosion, and begin discussing resources in Social Studies. By Grade 12, there are several courses that correlate to the Challenge, including Grade 7 Earth's Crust and Resources, the new Earth Science 30 course, and the Practical and Applied Arts Energy and Mines 10/20/30 course and Communications Media 10/20/30.

"The Digging Deeper Challenge combines science, art, technology of film, language arts and social studies, all in this one project," said Grapes Yeo.

Students are often given class time to prepare the videos, with support from their teachers. Last year's challenge, however, attracted one video from a student who did it all on his own.

Students can enter as individuals, in teams or with their classes.

Once the videos are finished and the entry forms have been sent in, students post their videos on YouTube, and submit the YouTube link to Education Outreach. The entries are then judged by a committee made up of SMA members, teachers and media experts using the same rubric provided to the students and teachers.

Prizes will be presented during the Mining Week launch May 25. To see last year's winning entries, visit <http://www.saskmining.com/digging-deeper-challenge.html>

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NORTHLANDS COLLEGE MINE SCHOOL TO OFFER WORLD-CLASS TRAINING



Colleen Durocher and Tim Gitzel at the Northlands Mine School simulator.

world class institute," said Greschner. "We already have partnerships with industry, and we are developing more. We have the \$2.5 million investment from the federal government, and another \$1.81 million from the International Mineral Innovation Institute, which is comprised of a number of SMA members on the board. We are extremely appreciative of their commitment as well."

Northlands College is the largest of seven regional colleges in the province. It employs about 180 people across the north, with about 15 of those involved with the mine school.

"We've always offered the programs...but it's been sort of haphazard," said Greschner. "Now, we've moved into a renovated building that was once an SMDC (Sask. Mining Development Corp.) building from 40 years ago, and concentrated all our training in one facility."

"The plan is now to grow those program offerings."

The mine school has already doubled the intake for the mine engineering technician program. A two year program, Northlands was until recently taking people every two years, but now is doing an intake every year.

The mine school also offers an underground mining and a radiation environmental monitoring technician program.

"We're trying to look at other programs that the mining industry needs," said Greschner. "What's driving us is whatever we do, it has to be driven by industry. Industry will be advising us on what programs to offer and in return, we want a commitment from industry that they are going to hire our graduates."

Perhaps equally exciting for Northlands are the three mine simulators, which will add considerable depth to the programs. One of the new simulators simulates a scoop tram, one a drill, and the existing one is a heavy equipment simulator. The simulators set Northlands apart from other mine schools, said Greschner.



The Radiation Environmental Monitoring Graduating Class from November 21st, 2014.

"One thing that we're doing which sets us apart is we're in a partnership with Atlas Copco. Their simulators are exactly the same as the equipment (used on site)," said Greschner.

"Atlas Copco has a globally recognized training program for their drill, so when the students take our program, not only will they come out with a Northlands College certificate, they will also get the Atlas Copco Master Driller certification, which is recognized world-wide."

"In addition we have another simulator that does all the other heavy equipment, such as a dozer, excavator and grader. Our plan is to set up a "sim farm" with access to a variety of equipment."

"People can either go on those as they go through our programs, or can come in from the mine site and upskill."

Colleen Durocher says the mine technician and radiation technician courses can take 12 to 15 students annually, while the underground mining program takes seven, three times per year. Much of the training is done at mine site, she said.

"We have a solid partnership with Cameco. We utilize the Rabbit Lake-Eagle Point stope school to train our underground miners. The instructor is one of Mudjetik Thyssen Mining's employees; the students get a lot of out the program because it's hands on and right on site."

Once the students graduate, they can work anywhere where there is hard rock mining. The mine tech program, for example, includes classes in geology, rock mechanics, surveying, computer applications and mine engineering methods, she said.

"It's kind of a little bit of everything, so they leave qualified to go into different

areas at entry level. If students choose to pursue further studies in a more specialized field they have some prior knowledge."

Having a dedicated mine school, she added, "just gives us and the North that much more clout. It makes us that much better, and it separates mining programs and makes them our own. That adds more pride for us, the students and the North."

"It also opens the door for me to add more programming, as well. Our mine school is still part of Northlands College, but we have our own building and with that a bit more space."

Durocher would like to add a basic mine entrance program, now in the development phase, and a chemical technician program in partnership with Saskatchewan Polytechnic.

Greschner, with a long career working in education and the provincial government in Northern Saskatchewan, is from Goodsoil, Sask., and is passionate about improving things in the north.

"It's (about) more than just training. We believe the Mine School will help grow the northern economy, help establish more businesses and jobs in the north, and most importantly improve the overall quality of life in the region."

"We want Northlands Mine School to develop a quality reputation like Haileybury School of Mines in Ontario and put La Ronge on the map as a mine training center of excellence in the same manner."

Durocher says details must still be worked out in terms of programming, simulator use and many other items, but Northlands is up to the task.

"What we know for sure is we want to train as many northern people as possible to achieve successful careers in the mining sector."

BETTY-ANN HEGGIE WINS TRAILBLAZER AWARD

Betty-Ann Heggie, a former senior vice-president with PotashCorp, is this year's winner of the Women In Mining (WIM) Canada Trailblazer Award.

Since her time at PotashCorp, Heggie has been fully engaged in promoting women in business through the Womentsorship program at the U of S Edwards School of Business.

It is the first national award to recognize the achievements of women in Canadian mining. WIM Canada works toward improving gender diversity in mining.

Heggie is a "true Trailblazer," said WIM Canada in announcing her award. She is a member of Canada's Top 100 Most Powerful Women Hall of Fame, was named Canada's Top Investor Relations Officer, has been awarded the Queen's Golden Jubilee Medal and received the Alumni Mentorship Award from the University of Saskatchewan.

In 2009, she won the Women Helping Women award at the Stevie Awards, and has been honoured with the YWCA Lifetime Achievement Award. She has also served on many boards, including the Canadian Chamber of Commerce and the Institute of Corporate Directors of Saskatchewan, an organization she founded. Recently, she was named to the board of Allana Potash.

"Nothing gives me greater satisfaction than to see young women who have come through the Womentsorship program become more confident and openly offer their opinions; put up their hands and volunteer for assignments or take a risk by leaving unsatisfactory positions to start their own businesses," said Heggie.

Mike Babcock, coach of the Detroit Red Wings, has described Heggie as a great leader.

"Betty-Ann Heggie embodies the definition of mentorship," he has said. "She's a person who wins with integrity. She is a passionate leader to people in all facets of their lives."

Heggie was presented with her award at the recent Prospectors and Developers Association of Canada conference in Toronto. Keep up with her if you can at <http://bettyannheggie.com>.





Tim and son Ty (left) participate in northern hockey camps with former NHLer Rich Pilon and son Garrett.

BEYOND THE BIO

TIM GITZEL

PRESIDENT AND CEO, CAMECO CORP.

In each edition of ORE, we go beyond the official bios to give our readers insight into the leaders of Saskatchewan's mining and exploration companies.

Tim Gitzel has been playing hockey with the same team of friends for 25 years. For someone born in Saskatchewan, it is both a fitting pastime and a regular reality check.

"It's a great bunch of guys," said Gitzel in an interview. "It's a social club. That's my comic relief, if you like, from the job here. It's a reality touchpoint, seeing what those guys have to say. You can really get wrapped up in business and world events...but you have to talk to those guys to see where life's really at."

Gitzel also regularly heads to the hockey rink to watch his 16-year-old son, Ty, play for the Saskatoon Contacts. Daughter Bailey, 14, is a serious dancer who attends classes and practices seven days a week.

"When I'm not on the road, which I am a lot – a couple of weeks a month – I'm here at home with the family, following the kids around with their activities, and trying to get out once in a while to play hockey with my team."

Bonnie, his wife, "runs the ship for us when I'm gallivanting around the planet. Probably the biggest challenge of this position is balance – balancing work, balancing family, trying to be everywhere."

Because Cameco has operations and customers in countries around the world, "I could easily be on the road every single day," said Gitzel. "I try to visit all our sites at least once a year."

Travel is an intense part of the job. On a recent trip to Kazakhstan, Gitzel left at noon on a Saturday

and arrived Monday at 5 a.m. Kazakhstan time. Meetings started at 8 a.m., and the day ended with an evening dinner. He left at 5:00 the next morning, and flew through Turkey and Amsterdam to Minneapolis, where he attended a Mosaic Co. board meeting.

"I think I slept at home on Friday night and didn't see a hotel room until Tuesday," he said with a laugh. Luckily, Gitzel added, "I can sleep on the plane. You catch up where you can."

Gitzel was born in Prince Albert, the son of an RCMP officer who moved all over Saskatchewan. While it was tough moving so much as a youngster, it also allowed him to develop contacts all over the province.

Educated at the University of Saskatchewan, he took



a B.A. and a law degree, and spent a year at Laval University in Quebec learning French.

Gitzel's first mining job was back in 1979 at Cluff Lake, and he has been in the industry almost ever since. Before joining Cameco, Gitzel held many senior positions with AREVA,

including president and CEO of the company's Canadian division, before being reassigned to France.

"We came back to Saskatchewan a little over eight years ago," said Gitzel. "We spent four years in France, just outside of Paris, and had a tough decision there as to what to do going forward."

Things were going very well with AREVA, but home beckoned the Gitzel family.

"The opportunity to come back to Saskatchewan with Cameco was great. We saw it as a great place to raise our kids, and it has been all of that. We wanted them to grow up with the values and the principles that the people in Saskatchewan grow up with.

"We love the province, we love living here. To be able to work for a world-class company in your home province is really an honour and I treat it as such."

Gitzel joined Cameco in January 2007 as senior vice-president and chief operating officer. He was named president in 2010 and appointed CEO on July 1, 2011. It was a very difficult time for the uranium mining sector. The day of this interview was the fourth anniversary of the Fukushima nuclear reactor accident, caused by a massive tidal wave.

"When it was announced, we were in a different world. We were talking about Double U, which was doubling our production. Almost overnight, it changed. We had to react to that change in circumstances.

"It's been tough. We've had to really tighten up over the last four years, manage the company judiciously.

But today we're in good shape, and we see a bright future for the industry."

His optimism stems partly from the fact that 70 reactors are under construction today, adding capacity on top of 435 operating reactors.

"That's growth we haven't seen since the late 1970s. That's good news for our industry," said Gitzel. "We extrapolate that into uranium demand, which we see growing by about three or four percent per year. It's a good story for us."

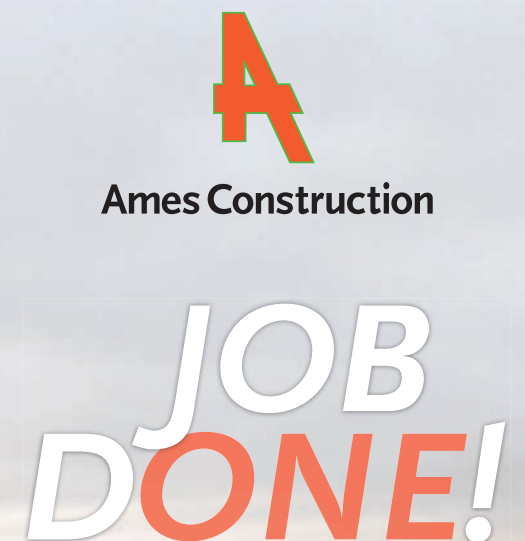
Melded into Gitzel's intense schedule are many board positions, such as with Mosaic and the Nuclear Energy Institute in Washington, and with community organizations. To name a few involvements, he was vice-president of communications for the World Junior Hockey tournament, and has volunteered with the Red Cross, Wanuskewin Heritage Park, and the Roughriders Touchdown for Dreams program.

"A big part of both Cameco and my personal goals, is to make a difference. That's what we try to do.

"Whenever we ask for volunteers at Cameco we're overloaded. We've really created a culture of volunteers and giving back. We're the largest United Way donor by a mile. That's an important part of what we do."

The demands on his time are constant, but Gitzel truly enjoys them all.

"This is the best job in Saskatchewan. I'm just very honoured to be in this role and will continue to serve for as long as the board will have me."



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TAGGING ALONG

DENNIS PASTL
PLUMBER AND PIPEFITTER,
AREVA MILL MAINTENANCE
DEPARTMENT,
MCCLEAN LAKE

With decades of experience as a plumber and pipefitter, not much fazes Dennis Pastl.

Working in Northern Saskatchewan always comes with challenges, many of them weather-related. For example, AREVA's mill at McClean Lake is extremely reliant on propane for heating and mill operations, and propane will not turn from liquid to gas when it's 40 below. That means vaporizers are crucial to keeping propane warm enough to make the transition.

"Say one of the vaporizers goes out; you're under the gun to get that up and running," said Pastl in an interview. "We look after all the HVAC units too.

"It's a pretty good job. I enjoy it. It's challenging...it's never the same thing every day. It's always a different experience. You might be doing a valve or a flange, but

something is always different about it. You need to be able to do the new job in whatever setting you are in."

Pastl became a journeyman by working and training all over Saskatchewan. He has operated his own business in Saskatoon and La Ronge, which is home; was an instructor at SIAST (now Saskatchewan Polytechnic) for four and a half years; and worked for the Saskatchewan Apprenticeship Commission.

When he first started in the trade, it was all industrial installation. "Now it's more about troubleshooting and the repair and maintenance of systems I installed years ago."

At McClean, Pastl's shift is 12 hours a day, seven days in and seven out. The company flies

him out of La Ronge, picks up people at Buffalo Narrows, and lands at Points North Landing, where employees catch the bus to the mill.

On site, he's usually up before the sun.

"It can be a long day. I'm up 4:30, 4:45 in the morning, and go for breakfast with the boys. We start at 6:30, and I'm usually here at 25 to 6:00 having coffee with the guys, getting ready for the day.

"We get our roll call, where they come in and tell us what's happening, so you know what's going on before you head out into the field.

"You get your work orders, do your safety talk, and away we go."

The safety briefing is extremely important in letting everyone know what is happening on site that may pose safety challenges. If there is construction, for example, the workers are aware that they should exercise extra caution in that area.

Pastl and the rest of the crew then follow the day's work log, until something unexpected crops up.

"Sometimes there are emergencies that come up. They'll pull a welder and a fitter off (the scheduled job) and then go back to the original work plan," said Pastl.

"Sometimes a valve fails, and they need to do the processing of the uranium, so we are asked to go in and fix the valve, repair or replace it and get it back online." There is always back-up containment, so a valve failure, while an important issue, is not an environmental one.

"We do a good job of it. We work as a team, the mill maintenance, operators, engineers, office staff, site services and environment, toward keeping the mill running smoothly."

There are plenty of additional benefits to working at the mill, including good food in the cafeteria, social and athletic activities in the evening, and great co-workers, Pastl said.

"For me, it becomes a way of life. You almost have a second family up here. You're spending half your life with the people you work with, so you become very good friends."



SAFETY FIRST, LAST AND ALWAYS

STANDARDIZED CONTRACTOR SAFETY TRAINING ADVANCES QUEST FOR ZERO INCIDENTS

For a man whose life revolves around mine site safety, a standardized training program is a milestone of epic proportions.

James Baumgartner, manager of health, safety and security for Mosaic Co. at Colonsay, is also chair of a Saskatchewan Mining Association (SMA) subcommittee overseeing the creation of the Standardized Contractor Safety Training program. He has been championing it since fall, 2011, and it is now a few details away from coming fully on-stream.

"I am pretty excited about this, I'll tell you. It's been a long time coming," said Baumgartner in an interview. "When you work for a company like Mosaic or PotashCorp or Cameco, the big companies, it is tough enough to get your own company sites doing the same thing, let alone all

the membership of the SMA doing the same thing."

"With safety always the top priority... this initiative provides a framework and a vital quality assurance component for safety training provided to contractors."

With safety always the top priority for Saskatchewan mining companies, this initiative provides a framework and a vital quality assurance component for safety training provided to contractors who work on SMA member company sites. In addition, Saskatchewan Polytechnic is developing a series of compliant courses to facilitate training opportunities across the province.

Cristal Glass-Painchaud, director for the Centre for

Minerals Innovation at Sask Polytech, said some of these courses will be ready for delivery as early as April.

"The SMA group is so motivated, and has been so supportive of providing the necessary resources needed to get a project of this magnitude off the ground ... it's been a pleasure to work with them," said Glass-Painchaud.

Baumgartner said it has been clear for a while that standardized safety training would be a massive benefit to the mining companies, the contractors and all employees.

"Most of the mining companies, especially potash (companies) in the last few years, have been expanding. We've had thousands of contractors," he said.

"The reason why I'm chairing is that in 2010, I took a new job with the Mosaic business unit on contractor management. We've always had contractors, but we've never managed them to the degree we are now.

"When I got into that role, I found a wide range of contractor training that was out there. I had gone to an SMA committee meeting and asked if there was any interest in trying to standardize contractor training across the province for the mining industry. The member

companies said yes, we'd like to see that happen."

The new program will provide one set of standards used at all SMA member sites. In the past, sites would require varying standards of safety training and contractors would find it quite frustrating when moving from site to site for work, said Baumgartner.

"One common standard of training is helpful for contractors. That's dollars in their pockets.

"For the SMA member companies, it is an assurance that all the employees working for contractors have been provided safety training that meets a common standard and is prepared to provide safe work. At the end of the day that's what it's about. A contractor arrives on your site and you know and understand the quality of their training. That's a level of comfort for management."

Glass-Painchaud said the SMA initiated a partnership with Sask Polytech because of its province-wide capacity to delivery and manage training.

"Saskatchewan Polytechnic has long been recognized by graduates and employers for the quality of our programming. This reputation, combined with our outcome, or

standards-based curriculum development model brings the SMA assurance that courses are relevant and that knowledge and performance requirements are clearly identified and measurable.

"Saskatchewan Polytechnic also works closely with industry to ensure program relevance and currency. We have built an ongoing industry validation process into this safety project to allow for curriculum review and revisions when needed. This quality assurance process will ensure courses are up to date with legislative requirements.

"To ensure the quality and reliability of this program we will continue to invite industry

subject matter experts to participate in annual focus groups to review and provide feedback on the standards," said Glass-Painchaud.

To expand the availability of the safety courses across the province, Saskatchewan Polytechnic will work with the regional colleges, Dumont Technical Institute and Saskatchewan Indian Institute of Technologies to deliver the training. Sask Polytech also offers third party training providers the opportunity to deliver the curriculum by becoming approved training providers.

Saskatchewan Polytechnic will also provide a centralized database for training records. Workers and contractors are required to have proof of certification with them at all times on a mine site. The database will allow SMA mining companies the ability to quickly verify that the industry-validated training has been completed and is current, she said.

Some of the safety courses will be available online and some will be classroom based only, she added.

"A course that has a practical component, such as fall protection, has been designed to be delivered in a classroom environment

to ensure that the practical standards required to work safety can be demonstrated to the instructor."

Although each site will still need to discuss site-specific hazards with contractors, many safety issues are the same regardless of the mine location, whether above ground or below ground. A standardized safety training model will eliminate the need for repetitive training from site-to-site, Baumgartner said.

People interested in entering into the mining field could also take these courses, and add them to their resumes, he added. "It's open to more than just the contractor."

There are currently 12 courses that will become available between April and fall 2015. WHMIS (Workplace Hazardous Materials Information System) and General Mine Safety will be prerequisites for all mine sites.

"For a contractor to go on any Saskatchewan mining site you need to have these two courses, whether you're going underground or working solely on surface," said Baumgartner.

The General Mine Safety course covers personal protective equipment, power



The new Standardized Contractor Training program provided by Saskatchewan Polytechnic will train all contractors' employees in safety processes.

and hand tools, lock-out tag-out awareness, hazard recognition, environmental awareness and spill reporting, incident reporting, Saskatchewan mining regulations, the Saskatchewan employment act, fit for duty (drug and alcohol), ground control awareness and self-rescuer awareness. (“Self-rescuers are something you would wear if you were underground and there was a fire. They are there to protect you,” said Baumgartner.)

There are also specific specialized courses, such as confined space entry training, for those who might clean out or weld in a tank. Other courses relate to hoisting, rigging, incident investigation, ground disturbance (regarding the digging of holes), aerial work (on platforms) and many others.

Each course has a number of clear standards that must be demonstrated by the individual.

“It’s important for the mining industry that we set a high standard here,” said Baumgartner. “We understand that not everyone across the province is going to be able to get 100 percent, but it’s important for us to know the questions they got wrong have been reviewed with them. Sask Polytech has designed the exams to ensure the things that need to be corrected are reviewed by the learner before the training is complete.

“It’s not about the contractor getting the certificate, it’s about the contractor demonstrating what they know so they can work safely and protect others.”

For further information, visit www.saskpolytech.ca/cmi.

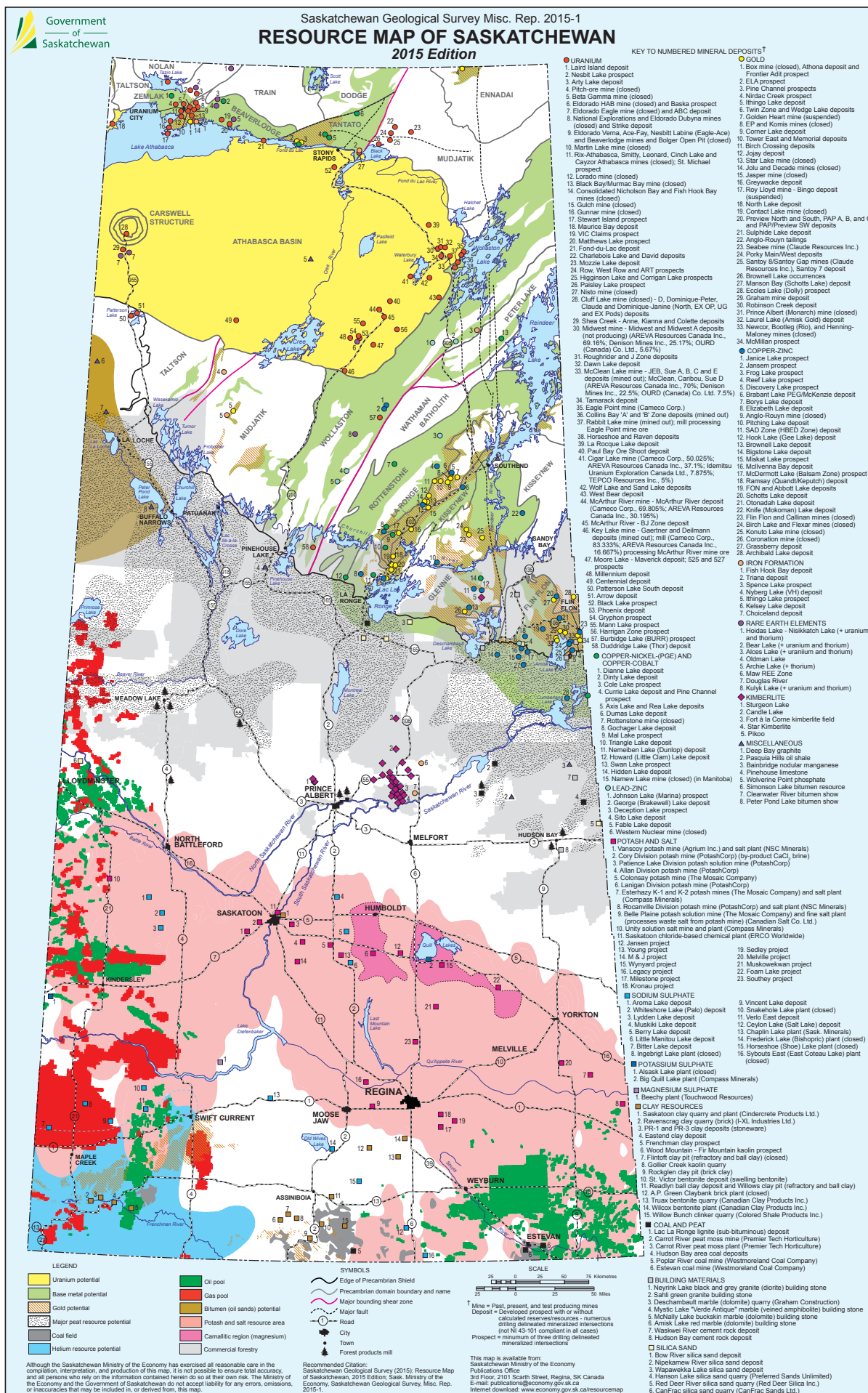


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Vale Potash Canada Limited
Western Potash Corp.
Westmoreland Coal Company – Estevan Mine
Westmoreland Coal Company – Poplar River Mine
Xtreme Mining & Demolition Inc.
Yancoal Canada Resources Co., Ltd.

DIGGING DEEPER:

For more information on the Fraser Institute's survey of mining companies, please visit:

<http://www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-news/research/publications/survey-of-mining-companies-2014.pdf>

For more information on KPMG's Insights into Mining publication, please visit:

<https://www.kpmg.com>

For more information on Deloitte's Tracking the Trends report, please visit:

<http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Energy-and-Resources/gx-er-tracking-the-trends-2015.pdf>

For more information on Northlands College Mine School, please visit:

<http://trainnorth.ca/>

For more information about the Standardized Contractor Safety Training Program, please visit:

www.saskpolytech.ca/cmi

For more information about the Digging Deeper Challenge, please visit:

<http://www.saskmininged.com/digging-deeper-challenge.html>

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