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ORE

MAGAZINE

Transforming Saskatchewan's Mining Industry

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CRITICAL MINERALS
STRATEGY**

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**EDUCATION
OUTREACH FOCUSES
ON ROBOTICS**

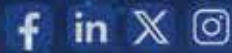
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MAGAZINE

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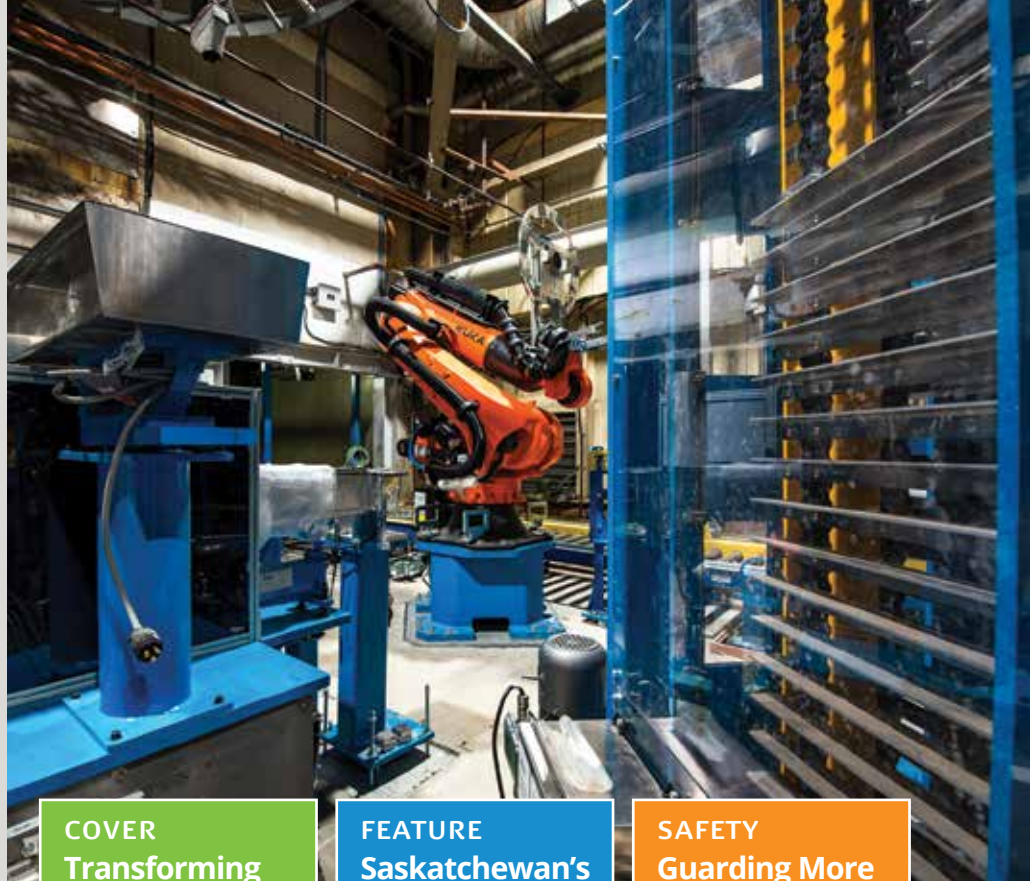
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Cover

This issue of Ore Magazine focuses on Saskatchewan's mining companies' implementation of automation and tele-remote technologies for sustainable growth.



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Transforming Saskatchewan's Mining Industry



There is an old saying about “out with the old and in with the new” and while Saskatchewan’s mining companies are adopting technology at a rapid pace, many operations are integrating technology into existing infrastructure, with existing workforces and supply chains. An evolution is underway.

This issue of ORE explores how Saskatchewan’s mining companies are transforming their existing operations or exploring for and developing the next generation of mines, incorporating technology, while being purposeful about building a diverse, inclusive and safe workforce that is globally competitive.

The workforce of the next generation of mines will look different. It will be more representative of the communities around it. There will be more females, more Indigenous peoples and more immigrants. Employees’ workspaces will also be different, with many people operating remotely at Integrated Operating Centres rather than at the actual mine site. While physical safety has always been core to the mining sector, the mental health of employees is now receiving the same purposeful attention. Multiple stories in this edition of ORE illustrate how this vision and evolution is being turned into reality at Saskatchewan mine sites.

One of those stories is in the Tagging Along feature about trailblazer Daley McIntyre, the first female general manager of a uranium operation who was born and raised in northern Saskatchewan. Another important “first” is the successful decommissioning and remediation of the Cluff Lake Mine, an example of sustainable mine closure, over twenty years in the making.

On any road trip, you need to be looking out the front window to see the road in front of you. But you also look in the rear-view mirror. In the story about Saskatchewan’s important supplier base, we are paying tribute to two enormously important businesses that have been part of the northern mineral exploration and development cycles for decades, but who are now in the process of packing it up so to speak. Robertson’s Trading Post, a family-owned store in La Ronge was the supplier of choice for northern exploration and mining camps. When crews are in a bush camp, there are a lot of variables that can go wrong. So, ensuring people are well fed and supplied is fundamental to a happy camp. With Robertson’s you never worried about questionable food substitutions, or that you couldn’t get the right axe for the job. Similarly, Osprey Wings, operating out of Missinippi and Points North, literally flew thousands of exploration crews into the field across northern Saskatchewan to conduct their programs. In northern Saskatchewan, road access is very limited, but with hundreds of lakes to access, Osprey Wings delivered crews to where they needed to be. While Osprey Wings is set to continue operating under new ownership, Robertson’s Trading Post will be closing their historic business at year end. To Gary and Bonnie and your family, and to Scott and family, Saskatchewan’s mineral industry salutes you for being top notch suppliers and friends. On behalf of the thousands of flights and camp orders your businesses have filled, many thanks and best wishes on your retirements.



Evolution is a process. I hope you enjoy reading about how the Next Generation of Saskatchewan’s mines is being achieved through purposeful actions.

— PAM SCHWANN



Evolution is a process. I hope you enjoy reading about how the Next Generation of Saskatchewan’s mines is being achieved through purposeful actions. 🏔️



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TRANSFORMING SASKATCHEWAN'S MINING INDUSTRY

Automation and tele-remote technologies are reinventing the mining industry—and the benefits are compelling.

In recent years, implementation of autonomous and tele-remote technologies by Saskatchewan's leading mining companies has launched a revolution that is changing the very nature of the mining industry. The benefits are evident, from increased productivity and efficiency, to improved environmental sustainability, to greater worker safety.

SABRE OFFERS FLEXIBILITY & SCALABILITY

Orano Canada and Denison Mines Corp., joint-venture partners in the McClean Lake Joint Venture, have successfully completed a five-year test program using Surface Access Borehole Resource Extraction, or SABRE.

SABRE is a non-entry, surface-based mining method that uses a high-pressure water jet placed at the bottom of a drill hole to excavate a mining cavity. Cuttings from the excavation process are air lifted to surface, separated and stockpiled. This new, patented mining method could provide an economically viable way to mine small, high-grade deposits in Canada's Athabasca basin.

"The SABRE mining method is the result of long-term R&D and involves a mix of different equipment, technology and expertise," says Jim Corman, Orano Canada President and CEO. "I'm proud of the work the operational team of drillers, mechanics and engineers completed as they showed how agile this method can truly be."

The SABRE method lets operators on the surface control mining equipment, minimizing the risk of worker injury or radiological exposure. The method is both flexible and scalable. It has a significantly smaller surface footprint than conventional open pit or underground mines. Significant reduction of water usage and power consumption also dramatically reduce future greenhouse gas emissions, making it more environmentally sustainable in the long term.

PIONEERING TELE-REMOTE MINING

Nutrien has a long history of using innovative technology. The company's NextGen Potash program is currently designing and piloting initiatives across its network of six potash mines in



Pilot program using tele-remote technology at Nutrien Cory Mine.

Saskatchewan. Autonomous mining and tele-remote systems use a combination of cameras, communications systems and cutting-edge technologies to give operators an overview of an entire mining system in real time, allowing them to navigate massive underground machines remotely.

The SABRE mining site - Orano Canada.



At Nutrien's Cory potash mine, for example, a pilot program using tele-remote technology enabled a team to efficiently cut in anomalous geology from a surface station. Normally, such "leach ground" would require underground operators to do the cutting in, no more than eight metres at a time to ensure workers were always under bolted ground. This reduced productivity but ensured operators were located in a higher safety environment. In two separate trials in 2021 and 2022, surface operators were able to remotely cut over 3,200 tonnes of leach ground.

It's a milestone that has Tyler Zimmerman, Nutrien's Project Lead, Automation, justifiably pumped. "Our application of tele-remote technology in continuous mining machines is unique within our sector—it's a pioneering approach that sets us apart," he says.

Chad Litzenberger, Nutrien's Mine General Superintendent, agrees. "We continue to move forward by developing technical advancements as one team with an aligned vision. Using tele-remote technology aligns with our safety vision by removing the worker from the active face, creating a safer workplace while also increasing efficiency."

BUILDING A DIGITAL MINE

Automation has played a lead role in readying Mosaic's Esterhazy potash operation for the future. In 2009, the company announced a \$3 billion investment to build the first new underground potash mine (aptly named K3 to follow K1 and K2 that were built in the 60s) in Saskatchewan in more than a half-century. Completed in 2022, Mosaic's expansion project is now the world's largest potash operation and considered to be one of the most technologically advanced, too.

"K3 is built on technology and innovation," says Dustin Maksymchuk, Esterhazy's General Manager. "It's designed to efficiently and safely produce millions of tons of potash to help feed the world."

As new state-of-the-art infrastructure brings potash ore from a kilometre underground to surface, its flow is monitored and run from a technology-enabled surface-based facility called the Integrated Operations Center, or IOC. A network of cameras and sensors allow employees in the IOC to view the ore's movement, including over an 11-kilometre conveyance system that transports ore from the new mine to mills for processing.

"The IOC is improving production capabilities and increasing reliability by integrating our operations and using



Mosaic K3 shaft

“
The IOC is improving production capabilities and increasing reliability by integrating our operations and using technology to deliver real-time information so we can make better and faster decisions,”
Maksymchuk says.



13TH MINER in shop, Mosaic Esterhazy

technology to deliver real-time information so we can make better and faster decisions,” Maksymchuk says. “This journey isn’t over. We continue to explore innovative, technology-enabled opportunities to increase safety, efficiency and connection across our operating footprint, building a ‘digital operation’ to power us into the future.”

TECHNOLOGICAL FOUNDATION FOR GROWTH

Over the next few decades, K+S Potash Canada (KSPC) is planning for a sustained increase of potash production at Bethune mine, doubling the current production from two to four million tonnes per year. Currently in the feasibility stage, the long-term growth plan is looking at using advanced technology systems to increase production while reducing energy use and water consumption per tonne.

But technology is already playing a role in the foundational work for future growth. Paige Martin, a Program Manager in the IT Department, is leading a team working on a variety of technology initiatives that will further digitize KSPC’s operating strategy and drive business improvement.



Digitization and automation of processes are major elements of K+S Potash Canada's Project Fusion.

Supporting Learners in Saskatchewan



Orano Canada is deeply committed to supporting education in Saskatchewan. We believe in empowering youth, especially through initiatives like the Indigenous Student Achievement Pathways program at the University of Saskatchewan, Saskatchewan Polytechnic Women in Trades and Technology, and our Northern Scholarship offerings.

Every summer, we proudly welcome students to gain hands-on experience at our operations, but the mentorship doesn’t stop there. Orano takes pride in hiring trainees that complete our programs, offering them a promising start to their professional careers.

Supporting further education and skills training benefits not only Orano but more importantly, the entire province of Saskatchewan.

Source: Saskatchewan PolyTechnic WITT, powered by Orano



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GROWING OPPORTUNITIES

We will be a world-class potash producer that helps sustainably feed our growing population.

We are proud to look ahead and meet the needs of the future by making the right choices today.



K+S Potash Canada





Employees at K+S Potash Canada using drone technology.

“Internally we call it Project Fusion,” says Martin. “The goal is to identify all of the transformational technology capabilities that we can implement now to empower us for sustainable growth in the future.”

Digitization and automation of processes are major elements of Fusion’s current state, with programs and apps enabling the workforce to have more immediate access to information, real-time trend analysis

and data-driven decision making, ultimately helping drive an organizational culture of collaboration.

“There are really impressive, cutting-edge possibilities when it comes to technology in our industry,” Martin adds. “By focusing on our foundational elements now, we can enable KSPC to implement and sustain future innovation. I’m really proud of what we’ve been able to accomplish to-date and I’m excited to see the progress we make as we continue our digital journey.”

LOOKING FORWARD

From uranium to potash to critical minerals, from exploration to extraction to processing, technology is helping Saskatchewan’s mining industry meet growing world demand for vital resources—safely and cost-effectively. That’s good news for Saskatchewan’s economy. And it’s not just the industry’s bottom line that will benefit.

BHP’s new Jansen Potash project is being developed as a gender-balanced, world-leading low emissions potash mine. Foran Mining’s McIlvenna Bay project is designed to be a carbon neutral copper mine, delivering critical resources to support electrification and global decarbonization. Arizona Lithium is using proprietary technology to establish itself as a leader in lithium brine development, an essential element in EV batteries.

Through implementation of new technology, Saskatchewan mining companies are reducing their environmental footprint while building opportunities for globally sustainable growth. 🌱

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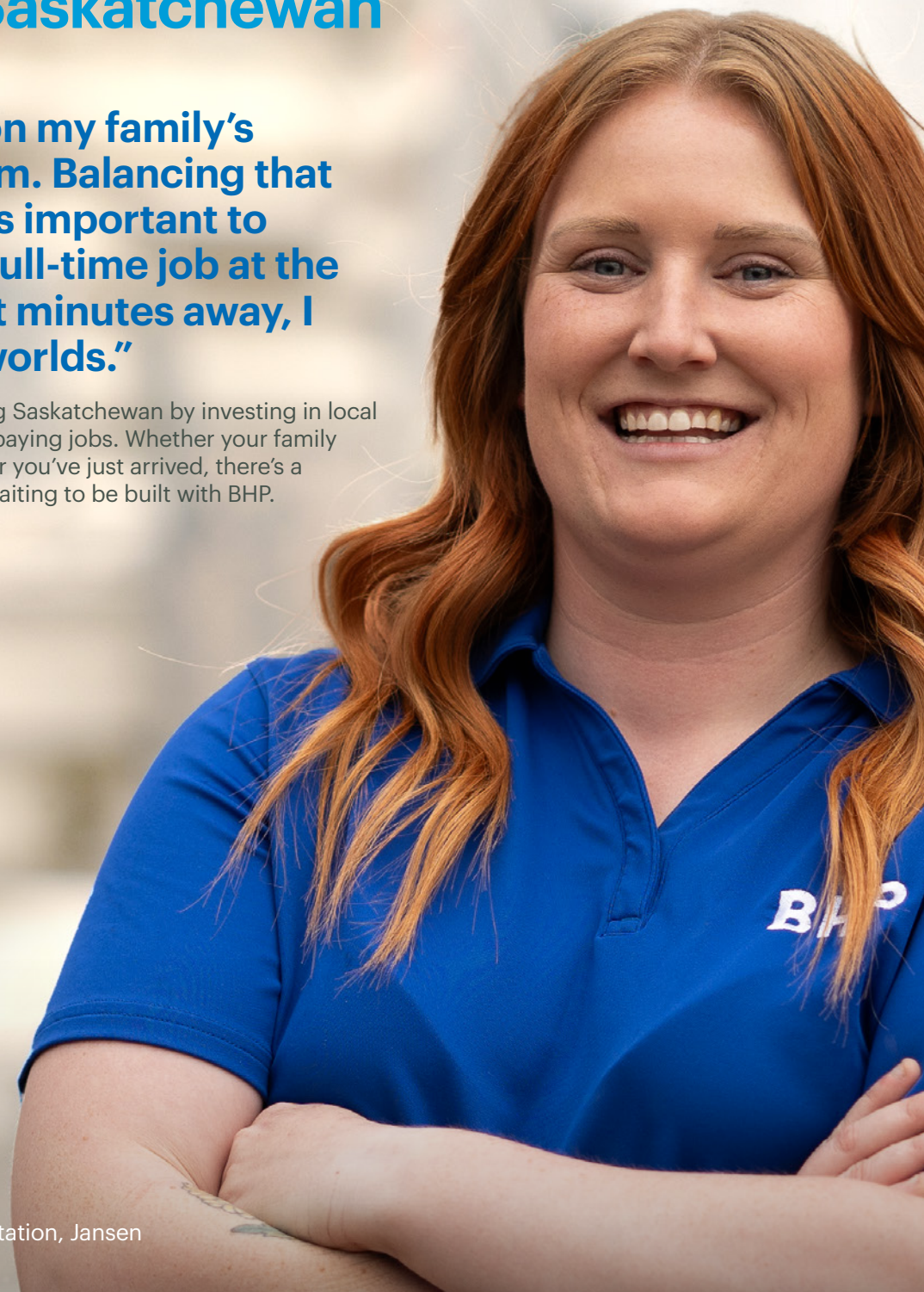
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BHP

We're building something special in Saskatchewan

"I cherish time on my family's 120-year-old farm. Balancing that with my career is important to me, so with my full-time job at the Jansen mine just minutes away, I get the best of worlds."

BHP is contributing to a strong Saskatchewan by investing in local initiatives and providing well-paying jobs. Whether your family has been here for 120 years, or you've just arrived, there's a bright and promising future waiting to be built with BHP.



Charlie Elke
Lead Electrical and Instrumentation, Jansen

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Contractor opportunities
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SASKATCHEWAN'S CRITICAL MINERALS STRATEGY

Saskatchewan's new critical minerals strategy is building on almost a century of mining expertise to position the province as a key supplier of critical minerals.

Saskatchewan is blessed with an abundance of natural resources, including 23 of 31 minerals listed on Canada's critical minerals list. With the recent launch of Securing the Future: Saskatchewan's Critical Minerals Strategy, the province is looking to super-charge exploration and production, with particular emphasis on diversifying into lithium, copper, zinc, cobalt, nickel and rare earth elements.

"Critical minerals will be a key economic driver for Saskatchewan. Explorers and developers are ready to step up to meet the surging demand around the world, and our province has an important role to play," says Jim Reiter, Minister of Energy and Resources.

The critical minerals strategy outlines four key goals. First, to increase Saskatchewan's share of Canadian mineral exploration spending to 15 per cent by 2030. Second, to double the number of critical minerals being produced in Saskatchewan by 2030. Third, to grow Saskatchewan production of potash, uranium and helium, and fourth, to establish Saskatchewan as a rare earth element hub.

To support these goals, the provincial government has expanded several programs. The Targeted Mineral Exploration Incentive, which applies to exploration drilling of all hard-rock minerals, was increased

from \$750,000 to \$4 million annually. Another \$2.4 million was dedicated to providing better systems for geoscience data collection and reporting, which exploration companies use when considering projects.

The province has also tripled the Saskatchewan Mineral Exploration Tax Credit (SMETC) from 10 per cent to 30 per cent. Minister Reiter explained the increase, saying, "A key part of our government's Growth Plan is to increase mining exploration and the value of mining exports. Incenting the industry with this tax credit is one tool to help us do that. The proposed change will improve the province's competitiveness with other jurisdictions, bringing Saskatchewan's

Foran Mining Jumbo-Drilling-Development-Round-In-Decline



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Four times the amount used in a typical combustion engine.

mineral exploration tax credit to the highest in Canada.”

Both government and industry are hopeful the enhanced tax credit will encourage more exploration and provide new investment and employment opportunities.

“The increases, both to the Targeted Mineral Exploration Incentive Program and to the Mineral Exploration Tax Credit, are very welcome,” says Pam Schwann, President of the Saskatchewan Mining Association. “They position Saskatchewan to be one of the leading Canadian mineral jurisdictions and will be effective in incentivizing additional investment into Saskatchewan.”

So, who are the players driving critical mineral exploration and development in the province? The larger producers are familiar names—Nutrien, Mosaic and K+S

in potash (with BHP on the horizon), Cameco and Orano for uranium. Most have deep roots in the province and have proven track records.

Some of the players are newer, a response to growing global demand for critical minerals. Arizona Lithium, for example, has established itself as a lithium resource and technology developer in the resource-rich Williston Basin. In the spring of 2023, the company received over \$1 million in funding from Natural Resources Canada’s Critical Mineral Research Development and Demonstration program for development of its proprietary direct lithium extraction (DLE) technology.

In northern Saskatchewan, resurgent interest in uranium’s role in a low carbon economy has spurred activity in the

Athabasca Basin. CanAlaska Uranium Ltd. is a project generator with extensive land holdings and success identifying uranium exploration targets in the basin. Its current focus is on a recent high-grade uranium discovery on its West McArthur Joint Venture with Cameco.

NexGen Energy is developing its Rook I Project, currently the largest development-stage uranium project in Canada. After completion of a feasibility study in 2021 and the Provincial Environmental Assessment technical review this summer, the company is preparing for the final stages of the Provincial and Federal Environmental Assessment processes. These are necessary steps on its journey to becoming a significant supplier of uranium.

Cameco, a global leader in uranium, has also acted on the strength of the sector and boosted production. In 2022, the company restarted its high-grade McArthur River mine and Key Lake mill operations after four years in care and maintenance. “We’re delighted to have McArthur River and Key Lake back in production,” Tim Gitzel, Cameco President and CEO, said at an event celebrating the first shipment of uranium from these facilities since 2018.

“Having these two operations up and running allows us to provide hundreds of jobs to northern Saskatchewan, brings back business to our valued northern suppliers and results in increased investment and economic activity in surrounding communities,” Gitzel noted. “It also means more Saskatchewan uranium powering clean nuclear energy here in Canada and around the world.”

Northern Saskatchewan has more to offer than uranium. To the east, exploration activities are focusing on copper, zinc, cobalt, nickel and rare earth elements, all minerals critical to the green energy transition. Murchison Minerals is a Canadian-based exploration company with a zinc-copper-silver project located about 170 km northeast of La Ronge.

Foran Mining Corporation holds eight copper-zinc properties in the Hanson Lake District along the deposit-rich Flin Flon Greenstone Belt. Prominent amongst its current projects is its McIlvanna Bay deposit, targeting carbon neutral production of copper and zinc from a significant and scalable resource.

These are just a handful of the companies currently exploring for critical minerals to help power Canada’s green energy transition. 🌱

Copper

Copper is a metal with very useful properties, such as excellent thermal and electrical conductivity, malleability and resistance to corrosion, and it even kills microbes when in an alloy, such as brass. This makes it the most common material used in electrical wiring, and an important component in pipes and roofs, and on touch surfaces in hospitals.



Copper tubes. Sources: copper.org



Copper wires Source: www.britannica.com/science/copper

EV motor contains a copper coil, and copper cables connect the battery and electronics.

In nature, copper is usually found with sulfur, in minerals such as chalcopyrite. It also occurs as native copper, and in minerals that result from the alteration of copper sulfide deposits, such as the spectacular green malachite, and sparkling blue azurite. The largest copper mines are found in Chile, which supplies about a quarter of the world's production of 20 million metric tonnes. In contrast, Canada mines about 0.5 million metric tonnes annually, most of which come from British Columbia and Ontario.

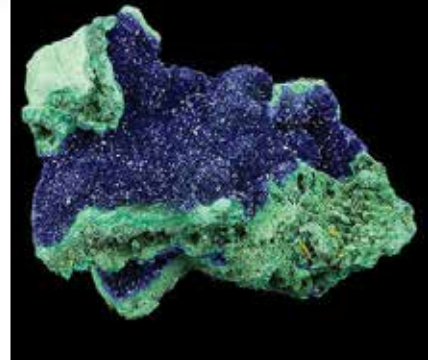
There are deposits of copper in Saskatchewan, all of which are found in the Precambrian Shield in the north of the province. They occur in massive sulfides in altered metavolcanic rocks, such as those in the Flin Flon and Creighton area, or as scattered sulfides in metamorphosed sedimentary rock the Wollaston Belt, north of La Ronge.


Copper is one of the 31 critical materials identified by the Canadian government in 2021, all of which are important for Canada's economic security, as a sustainable source for

Chalcopyrite from 777 mine, Flin Flon



Malachite and azurite: Source: crystal-information.com



international partners, or required for the country's transition to a low-carbon economy. The latter is particularly significant as the world increasingly electrifies to reduce carbon emissions and dependence on fossil fuels and increases the use of renewable energy. As copper is the "metal of electrification", some forecasts predict that 50 million metric tonnes of copper will be needed by 2035, to connect to new solar panels, wind turbines, and storage batteries. Also, although an internal combustion engine car contains up to 20 kg of copper, a battery electric vehicle can require up to 80 kg. To meet this demand for copper, new mines will have to be discovered, in spite of copper being a metal that can be recycled without any loss of quality. **Copper is the new "gold"!** 

Education Outreach Focuses on **Robotics**

The Saskatchewan Mining Association's Education Outreach program continues to promote the role minerals have in our daily lives. Working with industry partners and sponsors, the Education Outreach team reaches schools across the province with a range of free resources, such as curriculum-correlated lesson plans, potash kits, posters, career exploration resources, GeoVenture Teacher Program and Educator Workshops, and now the GeoRobotics program.

Over the past few years, SMA Education Consultant Hilary Roemer has been working with the SMA's Innovation Committee, Sask Code and Education Outreach sponsors on new GeoRobotics Kits for students in Grades 7 and up.

"The focus of the GeoRobotics Kits is to get students thinking about mining careers and how robotic systems can improve environmental protection and workplace safety," Roemer says.

Developing new kits is a team effort. It starts with an idea—last year's 'fly away birdie' challenge, for example, began when Roemer pitched the

idea to the Innovation Committee, which is comprised of industry representatives.

"The idea was to challenge students to create a device to scare birds away from tailings ponds around mine and mill sites," Roemer says. Committee members used their experience to create a real-life application, which was then passed on to Dave Dalton, a math and science teacher at Rossignol High School in Ile a la Crosse, who's also coach of Rossignol's robotics club. Dave designed the actual challenge, including the coding, and then passed his design journal back to me so I could create a lesson plan around it."

The 'fly away birdie' challenge focused on mine safety and environmental stewardship. This year, the SMA is introducing a 'team mega mining' challenge focused on automation in the mining industry. The kit includes a series of smaller challenges, like navigating a robotic car through a maze or building a marble sorting machine. It also includes information sheets on automatus mining technology, sensor sorting technology and hopper technology. The SMA is working with SaskCode to offer the GeoRobotics

workshops and distribute the kits.

"Most students don't realize how much technology is already incorporated into mining operations, and how the increasing adaptation of technology is transforming the nature of mining," says Roemer.

The GeoRobotics program helps students connect the dots between what they're learning in school, what's happening in the mining industry, their personal interests and how that fits with what types of careers are available—especially in technology.

"We want the next generation of talent to know that they can transfer digital skills they have developed through activities like gaming, to successful careers in the mining industry," said David Potts-Schwinghamer, Program Manager, SMA Ed Outreach.

For Education Outreach staff, industry partners and sponsors, the GeoRobotics program is proving an exciting way to engage students in learning more about the mining industry—its role in society, its commitments to worker safety and environmental protection, and its growing diversity of career opportunities. 🏠

Looking for free, curriculum-correlated resources? Check out Teachers Pay Teachers account @ Saskatchewan Mining Association.

www.teacherspayteachers.com/Store/Saskatchewan-Mining-Association or

www.saskmining.ca/Mines-in-Saskatchewan/Education-Outreach



Robot Rumble in Saskatoon in May. They were the most Northern team in a field of 97 teams; they also travelled the farthest to attend—over 460 km.

Rossignol Dominates Robot Rumble

The Saskatchewan Mining Association is proud to be a long-term sponsor of the Rossignol High School Robotic Huskie Squad in Ile à la Crosse. In 2023, sponsorship helped purchase more robots and more parts for the team, enabling them to build larger robots.

The Rossignol team was also able to attend the Saskatchewan Polytechnic

The long drive was worth it, not only for the experience but also for the win. For the second time in Robot Rumble history, Rossignol High School had a 1st, 2nd and 3rd place finish, becoming province-wide Sumobot Champions and Runner-ups. Rossignol is the only school to win in "back-to-back-to-back-to-back" competitions. Congratulations Rossignol Huskies! The long drive was worth it, not only for the experience but also for the win.





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As Kyle Robinson, Manager at Ens Industrial states; "Not only do we offer top-of-the-line vehicles, but we also provide the comprehensive service and support necessary to keep your operations running smoothly." Ens' massive warehouse is meticulously stocked with an extensive inventory of parts, allowing us to guarantee quick turnarounds and minimize downtime for our valued customers. Rest assured, we have everything you need to keep your operations running smoothly and efficiently.

At Ens Industrial Sales, we are dedicated to your success. With our extensive experience in the industry, our commitment to excellence, and our custom-built Toyota Land Cruisers, we are confident that we can exceed your expectations. Trust us to deliver the reliability, performance, and exceptional service you deserve.

When it comes to hard rock mining vehicles, there's only one choice that stands out from the rest: Ens Industrial Sales. Contact us today and let our team of experts guide you towards the perfect solution for your specific needs. Experience the Ens Industrial Sales difference and take your hard rock mining operations to new heights of success.

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trust the experts at Ens.**

“

Not only do we offer top-of-the-line vehicles, but we also provide the comprehensive service and support necessary to keep your operations running smoothly. – Kyle Robinson, Operations Manager, Ens Industrial Sales Inc.

”





GUARDING MORE THAN BODIES:

Tim Gitzel, President and CEO of Cameco, welcomes runner on the finish line at Step Up for Mental Health - September 2023

Supporting physical safety by cultivating Psychological Safety in Mining Environments

In the realm of safety within Saskatchewan's mining sites, the emphasis has evolved beyond just physical well-being. Now, it extends its reach to something equally crucial — mental health, with a growing recognition of how psychological safety supports and enhances physical safety.

Physical safety has been at the forefront of mining companies' priorities for decades. At mine sites across Saskatchewan, the trend is to ensure that safety means more than meeting standards. Andrea Crittenden, President and CEO of Sixteen Safety Services Inc., says, "Our clients make it clear to their employees and contractors that safety compliance is non-negotiable. Safety means more than meeting standards; it is a culture that ensures people go home safe after their shift. We work closely with many Saskatchewan mining companies to develop site-specific training materials that consider the reality of their particular environment and the tasks people are required to perform. Without a safe and healthy workforce, safe production can slow down and even stop – we help prevent that."

For Cameco, safety means that people are well physically and mentally. That's why

they established a fund for mental health. Funds raised are disbursed annually to organizations undertaking projects that promote or protect mental health.

"At Cameco, we understand that mental health is essential to overall well-being. We established the Cameco Fund for Mental Health through the Saskatoon Community Foundation to invest in the mental health of our communities. We believe that supporting organizations dedicated to mental health projects strengthens our communities and underscores our commitment to fostering a safe and supportive environment for all," says Jonathan Huntington, Cameco's Vice-President, Sustainability and Stakeholder Relations.

Nutrien is another global mining company that provides safe and supportive working environments. The company



Andrea Crittenden, President and CEO of Sixteen Safety Services Inc.

has recognized that to have a truly safe working environment, it is necessary to have psychological safety.

Psychological safety means employees feel safe and comfortable taking calculated risks, speaking up, sharing ideas, reporting mistakes or expressing concerns without fear of negative consequences.

Janelle Appleyard, Director, Safety & Health, Potash at Nutrien, says, "At Nutrien, we place the highest value on our



“At Nutrien, we place the highest value on our employees’ well-being, including their mental and emotional health.

**JANELLE APPELYARD,
Director, Safety & Health, Potash at Nutrien**

employees’ well-being, including their mental and emotional health. Psychological safety training is paramount to us because it equips our workforce with the tools to create an environment where every voice matters, concerns are addressed, and innovative ideas thrive. It’s not just about compliance; it’s about cultivating a culture of care, trust and empowerment, ensuring everyone returns home not just physically safe but also mentally secure.” She notes that approximately 2,600 people have completed training over the last two years, and the goal is to have everyone trained by the end of 2024.

As the mining industry continues to evolve, it’s heartening to see a growing emphasis on nurturing an environment where every individual’s well-being—body and mind—is valued and protected. In addition to physical safety and mental well-being training, this means creating cultures where psychological hazards are prevented in the workplace, such as unfair treatment, discrimination, harassment, and more. This evolution in safety is a testament to the industry’s commitment to its most valuable asset: its people. 🏔️



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BHP ACHIEVES GENDER BALANCE

When global mining company BHP set an aspirational goal of achieving gender balance by 2025, women represented just 17 percent of the company's workforce. That was in 2016; since then, female participation has risen to over 35 percent and continues to grow.

In Canada, BHP's potash team in Saskatchewan achieved gender balance in June, which BHP defines as 40 percent male, 40 percent female, and 20 percent other.

BHP's Saskatchewan employees are now 43.8 percent female, and when the global team that supports Potash is included, female representation increases to 57.4 percent. Notably, 52 percent of BHP's Potash leadership team is also female. It represents an encouraging development with the Potash team setting the pace, not just for BHP globally, but the mining industry in Canada.

The achievement was no accident and required the company to be strategic in its approach and focus its efforts on being

an employer of choice for women. BHP partnered with post-secondary institutions and designed its graduate hiring program to support the needs and goals of diverse candidates. For talent sourcing, the company engaged with specific groups such as Women in Mining and Women in Nuclear Saskatchewan (WIM/WiN-SK), and its community outreach efforts worked to promote an inclusive and welcoming workplace.

"BHP is leading by example and making the change happen. Achieving this milestone must be celebrated, but we know it's only a stepping stone. In parallel, BHP has implemented many internal programs to fully embed a culture of inclusivity and ensure a psychologically safe environment where everyone can thrive. I can see and feel the commitment to this initiative within the organization and am proud to be a part of the journey." – Amber Doney,



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I can see and feel
the commitment
to this initiative
within the
organization and
am proud to be a
part of the journey.

– AMBER DONEY,
Principal Decision
Evaluation, BHP and Chair
WIM/WIN-SK



Amber Doney

Principal Decision Evaluation, BHP and Chair WIM/WIN-SK.

Practical examples include the redesign of work and job structure to be accessible and inclusive, the choice for women to stay in women-only dorms or mixed dorms at Jansen's on-site camp,

the provision of gender-specific personal protective equipment, an annual gender pay review to reduce potential bias in remuneration, and the promotion of their internal Respectful Behaviour campaign to reinforce BHP's zero tolerance of sexual harassment, racism and bullying, including their "Stop for Safety" worldwide sessions for all employees and contractors.

BHP has built diversity, equity and inclusion (DE&I) into the design of the Jansen project from day one, taking cues from its South Flank operation in Western Australia. By fostering an inclusive environment that is open to dialogue and identifying and addressing the challenges of a diverse workforce, BHP has reaped the benefits of a more engaged workforce with multiple points of view, social and cultural backgrounds, and experiences.

While BHP is proud to be at the forefront of its DE&I work in Saskatchewan's mining industry, the company acknowledges that there is more work to be done and is excited for the challenge up ahead. 🏔️

BREAKING BOUNDARIES:

Embracing Women's Workwear and Inclusion in Historically Male-Dominated Industries

In the traditionally male-dominated world of heavy industries like mining, women have long faced unique challenges, from ill-fitting protective gear to the struggle for recognition and belonging. However, a transformation is underway. With global companies, including Cameco and Mosaic, leading efforts towards inclusivity, suppliers are meeting the demand for personal protective equipment (PPE) specially designed and manufactured for women.

A more inclusive future for women is paramount to mining companies such as Cameco. Cameco's Senior Vice-President and Chief Corporate Officer, Alice Wong, is a driving force behind the company's efforts to increase women's participation and equality. Says Wong, "Inclusion begins with acknowledging that everyone's needs are unique. When women are provided with PPE designed specifically for them, it sends a powerful message: You belong here, and your comfort and safety matter. It's about levelling the playing field and demonstrating that women are valued."

The discomfort of swimming in oversized men's PPE is an experience shared by many women in male-dominated industries. These ill-fitting garments exclude women and can hamper productivity and become a safety risk. Oversized sleeves can easily get caught in equipment, and dragging pant legs can become tripping hazards, making the garment meant to protect you the potential cause of injury. These are some of the reasons that prompted many mining companies to ensure they offered well-fitted PPE to their employees.

"Safety is our top priority at Mosaic, and proper fitting and comfortable PPE play an important role in keeping our people safe. Everyone in the workplace needs gear that includes their particular needs, whether during pregnancy or other modifications, to get the right fit. I've worked in operations for 14 years and am pleased to see the mining industry striving to be more inclusive," Says Allison Boudreau, Senior

Revolutionizing Women's Workwear

Covergalls, a Canadian company specializing in women's PPE, was started and is led by CEO Alicia Woods. It was born from Alicia's own experiences in the mining industry. After years of wearing PPE intended for men, she decided that women should no longer have to choose between safety and comfort. Thus, Covergalls was born in 2014, dedicated to empowering women by offering workwear explicitly designed for their needs, ensuring safety and comfort. Covergalls' vision extends beyond crafting better gear; it's about driving positive change, promoting inclusivity, and creating a safer future for women in traditionally male-dominated industries. With the growing push for diversity, equity and inclusion in all sectors, the women-gear market and the number of companies offering women's work apparel have grown. However, Alicia warns consumers to be careful when selecting a supplier, "When designers take the 'pink it and shrink it' approach by just using men's patterns and making them smaller, you may find that comfort and safety standards get sacrificed. At Covergalls, our research and development teams engage with women in the field to trial-test our products' functionality and feel on the ground, whether for our regular collection

or the new maternity workwear line. Like many of our clients in the mining sector, we're also on a path to ensure that our products are sustainable, using recycled materials, less water and less energy during production."



Alicia Woods

Mill Manager at The Mosaic Company.

Mining companies such as Cameco and Mosaic have made public commitments to create and maintain diverse and inclusive work environments that allow people to perform at their best, promote innovations and foster a respectful workplace. Their commitment is ongoing. Since 2010, Cameco has been recognized as one of Canada's Best Diversity Employers. In 2022, Mosaic announced its 30 percent targets by 2030, including women making up 30

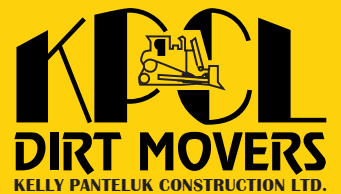
percent of their workforce, 30 percent growth in underrepresented groups in the workplace, 30 percent growth in leadership diversity and 30 percent of their community investments focused on diversity and inclusion initiatives.

The journey towards a more inclusive workplace continues, driven by visionary mining companies like Cameco and Mosaic. They understand that inclusivity is not just a goal; it's a journey. And it begins with something as seemingly simple as having the right outfit. 🧢

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END OF AN ERA: Two Iconic Businessmen Retire

Story and photos by
Gill Gracie, Air Ronge.

Garry Thompson and Scott Robertson spent their careers serving the North, and the community was startled when they both announced their retirement in 2023.



Garry Thompson

OSPREY WINGS AVIATION

Garry Thompson came north with his family in 1950 at age ten and fell in love with airplanes and tourism. In 1967, he opened the first tourist camp at Nemeiben Lake to accommodate the increasing number of visiting anglers. He sold it to buy a bigger camp at Missinipe, which he, his wife Bonnie and their three children operated as Thompson's Camp for decades.

To transport his guests to fly-in lakes, he bought an airplane and had a local pilot teach him to fly it. Then, he gradually bought out Nipawin Air, continuing operations under that name. After a few years, he sold the company but soon found himself repossessing it. He renamed it Osprey Wings.

The water base at Otter Lake (Missinipe), with a beaver and a Turbo beaver at the dock. The two-pane window at the corner of the office is where Garry had his dispatch station set up, where he could see the comings and goings.



Former Saskatchewan Lt. Gov. Gordon Barnhardt (in orange jacket) and a crew of colleagues and friends experience Garry's jet boat rides. With his trademark brown hat, Garry is barely visible at the wheel behind the windshield.

He built a fleet of 22 skis and float aircraft, expanding to La Ronge-based wheeled charters to serve uranium mines with shift change flights and adding a La Ronge water base. Several years ago, the Thompsons sold the camp portion of their operation, focusing on the air company.

Now in his eighties, Garry worked as owner, pilot and dispatcher while Bonnie and daughter Allison took care of the books. The Thompsons announced the closure and sale of Osprey Wings in March. The new owners are operating under the same name.



Painting by Garry Thompson



Garry is also famous for his side gig - jet boat rides up some of the rapids on the Churchill River. Many tourists have been thoroughly soaked during the scenic tour, often distracted by one of Garry's many tall tales!

An accomplished northern artist, Garry rarely sells a painting. He keeps most originals and gives away prints to friends and visitors.

He and Bonnie continue to live in Missinipe.

to bush camps and catering to a mining camp.

He took over management in the early 1990s with the assistance of sister-in-law Diane Robertson. Other family members are shareholders. His father was in the store every day for as long as possible; he passed away in January 2010 at the age of 81.

Not only does Robertson's offer groceries, dry goods, clothing, trapline supplies and the best butcher shop in the north under Guthrie Winn, but the store is also part museum and a great tourist attraction. Scott displays a unique collection of Indigenous arts and crafts, from antler carvings to beaded jackets and moccasins, canoes and luxurious furs. There are historic photos of customers and paintings by local artists. Much of it is for display only. Scott is among the few trained, skilled and knowledgeable fur buyers left.

Visiting Robertson Trading is a northern experience visitors flock to, which will be sorely missed.



Fresh produce – and antler carvings, a couple of mounted northern animals, and a selection of paintings by local artists.

ROBERTSON TRADING

Scott Robertson moved to La Ronge as a boy with his family in 1967 to operate a grocery and fur-buying business. Of the four children, it was Scott who worked alongside his dad, Alex, to build a new store and turn it into a significant grocery operation capable of expediting



Furs, beadwork, paintings, photographs, birchbark baskets, hide-making tools, rock hammers and a few warnings about bad cheques!



Scott with his executive assistant manager, his sister-in-law Diane, against a backdrop of tanned coyote skins. A photo of his dad and long-time resident Vern Studer is on the wall behind.

For several years, wife Karen, a retired teacher, along with their three children and two grandchildren who live in various parts of Canada, have been training Scott for retirement by requiring his presence elsewhere than in the store. Scott is listening and plans to close the iconic store at the end of December 2023. It will be a massive loss for the area.

Scott and Karen plan to travel and enjoy their new cabin on Lac La Ronge.

Environmental Responsibility and Community Engagement

Keys to Success of the Cluff Lake Mine's Transition to Institutional Control Program

Environmental responsibility and community engagement are two seminal pillars in the mining world. Orano Canada Inc's (Orano) now decommissioned Cluff Lake mine site in northern Saskatchewan is a testament to these pillars. After decades of work, Cluff Lake is one of the first modern mining sites to be ready to return to the Province of Saskatchewan under the Institutional Control Program (ICP). On the journey from operation to decommissioning and reclamation, successful environmental and community engagement efforts symbolize the beginning of a new standard in responsible mining.

The Cluff Lake Project is located in northwestern Saskatchewan on Treaty 8 Territory and within the Homeland of the Métis. The closest communities to the project by road are Clearwater River Dene Nation and La Loche, Saskatchewan, 250 km to the south, and the Athabasca Chipewyan First Nation by air.

The project produced over 62 million lbs of uranium concentrate between 1980 and 2002 and almost 8,000 ounces of gold between 1984 and 1988.

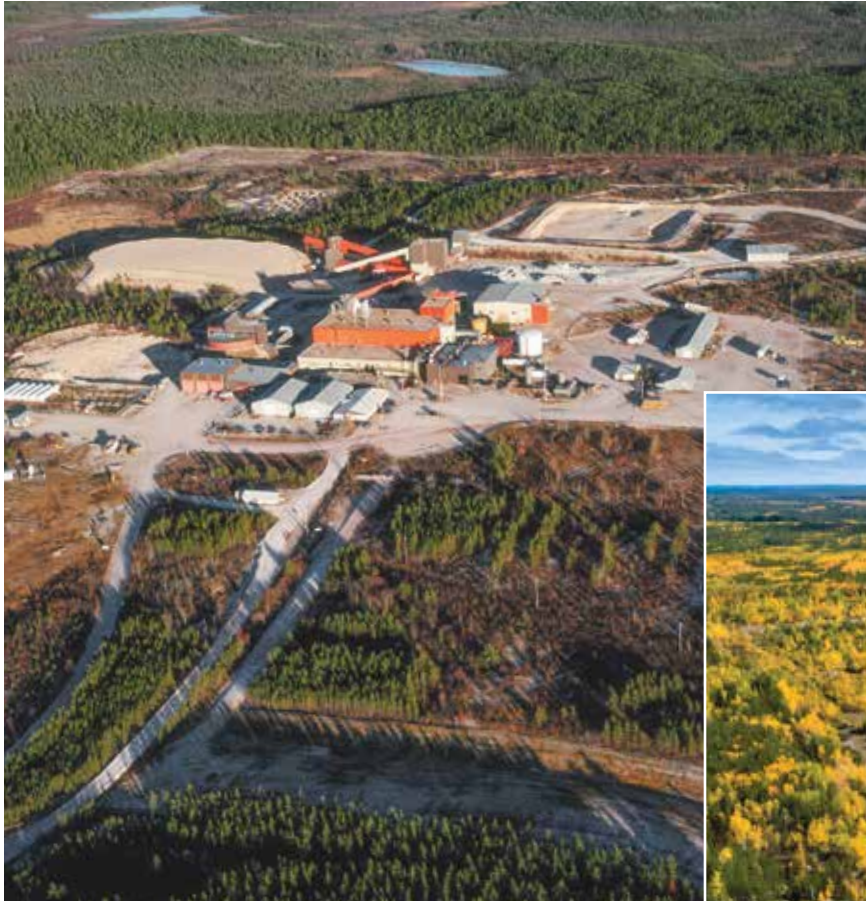
After more than two decades of operation, employing about 300 people at its peak, including over half from northern Saskatchewan, site decommissioning commenced in 2004. The decommissioning

included the backfilling of open pits, the draining of the tailings management area, and its subsequent covering, contouring and planting with local grasses. It also included the permanent closing and securing of the underground mine to blend with the surroundings. The decommissioning concluded with demolishing the mill complex, camp and warehouse. Finally, equipment, kitchen appliances, housing and emergency response equipment were transferred to nearby communities whenever possible.

Orano developed and implemented an environmental and radiological monitoring program focused on long-term groundwater and surface water quality.

Today, onsite monitoring shows that the water quality objectives established for the site are met, as reported to the provincial and regulatory agencies.

After decades of dedicated engagement with local communities and Indigenous leadership, the environmental restoration efforts were successfully concluded. Earlier this year, following a public hearing held by the Canadian Nuclear Safety Commission, the Cluff Lake mine licence was revoked, and the site was declared ready for transfer to the Province of Saskatchewan's ICP. This marks a significant milestone as the Cluff Lake Project stands as one of Saskatchewan's pioneering decommissioned uranium mine sites. The land has since found renewed



Former Cluff Lake mill during operation

purpose and is now actively utilized by Indigenous Nations and local communities for various activities, including hunting, fishing, and camping.

Orano developed long-standing relationships to engage with local communities and Indigenous leadership during operations and to get the land back to its natural state. These engagements were not mere formalities but platforms for dialogue, collaboration, and understanding. The insights and comments received from Indigenous rights holders significantly influenced the way Orano approached environmental protection, and the feedback helped shape their strategies for

ensuring the long-term safeguarding of the environment and the ability to utilize the land for traditional purposes. Through these relationships, Orano was able to identify and document traditional land use near the project site, underscoring the importance of harmonizing mining operations and decommissioning with the concerns and needs of the communities and Indigenous groups in the area.

Tina Searcy, Regulatory and Environmental Science Manager has been involved with the Cluff Lake project on and off since 1997. She shares her journey with the project.

“I am fortunate to have spent some time on-site as a consultant during Cluff Lake’s production years, then as an Orano employee within its environment

team and more recently as the project lead to complete the decommissioning regulatory work and obtain approvals necessary to transfer the property into the provincial ICP.”

This moment is of great honour and pride for Searcy and many others involved.

This is such a significant accomplishment for the mining industry,” says Searcy. “Everyone involved, including regulators, current and former Orano employees, community members and land users, should be very proud. Having the property ready for transfer into the IC program demonstrates Orano’s commitment as a



responsible mining company. Orano never wavered from the objectives to ensure the property remained safe and protective of the environment and for members of the public that may utilize the land, now and for future generations.”

The Cluff Lake project sets a high standard for the uranium industry in Saskatchewan, Canada and the world, showing that responsible mining, reclamation, and decommissioning practices are attainable and vital for the industry’s sustainability. And more importantly, Orano’s dedication to environmental protection and community engagement is a shining example for the mining world, setting the bar high for future endeavours to pursue a greener and even more community-oriented mining industry. 🌱

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.

NATHANIEL HUCKABAY

Born and raised in Deer Park near Houston, Texas, and having worked in the region for most of his career, no one predicted that someday Nathaniel Huckabay would be living in Coronach, South Central Saskatchewan. Yet, that's where we find the Texan as Westmoreland Polar River Mine's general manager. "My parents still live in the home where I grew up. I came to Saskatchewan in February 2018 to take on the GM position. As big and international as the mining industry is, it's also small in many ways. We all get to know each other in the industry or know someone who knows someone. So, when the opportunity at Westmoreland came up, one of my industry colleagues gave me a call. I was already in surface coal mining and the timing was right for my career. So my wife and I packed up our six kids - 3 boys and 3 girls aged 6 to 17 years old - and we moved North," recalls Nathaniel.

Nathaniel sees many similarities between his community of origin and his new home in the Prairies. "We all worry about the weather. In Texas, we insulate to stay cool and here we insulate to stay warm," jokes Nathaniel.

"There are good people back home and there are good people here. There are no mines in the middle of cities, they are all in rural communities. Whether people are ranching or farming they share the same values, family and safety. Whether there or here, people in coal mining share those values. And we mine coal the same way."

GENERAL MANAGER,
WESTMORELAND POPLAR
RIVER MINE

BEYOND THE BIO



Food security starts with us.



Nathaniel and Melissa Huckabay and their six children taking time away from Saskatchewan's cold

With all the headlines about climate change and net zero, energy source shifts and regulatory changes, some might wonder if being in the coal mining industry is still a good career. For Nathaniel, there is no doubt that it is. He explains that although he doesn't have an answer about what exactly the future may bring, he knows that there's still a place for coal

for quite some time. For example, the Poplar River mine supplies SaskPower's two generating stations in the region. These stations use cleaner, state-of-the-art electric equipment. Nathaniel says, "Even with the pressure on the thermal coal mining industry, there's still a place for it in the portfolio of energy sources. And we are looking at new ways of diversifying the use of coal, for example with agricultural applications. Coal mines are still a large contributor to communities in Canada, in North America and around the world. We still provide well-paying stable jobs for many."

Nathaniel shares his passion for baseball with his son and the children in their new community





TIME TO DIG DEEPER



Saskatchewan Potash Grows Communities

Here's a snapshot of the benefits Mosaic's potash mines bring to communities.

<p>SASKATCHEWAN ROYALTIES AND PRODUCTION TAX PAID IN 2022</p>  <p>\$1.2 Billion</p>	<p>AVERAGE SALARY</p> <p>\$100K per year</p> <p>X</p> <p>500 employees</p> <p>=</p> <p>\$50 Million in wages paid annually</p> 
<p>PROVINCIAL SALES TAX</p>  <p>\$50 Million</p>	<p>PROPERTY TAX</p>  <p>\$13 Million</p>
<p>PROVINCIAL INCOME TAX</p>  <p>\$6.25 Mil.</p>	<p>CAPITAL INVESTMENT</p> <p>\$150 Million invested annually per site</p> 

Learn more at timetodigdeeper.com



Nathaniel and Melissa Huckabay stop for rest along a bike trail.

Although Nathaniel may appear pretty stoic at first, when talking with him it quickly becomes apparent that he is good-humoured, humble and approachable. It is also clear that community and family are on top of his list for everything. At work, community means getting the team to pull together to solve day-to-day challenges and take care of each other's safety. "My dad instilled a strong safety value. When I started working in coal mining, I developed an even stronger sense and perspective on safe work. Now, I'm teaching that to my kids at home and the kids that I coach," says Nathaniel.

Indeed, when he's not at work, Nathaniel spends time coaching baseball in the community. He's even resumed his own baseball-playing "career" by joining the local senior league. Along with his wife, Melissa, he's fully adapting to Prairie life by learning to skate, curl and golf. "Melissa says that we're 'improving golfers.' She's right! At play, like at work, we have to learn to manage expectations, bring perspective, and recognize and value our continuous improvement," concludes Nathaniel. 🏏

DALEY MCINTYRE

GENERAL MANAGER,
CAMECO KEY LAKE OPERATION



Growing up in La Ronge, northern Saskatchewan, Daley McIntyre was well aware of the uranium mining industry but it wasn't until she left the province after graduating from the University of Saskatchewan's College of Engineering with a Bachelor of Science in Civil Engineering that she realized that northern Saskatchewan and the mining industry were exactly where she wanted to make her career.

Less than a year after leaving for Alberta, Daley returned to Saskatoon to join Cameco's Safety Health Environment, Quality and Regulatory Relations (SHEQ) team and has never looked back. In 2022 she was promoted to the position of

General Manager at the Key Lake Operation. "When I was an

18-year-old summer student

I used to joke with my teammates that someday

I would be the first women GM at Key Lake. At the time

I was positive

someone

would beat

me to it.

That didn't happen,

I was the

first woman

Manager in

the North

when I first

became the

SHEQ Manager

for McArthur

River and Key Lake's operations a few years ago,

and now I'm the first

female GM for Cameco

and at any northern

Saskatchewan uranium

mine," says Daley.

Daley became GM as the site was coming out of a four-year production hiatus. The restart of

operation meant that in addition to the usual multifaceted leadership role, she led the team through the hiring of hundreds of people and the re-commissioning of circuits and equipment. However, for Daley, the most important aspect of her role is to set expectations about safety. She explains,



I'm the first female GM for Cameco and at any northern Saskatchewan uranium mine, says Daley.



"A day in my life at Key Lake is nearly entirely made of interactions with people. The most important thing is that everyone goes home safe and healthy so I must pay constant attention to the decisions we make, the conversations we have and the motivation that is driving people, to ensure we are always protective of our health and safety as a team. I listen and assist the team in whatever challenges they are facing. When I am not talking with the team at Key Lake, I am interacting with folks from across Cameco. So really, I am listening and talking all day, every day."

"When I see a team struggle as a result of our processes or because our assets are not serving them well, it motivates me to improve them and find solutions so our teams can achieve the results we need with pride in a job well done. Ultimately, when I see them be successful and proud of it, it fuels my fire," she adds.



The obvious difference between Daley and her predecessors in this role is her gender, however, she is quick to point out that today's leadership styles are often similar regardless of gender. "I think the modern leader, and certainly the leaders I am surrounded by on the Key Lake team, all embrace a special mix of focus on people, behaviour and relationships along with valuing the technical, science and asset aspects of leadership," she says.

Daley believes that what truly differentiates her from previous GMs is that in 25 years, she grew up at Key Lake from her beginnings as a summer student to her current role. There is no doubt that she is fully committed to Key Lake and its

people. "I have dedicated my entire adult life to Key Lake, its people and the positive impact our operation can have on Cameco, the North and the world. People here know that I am one of them. I chose to be here."

Daley explains that although she initially chose a career in engineering because she was good at math and science, she also knew that having a leadership role was important to her. She endeavoured to find opportunities to combine her technical skills and her aspirations to lead. "There is a certain level of power and confidence that comes from knowing you are where you are because that is your choice, not because you are stuck. Today, I work in the mining industry and for Cameco because I love it." 🏆



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Innovation Improves Safety & Productivity



R2Key2, a robotic packaging system, increases worker safety and efficiency at Cameco's uranium mill site in Key Lake.

Innovation has been a hallmark of Saskatchewan's mining industry from day one. Notable examples include development of the Blairmore Ring in the 1960s to solve water inflow issues in the province's first underground potash mines and development of remote mining techniques to allow high-grade uranium to be safely mined at McArthur River in the late 1990s.

In recent years, technological innovation has become standard operating procedure. Even as mining companies integrate automation and remote technology into their operations—both highly visible applications—they're also implementing data analytics and artificial intelligence (AI) systems. This "digitization" of mining, though less visible, is central to fully

realizing the benefits of automation and remote technology.

Cameco is using digitization to improve efficiency, productivity and safety throughout its operations, including at its key assets in northern Saskatchewan. In 2022, the company completed the restart of its McArthur River mine and Key Lake mill, which had been in care and maintenance since 2018. Cameco used the restart to implement upgrades at both sites.

"We're focussing on digital transformation through AMPED-UP, which is short for Advanced Mining and Processing through Efficiency and Digitization - Uranium Project," says Andrew Thorne, Cameco's VP Mining & Operational Excellence.

"We're implementing systems that involve automation, robotics, predictive maintenance, data analytics, machine learning and AI."

AMPED-UP is a multi-faceted initiative involving approximately 50 individual projects. At Key Lake, for example, a robotic arm has been installed to automate the process of packaging and sealing uranium into shipping drums. Another project involves the integration of data analytics, machine learning and AI into mill systems to help improve efficiency and eliminate waste.

Each project comes with its own set of challenges. "It's easy to get excited about new technology, but digital transformation requires us to consider



Pilot program using tele-remote technology at Nutrien Cory Mine.

people, process and technology,” Thorne says. He points to the company’s move from paper-based to electronic work orders. “Not everybody is comfortable with technology, so we’ve had to focus on change management, reskilling and marrying the technology with the culture and the people. You need to put as much effort into the people and the process as you do the technology.”

People, process and technology are also the focus of innovation at Nutrien. Thanks to tele-remote technology, a production wing at the company’s Lanigan potash mine was recently mined without a single person entering the area.

“After more than 50 years of mining at Nutrien, it is the first time a wing has been cut with no people present,” says Trevor Berg, Nutrien’s Senior Vice President, Potash Operations.

Using a combination of radar, LIDAR, advanced sensing systems and AI-powered technologies, operators are now able to operate the mining machine from a remote location, removing them from the active mining area.

Nutrien’s network of six potash mines worked together to develop and implement the tele-remote/automation technology. “Collaboration between the sites has been instrumental in Nutrien’s



After more than 50 years of mining at Nutrien, it is the first time a wing has been cut with no people present.

**– TREVOR BERG,
NUTRIEN’S SENIOR VICE PRESIDENT**

success,” says Owen Gunther, Automation Project Lead at the Lanigan mine. “Collaboration has allowed us to develop at a strong pace and replicate proven solutions.”

The result is reduced safety risks to operators, including exposure to back, sidewall and roof hazards, trip hazards and equipment hazards. Operating mining machines remotely also impacts overall working conditions by improving ergonomics and reducing noise exposure.

“Operational processes were also positively impacted, and productivity increased, due to the fact the equipment can operate seamlessly through breaks and shift changes through the new operating strategies,” Gunther says.

Trevor Berg views the Lanigan project as a safety success story. “This achievement demonstrates that Nutrien’s potash business unit can safely and effectively mine any pass in a stress relief mining environment without requiring people to be at the active face,” he says. “We have truly changed the way we operate mining equipment.” 🏔️

BRINGING LOCAL ART TO THE MINE SITES



Denison Mine's Office painting



McClellan Lake camp trompe l'oeil wall



Gary with one of his eagle carvings.

Gary Dennis Natomagan

is a self-taught artist born and raised in Pinehouse Lake, Saskatchewan. He started fully expressing his art at about 14 years old and has never stopped since. He has a passion for northern Saskatchewan's nature and has developed a unique painting style, making him one of North America's most vivid wildlife artists. His paintings adorn the walls of many First Nations band offices, community centres and other venues in northern Saskatchewan and many offices, billboards and murals province-wide and across Canada. Similarly, his wood carvings now live in homes and offices throughout

Canada, the United States and even as far as Germany. A few years ago, Orano Canada commissioned Gary to bring some of the beautiful outdoors indoors by painting an entire wall in one of the recreation rooms, some camp windows, and the camp foyer. The painting in the lobby creates a cozy feel with the trompe l'oeil stone fireplace and windows. One of the particularities of Gary's images is that he hides wildlife within the landscape, inviting the viewers to not only take in the whole scene but also observe the details to spot the hidden bears, wolves, eagles or more. Cameco's Key Lake operation also displayed

a few of his smaller pieces. Last year, he was commissioned by Denison Mines to provide a large painting for their new office boardroom, and they also used the photo of the image on their greeting card. Gary is proud of his work and sharing his art with the mine sites. "I enjoyed doing the pieces right on-site at Orano's McClellan Lake camp; good people are working up there, and when I was painting, they always stopped by to see my progress and ask questions about what I was doing and my technique. I could see they were interested and appreciated my work," says Gary.

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9. EPSPCRRTOO _____
10. LEBSTRA _____
11. AWYELR _____
12. EALLTGURISMT _____
13. EIETQPUNM ROTEORPA _____
14. EAHVY UYDT NIMCEHAC _____
15. PUTRMECO ATSESIPLIC _____
16. STIHCME _____
17. MNAREILS VRUESRYO _____



CAREER

- Evaluates the geological aspects of mine sites
- Designs plans for mine sites and mining operations
- Repairs a variety of electrical equipment
- Uses a drill with a diamond tipped bit to bore deep holes
- Manages the money spent by the company
- Visits the mine to ensure safe working conditions
- Ensures that the mine operations follow environmental guidelines
- Interprets geophysical data to locate mineral reserves
- Searches for valuable mineral deposits
- Blasts large rocks and other surfaces for mining
- Obtains permits, rights and licenses
- Supervises the extraction of metals from ores
- Operates equipment used in daily mine operations
- Repairs and maintains heavy duty equipment
- Maintains and operates robots and computer networks
- Analyzes samples collected daily from the mine
- Maps and develops plans for sites of mineral extraction



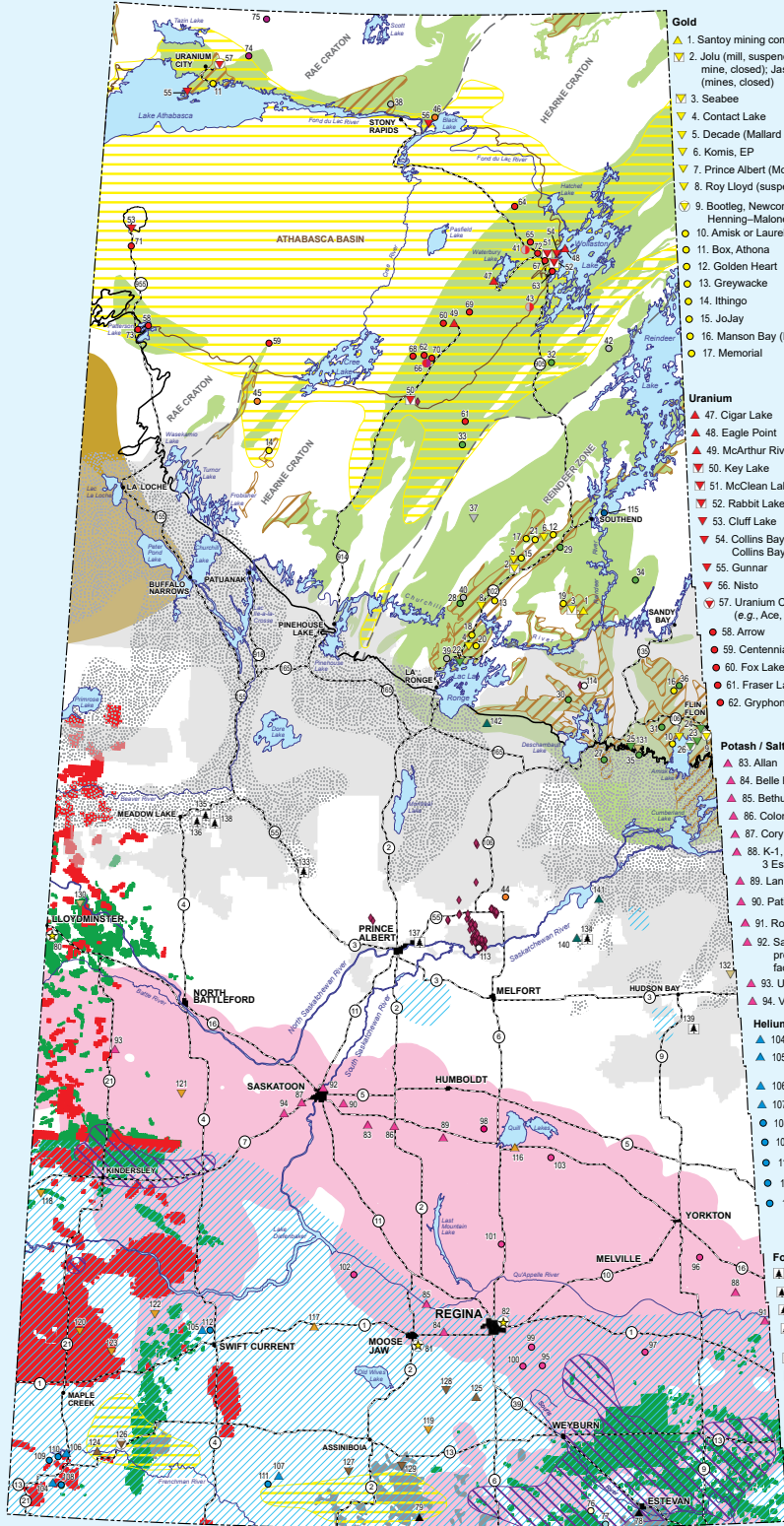
WORD BANK

- | | | |
|---------------------|-------------------------|-------------------|
| ACCOUNTANT | ENVIRONMENTAL SCIENTIST | METALLURGIST |
| BLASTER | EQUIPMENT OPERATOR | MINE ENGINEER |
| CHEMIST | GEOLOGIST | MINERALS SURVEYOR |
| COMPUTER SPECIALIST | GEOPHYSICIST | PROSPECTOR |
| DIAMOND DRILLER | HEAVY DUTY MECHANIC | SAFETY INSPECTOR |
| ELECTRICIAN | LAWYER | |

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RESOURCE MAP OF SASKATCHEWAN

Saskatchewan Geological Survey Miscellaneous Report 2023-1



Metallic Minerals

- ▲ 1. Santoy mining complex
- ▲ 2. Jolu (mill, suspended 2014; mine, closed), Jasper-James (mines, closed)
- ▲ 3. Seabee
- ▲ 4. Contact Lake
- ▲ 5. Decade (Mallard Lake)
- ▲ 6. Komis, EP
- ▲ 7. Prince Albert (Monarch)
- ▲ 8. Roy Lloyd (suspended 2014)
- ▲ 9. Bootleg, Newcor, Henning-Maloney
- ▲ 10. Amisk or Laurel Lake
- ▲ 11. Box, Athona
- ▲ 12. Golden Heart
- ▲ 13. Greywacke
- ▲ 14. Ithingo
- ▲ 15. JoJay
- ▲ 16. Manson Bay (MAN-1)
- ▲ 17. Memorial
- 18. North Lake
- 19. Porky Lake
- 20. Preview-PAP
- 21. Tower Lake, Corner Lake, Birch Crossing
- 33. Janice Lake
- 34. Knife Lake (Mokoman)
- 35. McIvanna Bay
- 36. Schotts Lake

Energy Materials

- ▲ 47. Cigar Lake
- ▲ 48. Eagle Point
- ▲ 49. McArthur River
- ▲ 50. Key Lake
- ▲ 51. McClean Lake
- ▲ 52. Rabbit Lake
- ▲ 53. Cluff Lake
- ▲ 54. Collins Bay, Collins Bay A
- ▲ 55. Gunnar
- ▲ 56. Nisto
- ▲ 57. Uranium City region (e.g., Ace, Fay, Verna)
- 58. Arrow
- 59. Centennial
- 60. Fox Lake
- 61. Fraser Lakes B Zone
- 62. Gryphon
- 63. Horseshoe, Raven
- 64. Hurricane Zone
- 65. Huskie, The Heldeth Tué (formerly J-Zone), Roughrider
- 66. Maw Zone
- 67. McClean Lake (Caribou, McClean North, Sue D, Sue E)
- 68. Millennium
- 69. Paul Bay, Ken Pen and Orora
- 70. Phoenix
- 71. Shea Creek (Anne, Colette, Kianna)
- 72. Tamarack
- 73. Triple R
- 43. West Bear

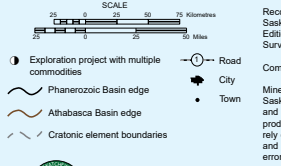
Industrial Materials and Gemstones

- ▲ 83. Allan
- ▲ 84. Belle Plaine
- ▲ 85. Bethune
- ▲ 86. Colonsay
- ▲ 87. Cory
- ▲ 88. K-1, 2 and 3 Esterhazy
- ▲ 89. Lanigan
- ▲ 90. Patience Lake
- ▲ 91. Rocanville
- ▲ 92. Saskatoon processing facility
- ▲ 93. Unity
- ▲ 94. Vanscoy
- 95. Albany
- 96. Bredenbury
- 97. Broadview
- 98. Jansen
- 99. Kronau
- 100. Milestone
- 101. Southey
- 102. Tugaska
- 103. Wynyard
- 113. Orion South
- 114. Pikoo
- 115. Deep Bay
- ▲ 116. Big Quill
- ▲ 117. Chaplin
- ▲ 118. Alsask Lake
- ▲ 119. Horseshoe Lake
- ▲ 120. Ingebrigst South
- ▲ 121. Palo (Whiteshore Lake)
- ▲ 122. Snakehole Lake
- ▲ 123. Vincent Lake
- ▲ 124. Plainsman quarry
- ▲ 125. Truax
- ▲ 126. Eastend region (e.g., Knolly, Old Pit)
- ▲ 127. Gollier Creek
- ▲ 128. I-XL quarries, Dominion Firebrick, A.P. Green region
- ▲ 129. Midland, Estevan 72H region
- ▲ 130. Canfrac
- ▲ 131. Hanson Lake
- ▲ 132. Red Deer River quarry

Forestry and Horticulture

- ▲ 133. Carrier Forest Products
- ▲ 134. Dunkley Lumber
- ▲ 135. NorSask Forest Products
- ▲ 136. Paper Excellence (Meadow Lake)
- ▲ 137. Paper Excellence (Prince Albert)
- ▲ 138. Tolko
- ▲ 139. Weyerhaeuser
- ▲ 140. Carrot River plant and bogs
- ▲ 141. Ravendale peat bog
- ▲ 142. Wapa Bay lignite-leonardite deposits

- Uranium potential
- Base metal potential
- Gold potential
- Major peat potential
- Coal field
- Potash and salt area
- Oil pool
- Gas pool
- Helium potential
- Lithium potential
- Bitumen (oil sands) potential
- Commercial forestry
- Kimberlite
- Forest products mill
- Petroleum processing/refining
- Producing mine¹
- Past-producing mine¹
- Exploration project²
- Mill with past-producing mine
- Grouping of past-producing mines within a region



Footnotes:
¹ Producing mine includes plants, processing facilities and quarries. Past-producing mine includes quarries.
² Exploration projects shown on the map are those with existing NI 43-101-compliant Mineral Reserves/Resource estimates, in addition to some with historical (non-NI 43-101-compliant) resource estimates and other selected projects.
³ This list includes only currently producing wells.

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 Compiler: M. Love

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