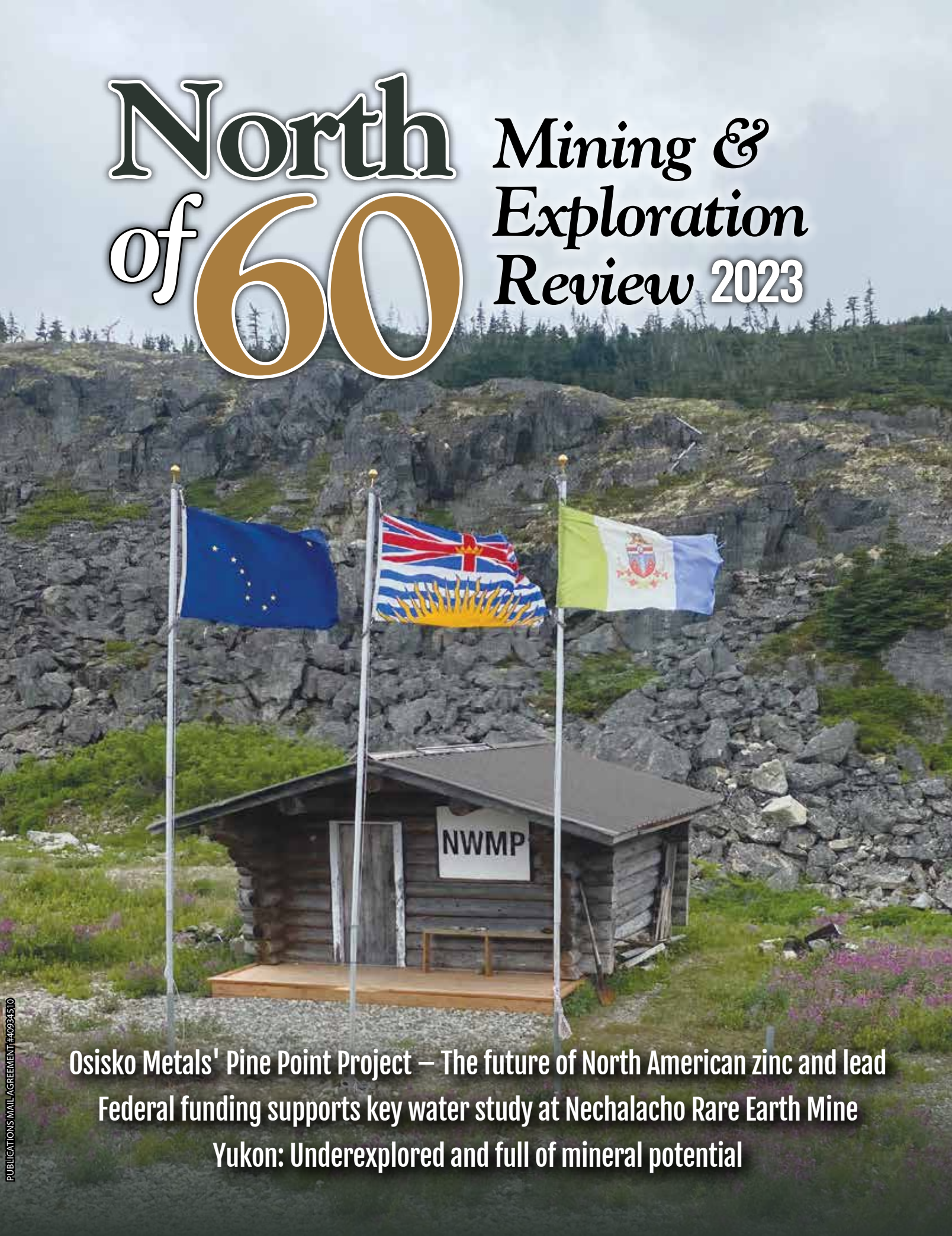
North of 60 Mining & Exploration Review 2023



Osisko Metals' Pine Point Project – The future of North American zinc and lead

Federal funding supports key water study at Nechalacho Rare Earth Mine

Yukon: Underexplored and full of mineral potential

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MESSAGE FROM THE EDITOR

Mining in Canada's north is a highly lucrative business.

In the Northwest Territories, over half of the 31 minerals considered critical to domestic, industry, national security, and emissions reduction can be found there. Although the territory is most known for its gold and diamond mines, the Government of the NWT is looking to build on their history of exploration, proven geoscience, and mining success to bring their mineral resources potential to the next level. As such, they are currently developing an action plan to promote the NWT's deposits of critical minerals and to increase exploration and geological work.

Also in the NWT, on page 12, Nighthawk Gold shares their successful 40-kilometre exploration program, where they intersected high-grade gold intercepts outside the 2022 MRE pit-shell, which suggests the potential expansion of known mineralization at the Colomac Gold Project.

Over in the Yukon, as the Yukon Economic Development explains on page 10, the Yukon's economic growth rate is the fastest in the country and can largely be attributed to its mining industry. In fact, in 2021 alone, the Yukon led the country in real GDP growth at 10.0 per cent.

Those are just some highlights of what we have in store for you in this issue of *North of 60 Exploration & Mining Review*. If you are looking for more northern Canada mining news, I also invite you to check out our website, miningnorthof60.com, and while you are there, subscribe to our twice-a-year e-newsletter, *Mining Your Business*, which is our online sister publication to this magazine.

I hope you enjoy this issue, and as always, strike gold!

Shayna Wiwierski
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Critical minerals mark a new chapter in NWT mining

The Tłı̨chǫ Highway, which is an all-season highway, replaces the winter road and connects the community of Whatı̀ to Highway 3 near Yellowknife. It also provides year-round access to some mineral-rich areas where some proposed mining projects exist, such as NICO.

Gold, base metals, and diamonds have long been the lifeblood of mining in the Northwest Territories (NWT).

But, as companies and countries around the world move to secure supplies of critical minerals, doors are opening for NWT projects such as Nechalacho, NICO, Pine Point, and Prairie Creek – and a whole new chapter is beginning to unfold in the territory's storied mining legacy.

As the Government of Canada moves to implement a Critical Minerals Strategy, over half of the 31 minerals considered critical to domestic, industry, national security, and emissions reduction can already be found within the Northwest Territories.

According to the International Energy Agency, the total market size of critical minerals needed for the green energy transition could grow almost seven times between 2020 and 2030.

And the NWT's Minister of Industry, Tourism and Investment, Caroline Wawzonek says this creates new space for small-scale domestic mining. Given the current post-pandemic and geopolitical climate, she sees this as an opportunity to diversify the NWT's mining portfolio with minerals like zinc, lithium, copper, and rare earths.

"We have an opportunity to add to our rich and long-standing mining story," says Wawzonek. "We are not looking past gold or diamonds, or any other metals that have brought us to where we are today. Instead, we want to build on the history of exploration, proven geoscience, and mining success that has been realized so that we can take our mineral resources potential to the next level."

Like Canada, the Northwest Territories is now developing an action plan to promote the NWT's deposits of critical minerals and to increase exploration and geological work.

As part of the that process, the Department of Industry, Tourism and Investment brought together industry, academia, and Indigenous governments to workshop how critical minerals can be responsibly leveraged as a commodity.

In the legislature, policy is being modernized and a new Mineral Resources Act and a Public Lands Act will help to bring certainty and clarity to the regulatory systems that govern land use.

Cheetah Resources' Nechalacho project, Canada's first rare earth mine.

Meanwhile, investments continue to address the territory's infrastructure deficit. On November 30, 2021, the Tłı̨chǫ Highway, a 97-kilometre all-season highway opened. It connects from Highway 3 west of Yellowknife to the community of Whatì and opens access to a resource-rich corner of the Tlicho region for future exploration.

And, while competition for investors is fierce in the international mining industry, the Northwest Territories is well placed not only to become a supplier of critical minerals, but to be a leader in how they are resourced in both an environmentally and socially responsible manner.

The NWT model, with resource royalty-sharing, socio-economic and benefit agreements, regulatory co-management and collaborative legislation development, is at the forefront of Indigenous participation in mining, exploration, and development in Canada – and likely globally.

Perhaps more than anywhere, the NWT understands the relationship between resource development and socio-economic wellbeing. It's what sets it apart from global competitors — and what makes the territory a great place to invest and do business. ✘

The Yukon's mining industry has long been instrumental to the success of the territory's economic growth, and today boasts world-class mining sites and boundless untapped potential.

Yukon: Underexplored and full of mineral potential

Throughout modern history there are a few staples that the Yukon has become known for across the globe; our beautiful mountain ranges, the midnight sun, northern lights and, of course, gold.

In August of 1896, gold was found in Bonanza Creek, an event which drew tens of thousands of prospectors to the Yukon, changing the territory forever. This discovery sparked the Klondike Gold Rush and cemented the region's legacy as a land of opportunity and a recognized mining jurisdiction.

The Yukon's mining industry has long been instrumental to the success of the territory's economic growth, and today boasts world-class mining sites and boundless untapped potential. The Yukon is full of talented prospectors, developers, producers, and explorers, all working together to create an impressive mining ecosystem. Within this thriving sector, Yukoners have proven themselves capable of discovering mineral deposits and operating many successful mines over the years.

Accessible by highway to the rest of Canada and the ports of Skagway, Alaska, and Stewart, British Columbia, the Yukon has more than 3,000 identified mineral occurrences and excellent geological potential. The 2021 Fraser Institute's Annual Survey of Mining and Exploration ranked the Yukon third among Canadian jurisdictions and ninth in the world for investment attractiveness. These rankings have continued to encourage investment in the territory.

The Yukon's economic growth rate is the fastest in the country and can largely be attributed to its mining industry. In 2021, the Yukon led the country in real GDP growth at 10.0 per cent. The Conference Board of Canada's latest 20-Year Territorial Outlook projects that mining development and production will support economic growth over the forecast period starting with 7.6 per cent Real GDP growth in 2022.

The territory is known to contain deposits of copper, gold, silver, zinc, nickel, cobalt, platinum, palladium, and tungsten; metals needed for technology and renewable energy equipment. As much of the world transitions to a green economy, the Yukon's critical mineral resources will continue to attract exploration and investment. There is already significant demand for these minerals and the World Bank currently predicts a 300 per cent increase in demand for copper and 290 per cent increase for zinc by 2050.

In addition to its abundance of minerals and exploration potential, the Yukon also boasts a transparent regulatory process and environmental protection measures that investors can easily understand and navigate. Eleven of the 14 First Nations in the territory have land claim agreements in place and Yukoners support reconciliation and collaboration efforts with Yukon First Nations. As such, all mining operations must work closely with nearby communities to ensure development aligns with First Nations values and respects the land and environment.

Snowline Gold site visit at the Rogue project in the Yukon.

The Yukon's economic growth rate is the fastest in the country and can largely be attributed to its mining industry.

The Government of Yukon has a progressive regulatory regime in place under the Yukon Environmental and Socio-economic Assessment Act (YESAA). Overseen by a board, proposed mining projects can be viewed on an online public registry. This level of transparency ensures that mining projects work for everyone impacted and adhere to highest environmental, social, and governance (ESG) standards.

This collaborative approach extends to developing technology and resources that improve access to mineral deposits. By working with stakeholders, communities, and First Nations, the Government of Yukon has advanced many infrastructure initiatives which will open up new areas for continued mineral exploration and mine development in the North. This includes roads to resources, airport improvements, renewable energy initiatives, and expansion of telecommunications into remote areas, along with the 800-kilometre Dempster Fibre project which will provide network redundancy to the Yukon.

The Governments of Yukon and Canada are working with local partners to develop a hydropower facility in Atlin, B.C. to grow the territory's renewable energy resources. This project will help support climate resilience in the north by building the Yukon's capacity to provide dependable, renewable electricity to Yukoners and growing industries. The Yukon Resource Gateway Program is a collaborative effort between the Yukon government, Canada, First Nation governments, and industry to upgrade existing road infrastructure, improve the safety and reliability of the road systems, and provide access into areas of high mineral potential. There are currently a number of projects ongoing under the program, valued at $251 million, which will enhance access and reduce costs for explorers and developers.

Access to critical minerals, regulatory transparency, and the development of new roadways and infrastructure will continue to advance the Yukon as a strong jurisdiction for mineral exploration, development, and investment. The Yukon has a well-known mineral abundance, yet the territory is still heavily underexplored and full of potential. Yukoners are proud of our reputation as a top global mining jurisdiction, earned by balancing the economic opportunities that our mineral sector presents with the responsible social and environmental measures necessary to sustain it, and the natural beauty of the Yukon, for future generations. ✘

Nighthawk Gold Corporation:

Thriving during volatile times and focused on advancing the Colomac Gold Project in the Northwest Territories

"We are in the best position in Nighthawk's history," says Keyvan Salehu, P.Eng., MBA, Nighthawk Gold president and CEO.

Earlier this year, Nighthawk Gold substantially expanded their total mineral resource estimates (2022 MRE) to more than four-million gold ounces in the Indicated and Inferred categories and mostly in near-surface, potentially open-pitable mineralization. They also recently completed a very successful 40-kilometre exploration program where they intersected high-grade gold intercepts outside the 2022 MRE[1] pit-shells, which suggest the potential expansion of known mineralization at the Colomac Gold Project. Some of their highest-grade intercepts were drilled at the satellite Kim and Cass Deposits.

"We will end the year with a strong balance sheet to fund our 2023 exploration program," says Salehu. "We are well-positioned to provide an updated mineral resource estimate in early 2023. That would set us up to commence work on a conceptual mine plan for the Colomac Gold Project."

Salehi, who took the helm at Nighthawk in early 2021, and the new management team have been steadily guiding the turnaround and evolution of the company to potentially become

The Nighthawk team has navigated the company prudently and is advancing its multi-million-ounce Colomac Gold Project in the NWT towards a potential large-scale, open-pit conceptual mine plan.

In 2022, the company completed more than 40 kilometres of drilling, focused on high-grade, near-surface mineralization at the Colomac Gold Project.

THE FUTURE OF GREEN ENERGY

NORTHWEST TERRITORIES

It's an exciting time for the Northwest Territories mining sector: resource availability, technology, market demand and public interests are all coming together. And critical minerals are one of those intersections.

The federal government has identified 31 minerals that it believes will position Canada as a leading supplier of critical minerals. Approximately two thirds of them can be found in the Northwest Territories (NWT).

The NWT has the first rare earths mine in Canada, and second in North America – this is also the first project in the country in which an Indigenous group has been contracted to extract minerals in its own territory.

By 2035, Canada's ambitious goal is to reach net-zero emissions – and because of this, we are positioned to be a green energy leader in Canada through contributing to the critical mineral supply chain that will help this goal become a reality.

"The Government of the Northwest Territories is committed to growing the NWT's mining sector and its contributions to investment, employment, and Indigenous participation in the economy."

This positions us right at the heart of green energies and technologies of the future, while being a global leader in strong environmental-social-governance Indigenous (ESG-I) practices.

Our regulatory framework places environmental protection, traditional knowledge, and Indigenous rights at the centre of decision-making, and ensures that Indigenous governments have a central role to play in the management of land and resources.

With new legislation and a new Critical Minerals plan, investments in energy and transportation; and support for advanced and innovative methods of exploration, the Government of the Northwest Territories is working hard today to lead our mining industry into the future.

Caroline Wawzonek
Minister of Industry Tourism and Investment

Caroline Cochrane
Premier of the Northwest Territories

Government of
Northwest Territories

The company is actively working towards its environmental and social licenses.

Nighthawk believes that the successful advancement of the Colomac Gold Project could help boost local job creation and business spending, and ultimately contribute to the Northwest Territories economy in the long-term.

one of the next exciting large-scale, gold development-stage stories in Canada.

2022 is a year of global economic turmoil. Several sectors, including mining, face stagnant growth with rising inflationary costs. Commodity prices have been volatile throughout the year and the outlook has been tempered due to recessionary fears. Despite these external headwinds, the Nighthawk team has navigated the company prudently and is advancing its multi-million-ounce Colomac Gold Project (located 200 kilometres north of Yellowknife, Northwest Territories) towards a potential large-scale, open-pit conceptual mine plan.

"Our mentality is to be aggressive with our drilling, but also be conservative with how we advance our project, with our assumptions, and how we manage our balance sheet," stated Salehi. "We've completed more than 100 kilometres of drilling over the last two years and have demonstrated significant growth of the project's mineral resource estimates as a result. We are now working towards an updated mineral resource estimate, to be delivered in early 2023, which then allows us to commence work on a conceptual mine plan using conservative and realistic assumptions."

Salehi strongly believes that the Colomac Project can potentially be a large-scale, open-pit operation with attractive economics. He adds that delivering on this potential could be a huge win for Nighthawk shareholders, but also their partners, local communities, and the Northwest Territories as a whole.

2022 EXPLORATION

The company completed more than 40 kilometres of drilling, focused on high-grade, near-surface mineralization at the Colomac Gold Project. Nighthawk successfully intersected high-grade mineralization outside of the 2022 MRE[1] deposit pit-shells, suggesting the potential expansion of open-pit mineral resource estimates.

ESG

Salehi says that they strongly believe in the importance of sustainable and green practices.

"When contemplating the conceptual mine plan for the Colomac Gold Project, it is important that the project is powered primarily using green energy. We've done the high-level work and it is possible to supply the majority of Colomac's power needs with wind and solar power without sacrificing return on capital," he says.

The company is actively working towards its environmental and social licenses. Baseline environmental studies for the Colomac Gold Project have commenced. Nighthawk has consistently engaged with the local communities, particularly the Tłı̨chǫ Nation. Nighthawk believes that the successful advancement of the Colomac Gold Project could help boost local job creation and business spending, and ultimately contribute to the Northwest Territories economy in the long-term.

LOOKING AHEAD

Nighthawk is positioned to provide an updated mineral resource estimate in early 2023. An updated mineral resource estimate allows the company to commence work on a maiden conceptual mine plan for the Colomac Gold Project.

"The potential of the Colomac Gold Project and the entire Indin Lake Greenstone belt is very exciting," says Salehi. "As an engineer with mine-building experience in Canada, the Colomac Gold Project can be a large-scale, open-pit operation with attractive economics if we continue to de-risk and deliver on our milestones. We think it could be one of the few top-tier gold projects in North America."

The NWT diamond mines have a relatively short mine-life remaining. Salehi believes that the Colomac Gold Project can be the next operation that can fill the jobs gap for when the diamond mines shut down.

"Nighthawk aims to contribute to a prosperous NWT in the long term," he says. ✘

[1] *For more information on the Mineral Resource Estimate ("2022 MRE") please refer to the March 8, 2022 news release and in the Company's NI 43-101 technical report entitled "NI 43-101 Technical Report and Update of the Mineral Resource Estimate for the Indin Lake Gold Property, Northwest Territories, Canada" and dated March 31, 2022 ("Technical Report"), which is available on SEDAR www.sedar.com and on the Company's website at www.nighthawkgold.com. Please review the forward-looking statements and disclosures in the Technical Report.*

Above left: Bornite Cpy outcrop.
Right: Malachite pile.

A grassroots copper-gold discovery in underexplored central Yukon

There's an adage in mining that just because a political border exists it doesn't mean the rocks stop at the line. Examples of this can be seen in many historical jurisdictions, where concentrations of mines and exploration projects may occur in one territory, yet just across the border in the same prospective rock package there's little-to-no work ongoing.

Vancouver-based explorer ATAC Resources Ltd. (TSX-V: ATC, OTCQB: ATADF) is proving this point with an exciting grassroots copper-gold discovery at their Catch Property, located 40 kilometres southeast of Carmacks, in central Yukon. Catch is located in the Stikine Terrane – the same package of rocks that underlies the prolific 'Golden Triangle' just to the south in British Columbia, with numerous advanced copper and gold projects. Yet despite the geological connection, this part of Yukon had never seen documented exploration work prior to 2021.

"A young Yukon prospector came to us last fall with a brand-new discovery he'd made following up on regional government silt samples taken years ago. We were very impressed with his samples, and decided to option the property," stated Graham Downs, ATAC's president and CEO.

When ATAC looked through historical government databases they couldn't find any assessment reports covering that area, nor any evidence of claims ever having been staked before.

"We were shocked that copper mineralization at surface of this tenor had been undiscovered all these years," says Downs. "It just goes to show the immense mineral potential of Canada's north, where vast areas have seen little-to-no systematic exploration work."

ATAC has now completed its first season of exploration work on the property and are seeing all the right ingredients for a promising copper-gold target. In late August the company announced results of its first phase of exploration,

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Closeup of malachite outcrop.

Geos and copper.

including soil sampling, prospecting and induced polarization geophysical surveys. This work outlined an extensive five-kilometre-by-600-metre copper-in-soil anomaly, with high-grade copper and gold grab samples from outcrop across a one-kilometre-by-400-metre area coincident with a chargeability and resistivity high.

The results were encouraging enough that ATAC returned to the property in late September to conduct additional prospecting and embark on a maiden RC drill program.

"The amount of mineralization at surface is astounding," said Downs. "Every day we would get photos from the field of our crew uncovering abundant malachite and azurite at new sites. The widespread extent of mineralization is just incredible, and we can't wait to get back out there again."

Results from the follow-up work are still pending, but the company is already planning for next season.

"We see ourselves exploring here for years to come," said Downs. "This could be the start of a whole new mineral district with potential for many meaningful discoveries."

For more information on ATAC and the Catch Project, visit www.atacresources.com. ✘

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Osisko Metals' Pine Point Project – The future of North American zinc and lead

By Ryan Davies

The northern lights looking to the east of the Pine Point Camp at around 10 p.m. during Osisko's winter drilling program in March 2022.

Critical minerals are needed more than ever, and they play an essential role in the global economy and will continue to be pivotal for global decarbonization objectives. However, North America is currently highly dependent on foreign sources for metals and minerals used in batteries and other renewable energy technologies, and new local sources are needed to ensure continued growth in the adoption of electric vehicles (EVs), among other initiatives that will reduce greenhouse gas emissions and slow the rate of climate change.

In particular, lead is a crucial but understated metal that supports the green economy, according to the World Bank. It helps with wind generation and makes solar panels last longer. Most importantly, it allows for easier recovery of other vital metals when recycling electronic waste. Meanwhile, zinc is fundamental to the green economy as it is used to galvanize iron and steel to protect against corrosion, adding longevity to infrastructure and construction materials that would otherwise deteriorate and have to be rebuilt. If global concrete construction emissions were classified as a country, that source would be third after the United States and China.

Osisko Metals is working to supply North America with zinc and lead with their Pine Point Mining Project. Located in Canada's Northwest Territories, the project has the potential to become one of the world's largest lead and zinc mines. It is located on the south shore of Great Slave Lake, between Hay River to the west and Fort Resolution to the east. The site's major advantages include the significant infrastructure it already has in place, which includes a hydroelectric substation on site, paved highway access, and 100 kilometres of viable haulage roads.

First discovered in the late 19th century, Pine Point was an active

open-pit mine between 1965 and 1988, producing and shipping over 10 million tonnes of lead and zinc concentrates annually. Zinc concentrate is produced from the mineral sphalerite and lead from galena, and Pine Point historically produced among the world's cleanest zinc and lead concentrates with very low impurities. This sets the project apart from most current producers.

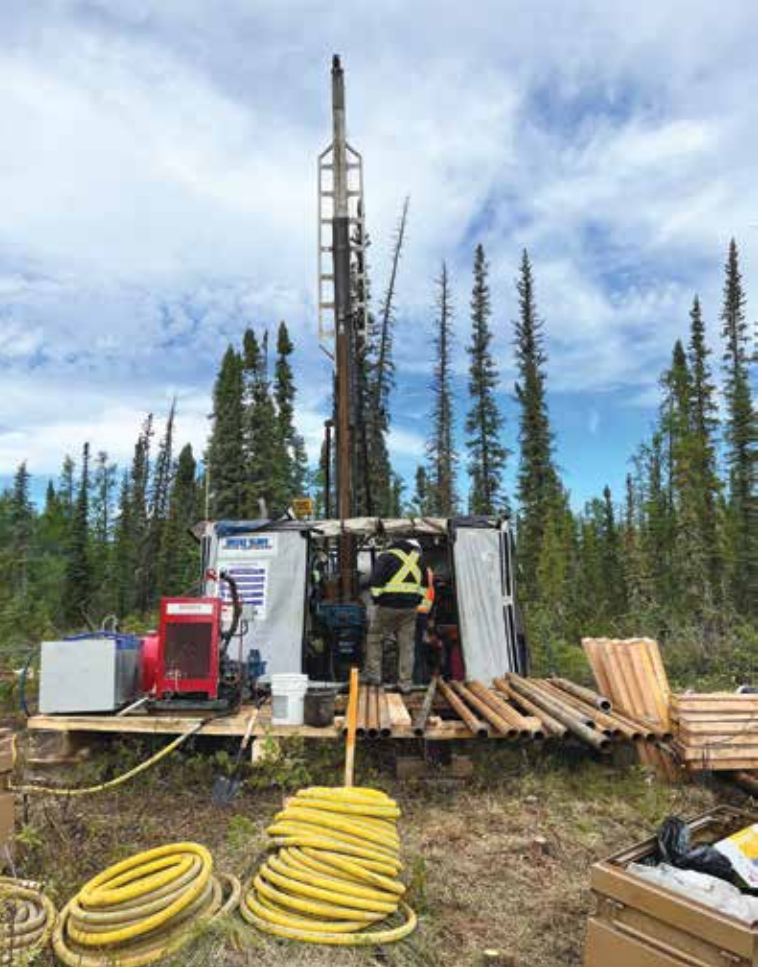
During its operations, the town of Pine Point was built by the mining company, Cominco, and when the mine closed the town was closed, and houses and components were demobilized. Today, zinc and lead prices have more than tripled since the closure and the time is right to evaluate the potential of resuming mining operations to supply the modern world with these critical minerals.

Osisko Metals released an update to the Pine Point Preliminary Economic Assessment (PEA) in July 2022, which integrated updated long-term prices for zinc and lead, and increased mine life, including reduced costs resulting from a recently completed hydrogeological model that reduced estimated dewatering volumes by 30 per cent compared to the 2020 PEA, with the potential for a further forecasted reduction of 15 per cent as the project advances to feasibility. The study also included cost escalations in CAPEX and OPEX due to inflation.

The Pine Point Project is expected to be profitable under various price assumption scenarios. Metal prices used in the 2022 PEA Update study are based on weighted two-year moving averages, hence $1.37/lb zinc and $0.97/lb lead. At these prices, the PEA update shows a very robust zinc project with viable economic metrics, including an after-tax IRR of 25 per cent and after-tax NPV of C$602 million. The new proposed mine plan, with an 18 per cent increase in tonnage processed in the concentrator over the life of the mine, could again make Pine Point a Top 10 global zinc-lead producer with an annual average production of 329Mlb of zinc and 141Mlb of lead over a 12-year mine life, an additional two years of production.

On a zinc-only basis, Pine Point could potentially become a low-cost zinc-lead producer ranking fourth largest in the Americas, as the exceptionally clean and high-grade zinc concentrate from Pine Point would be sought after by any number of smelters and traders globally.

Definition drilling continues to upgrade the inferred mineral resources on the project and will potentially yield further expansion of



Helicopter-supported drilling was conducted for some of the exploration holes.

several known deposits. These resources will be used for the feasibility study to be initiated early in 2023.

After seeing an all-time high in spot prices for zinc earlier this year, it is not unrealistic to consider more bullish scenarios, especially when considering record-low inventory levels and the continued lack of investment in the mining industry. At US$ US$1.50/lb zinc, $1.00/lb lead and FX 1.25, the project returns an NPV of C$787M with an IRR of 29 per cent on an after-tax basis.

The positive economic results of the 2022 PEA update reflect a robust project that is expected to generate strong returns under various price and assumption scenarios. The project's location in the Northwest Territories provides access to world-class mining infrastructure and skilled labour, which will help to keep costs low. With its large size, high grades, and extensive infrastructure already in place, the Pine Point Mining Project has the potential to become a leading supplier of zinc and lead in North America.

To learn more about the Pine Point project and Osisko Metals, visit osiskometals.com. ✘

Federal funding supports key water study at Nechalacho Rare Earth Mine

Prof. Jim McGeer of Wilfrid Laurier University leads a discussion at the Nechalacho Rare Earth Mine with a team from the GNWT Departments of Land, and Environment and Natural Resources. The visit in August 2022 was part of a three-year water study at the mine. Photo by Cheetah Resources/Cody Drygeese.

A three-year water quality study at the Nechalacho Rare Earth Mine is being funded through the Natural Sciences and Engineering Research Council of Canada (NSERC) in partnership with Natural Resources Canada, Cheetah Resources, Stantec Inc., and Environment and Climate Change Canada. The study is part of an initiative, valued at $265,000 annually, to better understand the environmental

Cody Drygeese, environmental officer at Cheetah Resource's Nechalacho Mine, tests a water sample at the mine's water settling pond. Drygeese, of the Yellowknives Dene First Nation, is assisting in a three-year water study at the mine. Photo by Cheetah Resources/billbradenphoto.

risks of the rare earths and other technology-critical elements.

The study at Canada's first producing rare earth mine began this summer, led by biology professor Jim McGeer of Wilfrid Laurier University who is working with colleagues from Laurier, the Université de Montréal, University of Guelph, as well as the Institut national de la recherche scientifique and CANMETMining.

McGeer brings 27 years of study into the toxicology of metals and has been focused on rare earths for over a decade.

"As Canada's only rare earth mine, it is the only field location in Canada where real-life data can be collected," said McGeer. "This data will ensure that decisions are made based on local conditions and not lab-derived estimates."

The research will help define a comprehensive site-specific understanding of the potential effects of rare earth residue in aquatic ecosystems. It will also support the mine and regulators in setting appropriate levels of treatment before any site waters are discharged. The study will focus on ground and melt water, which collects in the North T excavation pit. That water is pumped into a lined settling pond and analysed before any release into the natural environment.

"We welcome this kind of academic and scientific research at Nechalacho," said David Connelly, vice-president of strategy and corporate affairs for Cheetah Resources Corp. and parent company Vital Metals. "We are committed to being a responsibly-sourced supplier of rare earth product, and this will help everyone build confidence that the environment is being protected."

The partnership with Cheetah Resources was recommended and facilitated by the Government of the Northwest Territories, Department of Environment and Natural Resources (ENR). Cheetah will provide local air transportation, accommodation at the mine 110 kilometres southeast of Yellowknife, and logistical support for the field studies at the site.

The research team brings considerable expertise in the geochemistry of rare earths, essential to ENR's staff, and representatives from the Mackenzie Valley Land and Water Board. They joined McGeer at Nechalacho this summer, assisted by Cody Drygeese, Cheetah Resources' environmental officer. ✘

Exploration update – Ekati Diamond Mine

By Jon Carlson, Head of Exploration & Project Development, Arctic Canadian Diamond Company; and Tom Nowicki, Technical Director, Mineral Services Canada Inc.

The Ekati Diamond Mine, Canada's first diamond mine, opened in October 1998. Since that time, Ekati has produced more than 90 million carats from both open-pit and underground mining operations. Exploration of the Ekati mining claims and leases has been carried out for more than three decades resulting in the discovery of 177 kimberlite occurrences. The region is underlain by primarily Archean age bedrock (mostly metasediments and granitoids) transected by Proterozoic-age diabase dykes, and overlain by recent glacial sediments. The kimberlites are typically overlain by lakes but also occur in land settings (generally under glacial cover). Airborne geophysical surveys including gravity, magnetics, and electromagnetics have proved most useful in identifying drill targets. To date, about 350 targets have been drilled across the property.

The Ekati claim block originally comprised of approximately 3,320 square kilometres, but has been rationalized to about one-third (1,140 square kilometres) of its original size and now consists of 122 mining leases. Recent exploration efforts from 2018 to 2020 focused on high-resolution magnetic airborne surveys (magnetic gradiometer helicopter surveys) and tightly spaced remote mapper UAV magnetic surveys. These surveys were effective in detecting small kimberlite pipes that were not resolved on the earlier property-wide surveys.

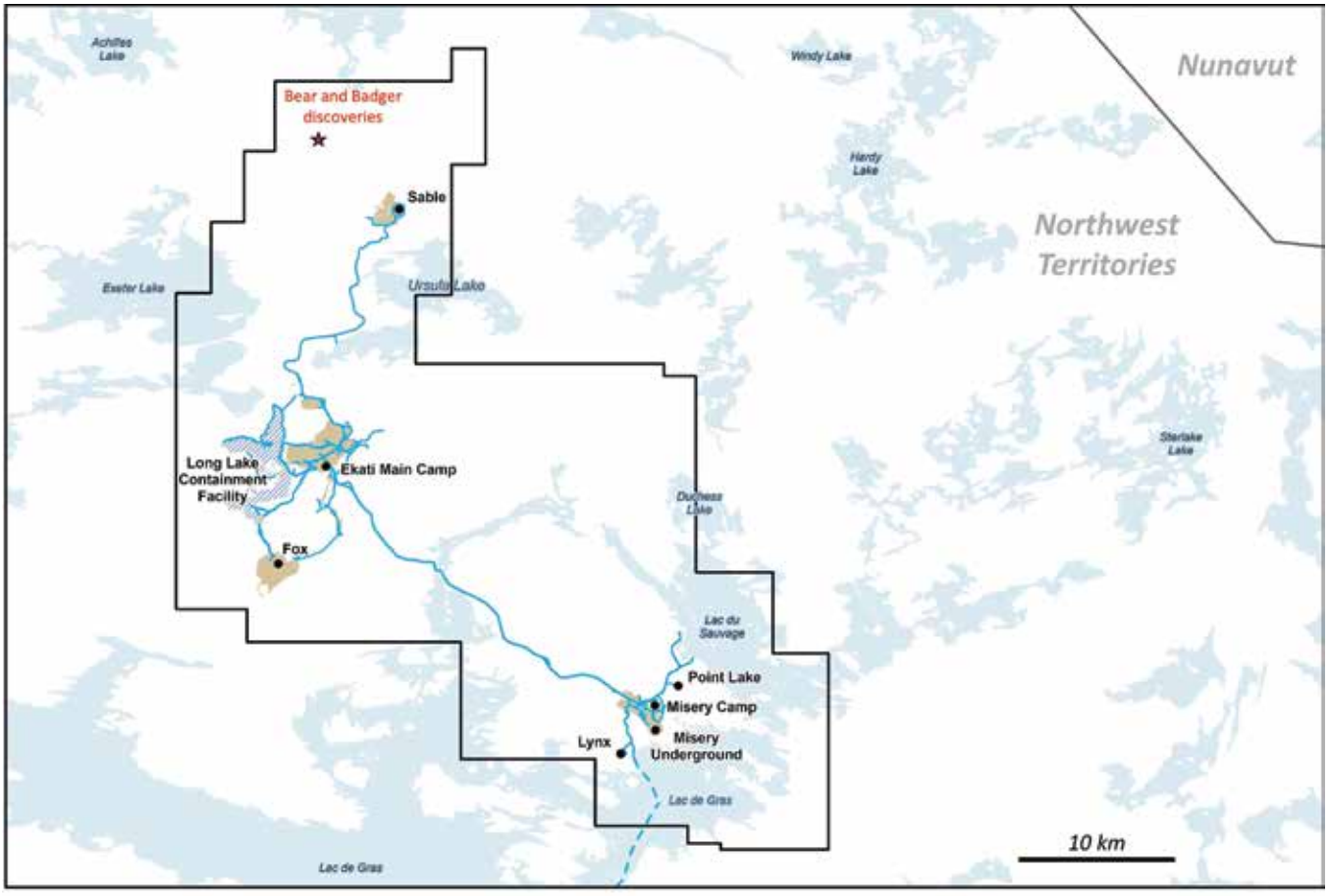


Figure 1: Map showing the location of the Bear and Badger kimberlite discoveries on the Ekati Diamond Mine property (black outline). Mine infrastructure and current operations and projects (black dots) are shown for reference.

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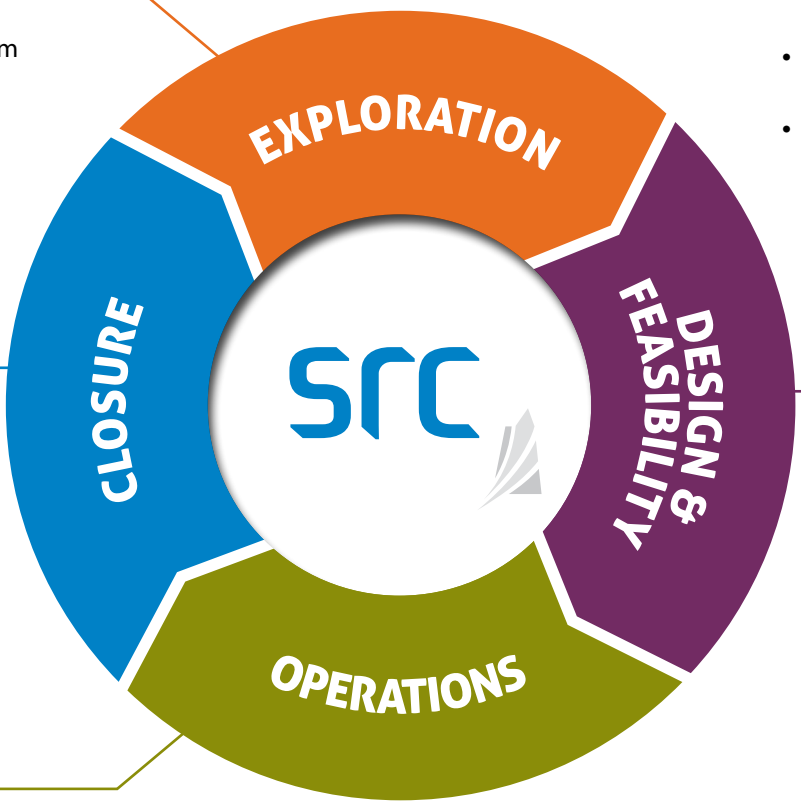

- **Sensor-based sorting characterization and piloting**
- **Minerals processing** testwork and piloting
- **Slurry** transport modelling and testing
- Net-zero energy assessments, including **renewables, biofuels, battery storage and microgrids**

- **Closure** plan evaluation and design
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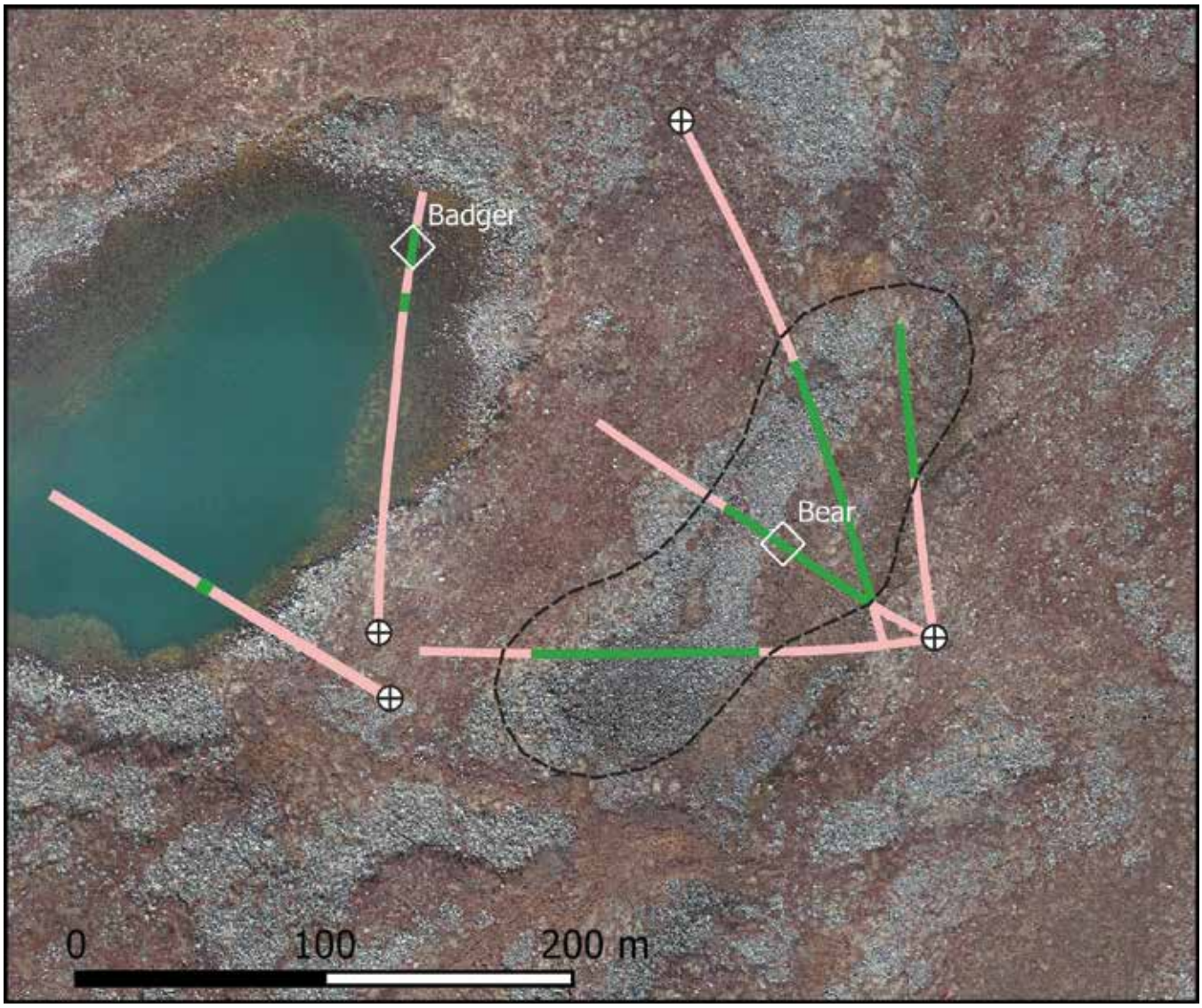


Figure 2: Map showing projected core holes drilled in the vicinity of the Bear and Badger kimberlites superimposed on drone imagery of the area. The drill traces are colour coded by generalised rock type (green = kimberlite; pink = granite). A preliminary interpretation of the outline of the Bear kimberlite at surface (based on drill results and geophysics) is shown.

A new exploration initiative was launched during 2020 by Ekati's operator (now Arctic Canadian Diamond Company) and its primary exploration consultant, Mineral Services, to apply the technology of deep machine learning (DML) to the comprehensive exploration dataset available for the property. Property-wide airborne magnetic, electromagnetic, and gravity data were compiled and processed to generate datasets in a format suitable for application of DML. Algorithms (DML models) for predicting the location of kimberlite pipes using the geophysical data were trained based on the locations and geophysically-defined outlines of known kimberlites, also integrating the distribution of lakes on the property. The DML models were applied across the property to generate predictions of potential kimberlite pipes.

The predictions from multiple models were carefully reviewed and filtered based on size, location, and geological criteria, yielding a shortlist of 11 potential drill targets, five of which were prioritized for drilling using electromagnetic inversions (in collaboration with Sanders Geophysics Ltd.) and detailed geophysical analysis. Helicopter-supported exploration drilling of the prioritized targets was undertaken in summer 2022. Two of three targets drilled were confirmed as kimberlite pipes (named Badger and Bear pipes). The two discoveries are located about six kilometres northwest of the Sable kimberlite pipe, which is currently in production as an open pit. The Bear kimberlite discovery hole intersected 81 metres of mud-rich to olivine-rich resedimented volcaniclastic kimberlite with variable concentrations of kimberlite indicator minerals; comparable to the infill of known economic occurrences in the region. The kimberlite is located on

land, buried by an undetermined thickness of glacial deposits (boulders and till). The presence of shallow permafrost on land likely suppresses the electromagnetic response of the pipe compared to those occurring under lakes (where the permafrost boundary is considerably deeper) and may explain why this relatively large body was not recognized previously. Three additional drill holes were completed to delineate the pipe (approximately 1.7 hectares) and to provide representative drill core samples for microdiamond and mineral chemistry analysis.

The remaining exploration targets will be drill tested in summer 2023 in combination with follow-up drilling in the Bear kimberlite area assuming positive results from the microdiamond and mineral chemistry analysis. ✘

Figure 3: Photographs of drill core from the Bear kimberlite illustrating the variation in olivine concentration and grain size. The pale grains are variably altered olivine and occur within a dark very fine-grained matrix dominated by mud. A plastically deformed clast of mudstone (M) and a fragment of carbonized wood (W) are also evident.

The Yukon Chamber of Mines continue to showcase and advocate for Yukon's exploration and mining industry, over 50 years and counting

In July 2022, the discovery of a mummified fossil of a baby woolly mammoth happened during a placer mining operation in the Klondike. Photo courtesy of Jeff Bond, MSc, Head, Surficial Geology, Yukon Geological Survey.

Modern society can gauge the extent of its evolution by turning to the pages of history. For us at the Yukon Chamber of Mines, the pages of history have been instrumental in measuring the many wonderful milestones of the mining industry. The Yukon Chamber of Mines have supported and highlighted how the industry has changed.

The exploration and mining industry have become leaders in equity, diversity, and inclusion. The Yukon Chamber of Mines was instrumental in the recent induction of Kate Carmack into the Canadian Hall of Fame. Carmack was part of the Carmack team that made the initial discovery of gold in the Klondike, which started the Klondike rush and 30,000 stampeders to the north.

This year we celebrate the 50th Golden Anniversary of the Yukon Geoscience Forum and Trade Show.

The one-month-old Nun Cho Ga, which believed to have died 35,000 years ago, is the most complete mummified woolly mammoth found in North America to date. Photo courtesy of Jeff Bond, MSc, Head, Surficial Geology.

The Yukon Geoscience Forum was one of the first geological conferences in Canada. Since then, it has evolved to attract scientific minds to come together and share and discuss hard science, research, and the future of exploration.

Today, 50 years later, it is still the platform where visions are sharpened, and new innovative paths are carved in the mining industry, which has evolved to incorporate sustainability, social responsibility, and strong partnerships with First Nations.

Platforms like the Geoscience Forum are therefore crucial to measure progress, especially for the mining industry which has been on a journey to achieve environmental sustainability through the least invasive extraction techniques.

As the Geoscience Forum celebrates its 50th anniversary this year, it is also an honour to be an informal yardstick to measure the progress of the mining industry, and, in some instances, even be the record keeper of historic events.

One such instance was the discovery of the mummified fossil of a baby woolly mammoth during a placer mining operation in the Klondike earlier this year in July.

The Tr'ondëk Hwëchin First Nation ceremoniously blessed the baby mammoth and named it Nun Cho Ga, which means 'big baby animal' in the Hän language.

The one-month-old Nun Cho Ga, which believed to have died 35,000 years ago, is the most complete mummified woolly mammoth found in North America to date.

Treadstone Mining's Brian McCaughan's crew discovered the Nun Cho Ga in Yukon's permafrost. Those that discovered her that day acknowledged it as a career highlight for them, far more precious than the gold they were looking for.

At the same time, government authorities, First Nation elders, scientists, and miners remarked how the historic find brought them all together and united them – a feat that would not have happened had it not been for the mining activity that day. It is one of the many examples of mining and First Nation partnerships.

The modern mining industry in Yukon is committed to the community and what lies within the crux of its operating vision. Another marker of an industry's true progress is reflected in its social responsibility, towards the development of its host communities.

In October, the Chamber was delighted to see the nomination of Tatra Ventures' for the Yukon Chamber of Mines Community Award for their innovative contribution to the Dawson community in the form of a swimming pond.

Tatra's team created a swimming pond for the community of Dawson through value-based reclamation and restoration on the Klondike River.

The team demonstrated their commitment to excellent reclamation and it leads the way for placer miners to work with community members in reclaiming or restoring sites to the desired outcome specific to the location.

With success stories like these, we look forward to the next 50 years of pioneering work in the mining industry, working alongside our stakeholders, transforming communities, and bearing witness to cutting-edge advancements in science and technology. ✘

Canadians want more mining, and the north is poised to play an essential role

By Pierre Gratton, President and CEO, Mining Association of Canada

For Canada to achieve its climate goals, substantive quantities of minerals and metals will be required to produce the clean technologies essential to a greener future, and Canada's North has a pivotal role to play in supplying the materials needed to meet this growing demand.

Never before has the public been so keen on our sector and the role it must play in the energy transition, with polling recently completed by Abacus Data showing great enthusiasm for Canada's mining industry. In fact, support was found to be at an all-time high, with 80 per cent reporting that they have a positive feeling about producers of minerals and metals in Canada, and 84 per cent giving mining companies in Canada a good or acceptable performance in contributing new materials for use in greener and cleaner technologies. Canada's mining sector is now widely considered to be a global leader in its commitment to strong ESG credentials and community engagement, with made-in-Canada standards like Towards Sustainable Mining being adopted by mining chambers around the world.

This public support hinges in large part on mining companies making commitments to lower their environmental footprint and seeing them through. Polling found that 83 per cent say they would like to see more mining projects in Canada provided they have a plan to reduce GHG emissions. While mining has always been an energy-intensive industry, there has been a surge of innovation and technology development taking place in the sector to enable Canadian mining companies to deliver these critical materials with sustainability and commitment to climate action, including via the use of renewable energy or decarbonizing equipment at mine sites, at the forefront. As one of the lowest carbon-intensity producers of mineral and metal products in the world, Canada fulfills the need for mined materials better than most competing mining jurisdictions.

While the mining industry is truly pan-Canadian, with operations from coast-to-coast-to-coast, it is particularly significant to remote and northern Canada. Mining is the largest private sector driver in Canada's Arctic, employing approximately 8,500 people. Proportionally, the industry is the largest private sector employer of Indigenous peoples in the country, and the territories host the highest per-capita demographic of Indigenous peoples of any sub-national jurisdiction in Canada.

Recent commitments, specifically those focused on critical minerals in the last federal budget, are positive, but our sector continues to face challenges when fulfilling the demand for our products, not only by companies within Canada, but also by our allies.

The future of Canada's mining industry lies increasingly in remote and northern regions, but the infrastructure deficit in this part of the country challenges project economics. Without infrastructure development to enhance investment competitiveness, northern regions and their inhabitants will remain disproportionately reliant on transfer funding for core services and program delivery, and frequently at lower standards than southern Canadian jurisdictions enjoy. Investments in projects such as the Gray's Bay Port and Road project in Slave Geological Province are required if we are to bring northern projects into production.

In order for Canada's full potential as the global mining supplier of choice to be realized, enhanced infrastructure in the North must be prioritized. Strategic investments in energy infrastructure, such as the Kivalliq Hydro/Fibre Link, the BC/Yukon Power Grid interconnect, and promising emerging technologies like off-grid small modular reactors are all essential to reduce northern reliance on costly and higher-emitting fossil fuels.

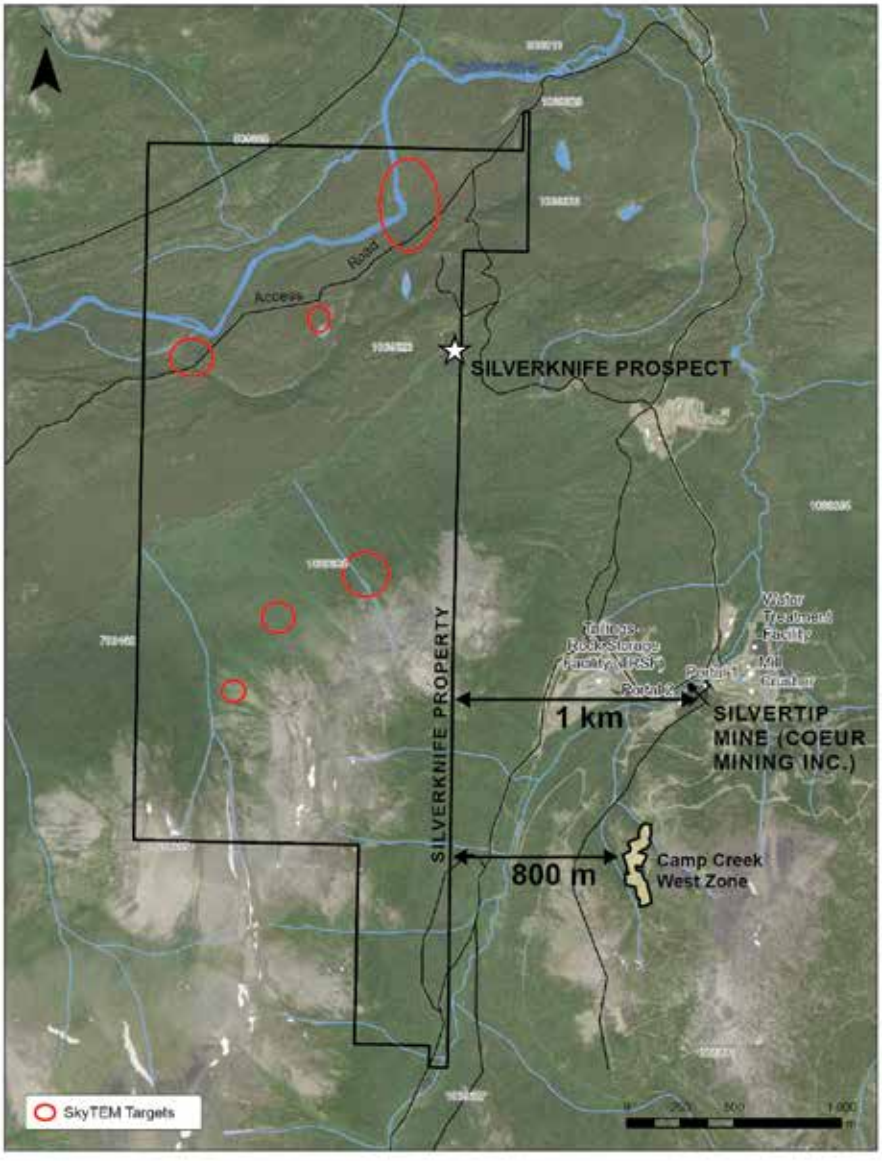
Off-grid mining companies, which encompass almost all mining operations in the north and several of which are essential to supplying the critical minerals essential to low carbon technologies, are overwhelmingly dependent on liquid fuels for power generation and will remain so until a paradigm shift ushers in the next generation of technologies. ✘

The best place to find a mine is in the shadow of a headframe

CMC Metals Ltd. plans an aggressive exploration program at its Silverknife property in north-central British Columbia

CMC believes that the old adage of "the best place to find a mine is in the shadow of a headframe" will become true in 2023 at its Silverknife Property in north-central British Columbia.

Silverknife is located one kilometre west of Coeur Mining Inc.'s Silvertip mine, which is one of the world's highest-grade underground silver-lead-zinc mines in the world. CMC has put together very convincing data indicating the potential for a major discovery at Silverknife.



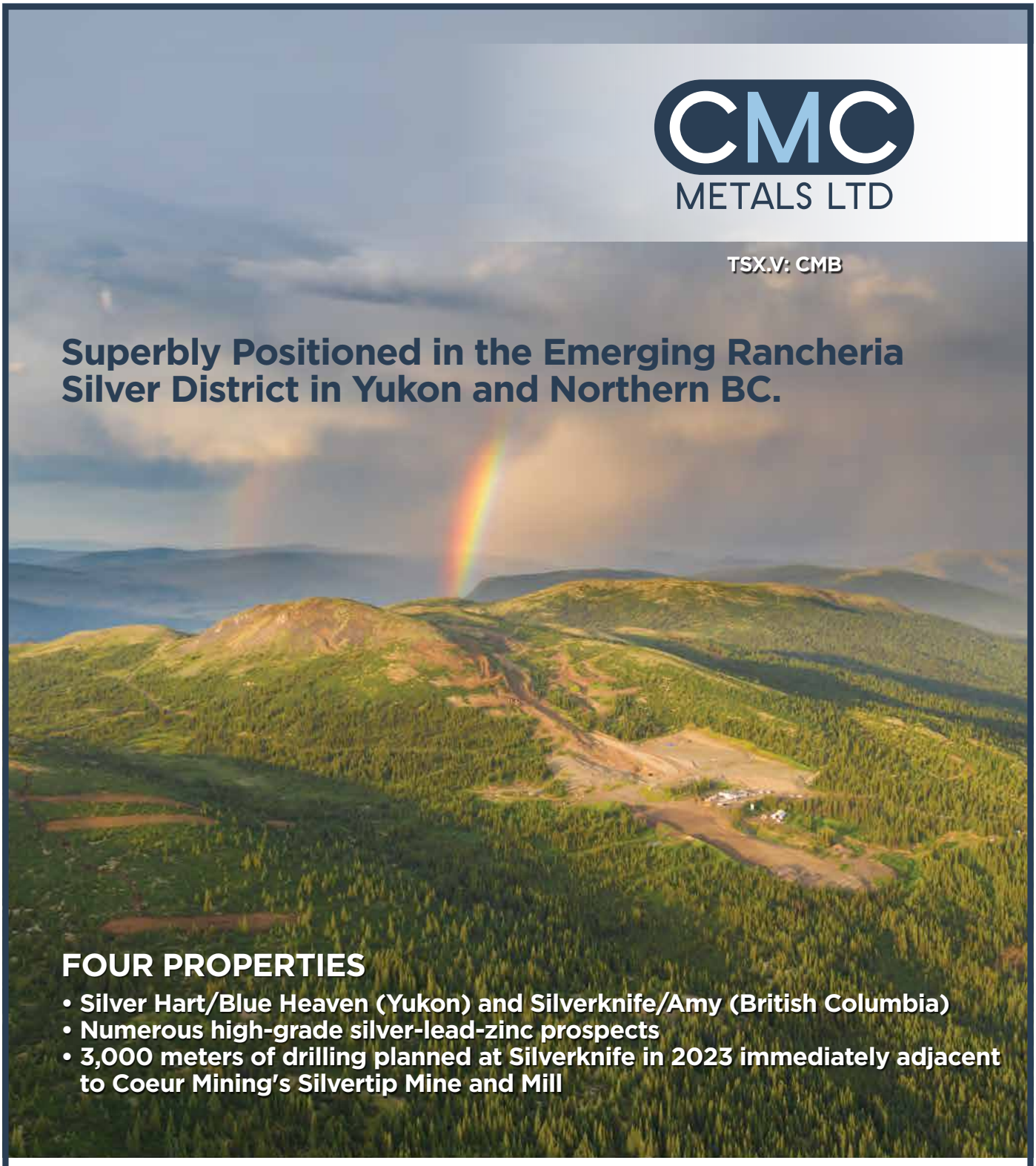
"All of the data points to having the key ingredients for a major silver-lead-zinc deposit existing at Silverknife."

Kevin Brewer, P. Geo., President and CEO

CMC is exploring for a style of deposit called carbonate replacement deposit, or commonly referred to as "CRD" deposits. Think of these deposits like a multi-layered chocolate cake. Like a cake in an oven, CRD's need a significant heat source to form, which in most cases is something like a granite or granodioritic intrusion. Approximately 150 million years ago, due to plate movements in the earth's crust, numerous large volcanic bodies intruded into older sediments, including limestones in the Silvertip area. When this happened, the granites brought with them hot mineralized brines, or fluids, which rose up through faults and other areas of weakness. And like the layering of a cake with cream, these hot brines essentially filled numerous voids and spaces in the overlying limestones and sediments which have resulted in layered mineralized sequences comprising of high-grade silver, lead, and zinc at deposits like Silvertip.

So, like a cake, the list of ingredients to form a CRD deposit is as follows:

1. Heat source: You need the heat source... the intrusive like a granite/granodiorite that will provide the heat for hot mineralized fluids to move.



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"CMC Metals Intersects 2.3 meters of 4,910.8 g/t silver equivalent at Silver Hart in 2021 drilling."

(News Release: December 6, 2021)

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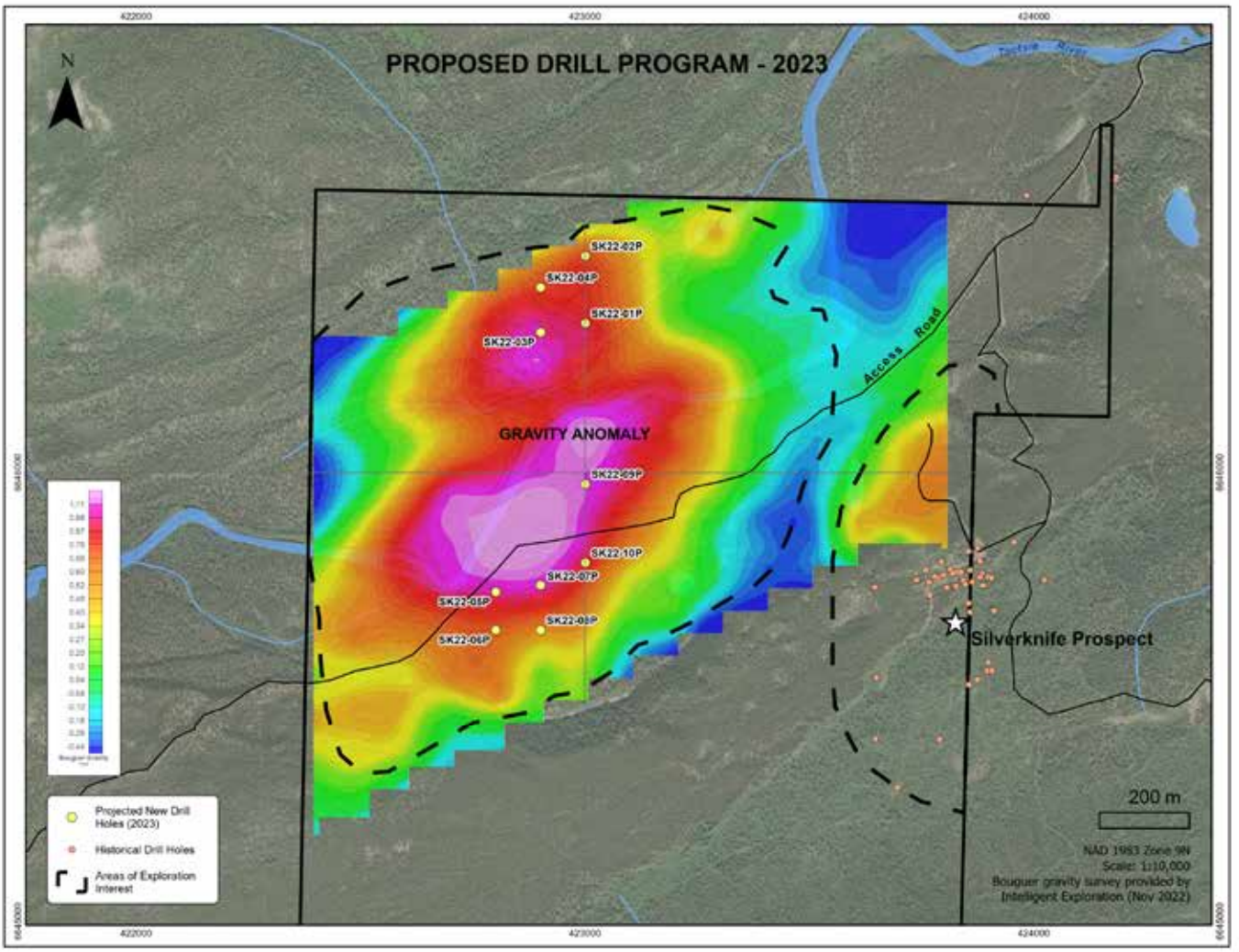

2023 proposed drill targets

2. Right setting: You need that heat source to intrude in a place where it is overlain by sediments like limestones, which typically are the "host rocks" for CRD-style deposits.

3. The minerals: Then like a cake, you need the "cream", which are the hot mineralized brines carrying those minerals from deeper into the earth into the overlying sediments.

4. The pathways: You need pathways such as faults or areas of weakness around the edges of the intrusive so that the fluids can move vertically through chimneys.

5. The spaces: Like the cream between the layers of a cake, to form a CRD you need the spaces or the voids in the overlying sediments (which are common in rocks like limestones), which will eventually become filled by the hot mineralized brines and you need these to accumulate so that the end results are layers and chimneys of mineralized rocks.

6. The cream: Finally, like you need the cream to layer into a cake, you need those hot brines to actually have minerals like silver, lead, and zinc in them.

Using methods like geophysics, geochemistry, geological mapping, and other good earth science, CMC has identified all of the ingredients necessary to form a CRD deposit and is not set to conduct diamond drilling to prove that a deposit exists at Silverknife.

The heat source is a group of intrusive rocks called the Cassiar Batholith, that through geophysics, are identified in their location because they show up as a strong magnetic feature compared to surrounding rocks. At Silverknife, granites and/or granodiorites assigned to the Cassiar Batholith exist in the northern portion of the property and are shown as strongly magnetic features identified through airborne electromagnetic surveys and geological mapping. So, the "heat source" exists.

Also, throughout the Silverknife Property exists older limestones of

Major thrust faults and other pathways are known to exist throughout the Silvertip area, most of them are typically northeast trending and they provide the vertical pathways commonly referred to as "chimneys" in CRD deposits.

the McDame Group, which are the host rock for the Silvertip deposit that were intruded by the granites. So, you have the heat rocks close to, or in direct contact with, the limestones, which is the "right setting".

Then, within the Silverknife property and around it you have the existence of numerous mineralized showings within the emerging Rancheria Silver District from known deposits like Silvertip, Logan and Silver Hart, as well as numerous prospects like Silverknife and others. In addition, a gravity survey, a geophysical technique that measures density of rocks in the subsurface, has identified a major gravity anomaly in the northern part of the Silverknife property. Minerals like zinc and lead are heavy and have a high density, and so a gravity anomaly is a significant indicator that the rocks in the subsurface at Silverknife contain valuable minerals like zinc and lead, and in that area are also generally associated with precious metals such as silver and gold. So, CMC has a strong belief that "the minerals" exist.

Major thrust faults and other pathways are known to exist throughout the Silvertip area, most of them are typically northeast trending and they provide the vertical pathways commonly referred to as "chimneys" in CRD deposits. Again, there is very strong evidence of the existence of major fault structures and a significant thrust fault in close proximity to the gravity anomaly, in other words, the "pathways" for mineralization.

Mapping has identified the presence of a huge area of McDame limestone and Earn Group sediments, which is the key association of the Silvertip deposit and exists in the northern portion of the Silverknife property coincident with the gravity anomaly and in contact with those important heat rocks, the granites. The McDame limestones and other sediments have the "spaces" and voids that can get infilled with mineralization.

And finally, as previously noted, the "cream" exists throughout the Silvertip area. In fact, recent comments by senior executives of Couer Mining, the owner of the Silvertip mine, have indicated that they are convinced the area has the potential to host several "Silvertip-style" deposits. Coeur is now planning to undertake significant investment in exploration and development into the Silvertip area and their mine and mill complex over the next few years. For companies like CMC, having a mill like Silvertip in close proximity to its exploration play and a lot of successful exploration on its doorstep is very encouraging.

CRD deposits are also known to form in clusters. These characteristics have been identified in other parts of the Western Cordilleran, such as the Coeur d'Alene Silver Belt in Idaho (the world's third most prolific silver district in the world) and in silver-rich northern Mexico. The Rancheria Silver District is known to share many of the same characteristics in terms of age, formation, depositional environment, and other geological features as is known to exist within the Coeur d'Alene Silver District.

CMC plans to conduct an initial 2,500- to 3,000-metre drill program into the northern part of the Silverknife Property in 2023.

"Our geological team is extremely convinced of the potential of Silverknife, and as a result we have prioritized drilling for that property in 2023," says John Bossio, chairman of the board of directors of CMC. "We also remain excited about the potential of properties like Silver Hart/Blue Heaven and our earlier stage properties in Newfoundland. Our business model of establishing a pipeline of properties where we are systematically advancing properties from grassroots stage to drill-ready stage is evident by our shareholders. The success of our exploration efforts is a clear tribute to the hard work and dedication of our team."

CMC Metals Ltd. is a growth-stage exploration company focused on opportunities for high-grade polymetallic deposits in Yukon, British Columbia, and Newfoundland. Our polymetallic silver-lead-zinc CRD prospects include the Silver Hart Deposit and Blue Heaven claims (Yukon) and Amy and Silverknife claims (north-central British Columbia). Our polymetallic projects with potential for copper-silver-gold and other metals include Logjam (Yukon), Bridal Veil, Terra Nova, and Rodney Pond (central Newfoundland).

CMC is headquartered in Vancouver and trades under the symbol of CMB on the TSX-Venture Exchange and also ZM5P on the Frankfurt Exchange, and CMCXF on the OTCQB. Further information is also available at www.cmcmetals.ca. ✘

Career ambassadors in a tightening mining labour market

The Mining Industry Human Resources Council

Aligned with the national strategy, MiHR launched the We Need Mining. Mining Needs You. Career Ambassador Program in partnership with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) in September 2022.

Mining is an essential industry in our modern day lives and key to a safer, greener, and more connected world. Canada's mining sector produces over 60 minerals and metals that are not only crucial to our way of life today, but to the transition to a clean economy.

Yet Canada's mining sector is facing a tightening labour market, compounded by an aging workforce, negative youth perceptions of mining careers, and shrinking post-secondary mining programs. Labour market analysis by the Mining Industry Human Resources Council (MiHR) shows that the unemployment rate in mining is historically low, with unfilled positions in the sector nearing 10,000 vacancies. Additionally, undergraduate enrollment in mining engineering programs has experienced the largest decline of any post-secondary engineering discipline, with a decrease of 42 per cent from 2014 to 2020. Geological engineering enrollment also decreased by 36 per cent in the same time frame, along with other mining-related programs.

Canada depends on mining and mining depends on its workforce. Canada's minerals and metals sector must increase its labour pool and talent pipeline to meet the continuously increasing demand for critical mineral and metals needed for a clean economy.

MiHR is taking action to increase interest in mining careers and transform perceptions of the industry through the National Youth Mining Career Awareness Strategy 2021-2026 and subsequent We Need Mining. Mining Needs You. career awareness campaign.

Aligned with the national strategy, MiHR launched the We Need Mining. Mining Needs You. Career Ambassador Program in partnership with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) in September 2022. The program aims to raise awareness among diverse youth and key influencers about the career opportunities mining offers and the sector's role in environmental sustainability, social responsibility, and technological innovation. It connects knowledgeable and enthusiastic career ambassadors to youth through in-person and virtual speaking engagements to increase awareness, improve perceptions, and encourage pursuit of careers in mining.

Career ambassadors volunteer to participate in the program and are selected based on their knowledge of the sector and their passion and dedication to its innovative and progressive future. They receive benefits such as an enhanced profile within MiHR and CIM publications, websites, and social media platforms – and formal recognition on an annual basis in the CIM magazine.

Initiatives like the Career Ambassador Program and industry's involvement in them are crucial to solving the mining industry's labour market challenges. Attracting, recruiting and developing the next generation of workers is vital to mining's sustainability and growth. It is imperative that we as an industry work to correct historical perceptions and inform youth of mining's role in a clean economy and what it means to be part of this rewarding and important workforce.

Join MiHR and CIM in this important initiative to inspire Canada's next generation of mining workers by signing up to be a career ambassador today at MiningNeedsYou.ca. ✘

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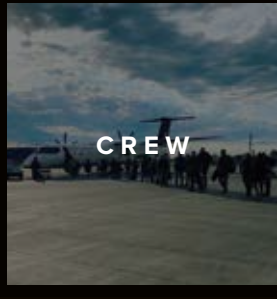

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SRC's X-ray transmission (XRT) sorter is part of a growing suite of sensor-based sorting services

Saskatchewan lab builds a global presence in the mining industry

How one lab expanded over 50 years to play a key role in the mining and exploration industry

By the Saskatchewan Research Council

This year, the Saskatchewan Research Council's (SRC) Geoanalytical Laboratories is celebrating 50 years of service providing high-quality analysis to the exploration and mining industry. The laboratory offers geochemical and mineralogical analysis with expertise in base metals, gold, lithium, uranium, potash, rare earth elements, and diamonds.

As Saskatchewan's resource industries have grown over the last five decades from uranium into diamonds, potash, gold, and more, the services the lab offers have expanded to match the needs of its clients and various industries.

"At the lab, we provide chemical analysis for exploration and mining companies, as well as other services, such as mineral identification and mineralogical services," says Rob Millar, manager of SRC Geoanalytical Laboratories. This includes multi-element geochemical analysis by inductively coupled plasma-mass spectrometry (ICP-MS) and optical emission spectrometry (ICP-OES), trace-element analysis, and other methods, such as X-ray diffraction (XRD), QEMSCAN® analysis, thin sectioning, and electron microprobe analysis.

With a wide range of services comes an even broader range of expertise. The lab employs technicians, geochemists, and scientists, many of whom have worked in the mining industry for decades.

A steadfast commitment to providing high-quality data, developing new methods of analysis and putting clients' needs at the forefront is what

SRC Geoanalytical Laboratories' new location provides more space to improve sample flow. Photos courtesy of the Saskatchewan Research Council.

drives the lab's success. SRC also believes that to be successful, new initiatives must be adopted to align with industry needs.

In December 2021, SRC's Mining and Minerals Division consolidated into one purpose-built facility to serve its clients more effectively—the move included SRC Geoanalytical Laboratories. The new location provides more opportunities to continue expanding SRC's services and capabilities.

The facility provides the geoanalytical lab with more space to improve sample flow and reduce turnaround time for clients. Also in 2021, the lab expanded its capacity for gold and precious metal fire assay by 400 per cent.

To round out the changes, the lab has added a mineral characterization service, which provides mining and exploration clients the ability to test their ores' amenability to sorting and choose the appropriate type of equipment or sensor for sorting.

It is examples like these that keep SRC Geoanalytical Laboratories ahead of the curve and will continue to help them to successfully adapt to industry change and growth in the future.

While it's difficult to say exactly what that future might look like for the mining industry, there are trends and projections that will have significant impacts.

"There will be many challenges for the mining and mineral exploration industry over the next 50 years and climate change will be one of them," says Millar. The lab is continuously looking for new technologies to reduce its environmental impact, such as installing acid scrubber fume hoods. The next phase for industry in mineral exploration is looking for deposits that are deeper and undercover. There are many new analytical techniques that are being developed for lower-level detection of mineralization at greater depths.

The past 50 years at SRC Geoanalytical Laboratories has shown notable achievements in the evolution of geochemistry and mineralogy that have helped clients with their mineral exploration and mining operations. With an eye on new technologies and their finger on the pulse of industry, it'll be exciting to see what the lab can achieve in the coming decades.

Read the full article and more stories like this on SRC's blog at src.sk.ca/blog. ✘

StrategX Elements Corp. – Opportunity in exploration discovery – Energy transition metals

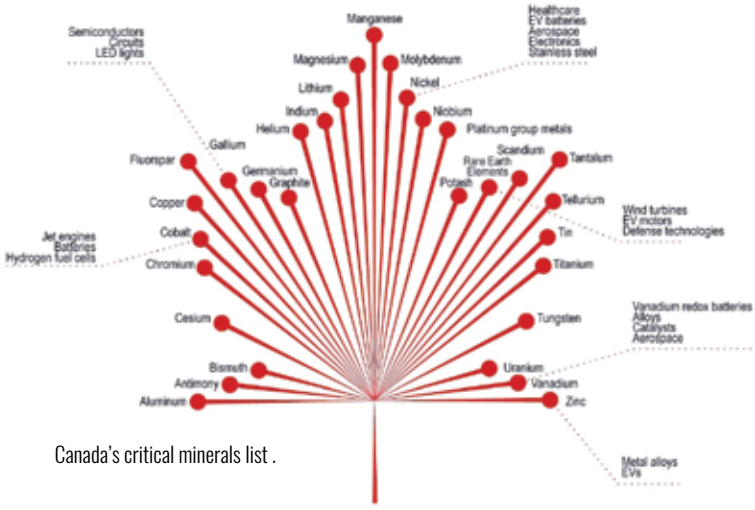
As global economies transition from fossil fuel-based energy to clean energy, StrategX Elements Corp. (CSE: STGX) is a new Canadian-based exploration company poised to be a significant contributor to the natural resources sector and sustainable energy economy. The company is currently focused on discovering cobalt and associated energy transition metals in northern Canada. The company's property portfolio of five stand-alone projects is situated on the east arm of Great Slave Lake, Northwest Territories, and the Melville Peninsula, Nunavut. The company's first-mover land position in vast, mineral-rich, and underexplored regions provides a unique opportunity for investors to be part of multiple discoveries and the creation of new districts hosting metals required in the transition towards green energy.

PROJECT'S LOCATION

Canada: Becoming a supply giant to achieve its climate goals

To combat the rapid regression of climate change, government leaders continue to emphasize the importance of climate action and Canada's potential key role being a source of critical minerals required for electric batteries and green technologies.

Canada has the upper hand on increasing the domestic production of key critical minerals and energy metals, reducing its reliance on imports and becoming one of the pillars that will support international supply-chain security. With this vision, StrategX supports the national government's mandate to become a global leader in the mineral space and become the supplier on contributing to the world needs.



Canada's critical minerals list .

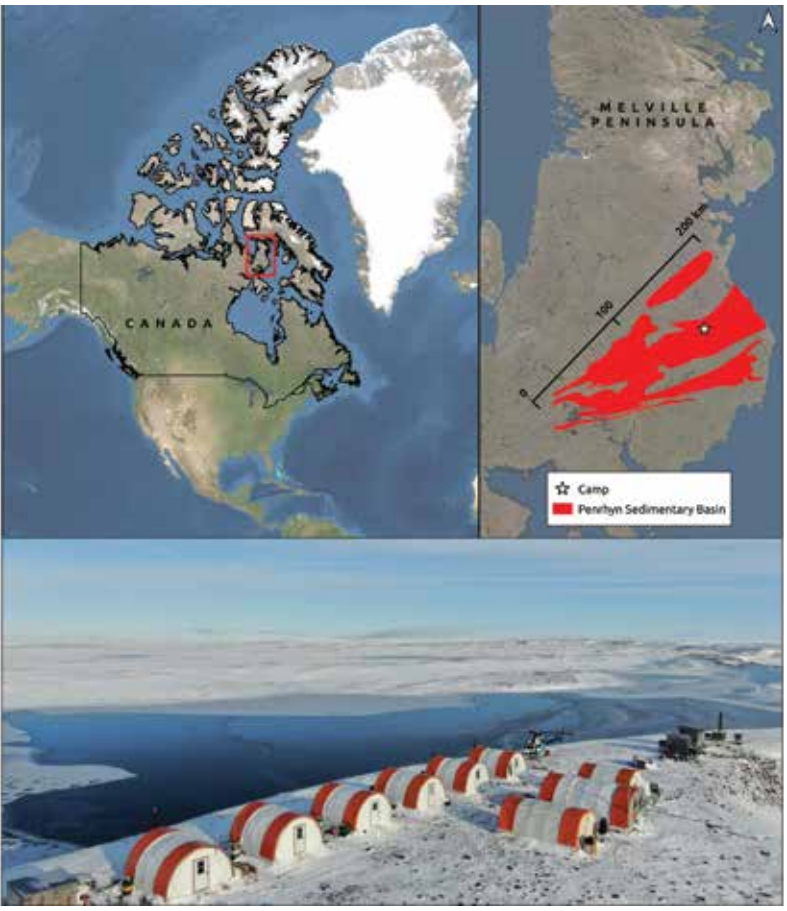
The rising deployment of clean energy technologies and the global drive towards electrification is set to supercharge demand for critical minerals. Of the 31 minerals deemed critical by the federal government, 23 can be found in the Northwest Territories .

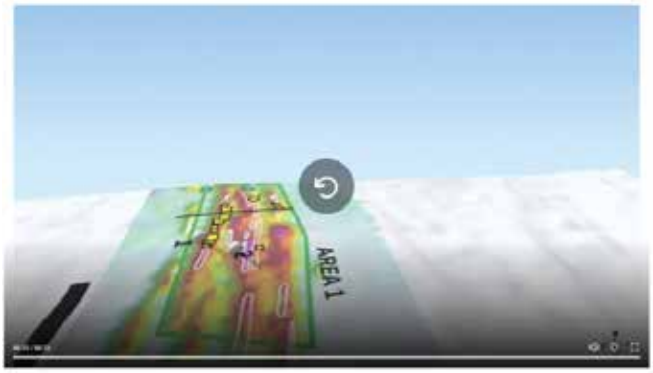
Our vision is to make major exploration discoveries in energy transition metals. We are targeting underexplored regions in northern Canada having world-class deposit discovery potential. Our project pipeline has many excellent targets that are almost drill-ready. We are excited to contribute to the global demand for clean energy.

StrategX is exploring virgin territory in the Canadian Arctic for critical minerals. The Penrhyn Basin spans over one-million hectares and has received very limited exploration work – previous exploration (1965 to 1996) was focused on zinc. Other metals were overlooked due to commodity prices at that time; some of those overlooked metals are now essential in the production of electric vehicles and renewable energies.

Our discovery-driven team is currently focused on advancing the company's flagship Nagvaak project on the

On to a major discovery – discovery drilling!





3D model showing geophysical anomalies with the gossans (in white) and high NiEq values in rock samples (box symbols) on surface and the location of proposed drill holes.

Melville Peninsula, Nunavut. On the back of a recently conducted geophysical survey, 12 high-priority drill targets have been identified in six areas covering a 6,000-metres-by-400-metres-wide mineralized corridor that hosts nickel, vanadium, cobalt, and a basket of other associated energy transition metals at the surface (see Oct. 14, 2022 news release). With the rig mobilized, the team is excited to drill these targets and make a major discovery in energy transition metals.

ESGI (ENVIRONMENTAL, SOCIAL, GOVERNANCE & INCLUSION)

StrategX continues to develop and integrate relationships in the communities they operate in and believes that on-going assessment and reduction of environmental, social, and safety risks is required to optimize benefits to our various stakeholders.

Follow us and be a part of our journey on making major discoveries!

Please visit our website to learn more about the various applications of these critical minerals. You can also follow us on our social media channels for our latest news and activities. ✘

[1] Government of Canada – Critical Minerals: an opportunity for Canada (https://bit.ly/3DiaHIk)

[2] Government of Northwest Territories – Northwest Territories Action Plan For Promoting Critical Minerals – page 9 (https://bit.ly/3Sg5l4l)

Everything depends on water

YWWOP coordinator Alison Anderson stands inside Yukon U's Mobile Water Treatment Plant – a winterized 24-foot trailer which provides hands-on training in communities and mine sites across Yukon.

No matter where you are and what you do, we are all subject to this persistent reality.

In large urban centres, clean, reliable drinking water is the product of massive systems with built-in redundancy. Across the north, whether in small communities or a mine site, the supply of safe drinking water often falls to a single individual.

It's vital those tasked with operating small water systems are certified and trained to respond to the daily challenges operators can face to ensure water continues to flow.

The system relied upon at your company's exploration camp, working or decommissioned mine—even if it's simply water delivery—may be at risk of source water contamination, equipment failure, or pathogens entering during maintenance or installation.

How confident are you the water supplied to your employees and contractors meets or exceeds the Guidelines for Canadian Drinking Water Quality?

The Yukon Water and Wastewater Operator program (YWWOP) at Yukon University (YukonU) offers a range of courses designed to meet the needs of new and prospective water and wastewater operators, as well as current operators working within governments (municipal, territorial, federal or First Nation) and the private sector (e.g. mining, water delivery).

Our core courses prepare learners to write Environmental Operators Certification Program (EOCP) exams. Our elective courses develop technical and workplace essential skills related to the water and wastewater sector. The YWWOP team can also develop specialized courses to meet the needs of a specific group.

Small Water Systems Operations, Bulk Water Delivery, Wellhead Protection Planning, and Ultraviolet Disinfection are just four short courses that would increase the knowledge and effectiveness of your water system operator. Our courses are available in-person at our campuses, online, or at mine sites.

"Our online classes take place in real-time, with knowledgeable instructors who bring real-world experience and can bring learning to life for students," said Alison Anderson, YWWOP program coordinator. "Attending courses remotely is more cost-effective for students and employers. Online offerings also ensure our courses are more flexible. We can run online courses more often and with fewer students compared with in-person classes."

Anderson's own background as

Small Water Systems Operations, Bulk Water Delivery, Wellhead Protection Planning, and Ultraviolet Disinfection are just four short courses that would increase the knowledge and effectiveness of your water system operator. Our courses are available in–person at our campuses, online, or at mine sites.

a professional engineer with specialization in water systems also helps students feel at ease talking through challenges they're facing and offering ideas for future courses.

"Students often call up to brainstorm solutions to operator situations," said Anderson. "They're also comfortable requesting we look at offering courses they're interested in because they know we're nimble and responsive with solutions that meet their needs."

Regardless of whether training takes place in the classroom or online, it's all theoretical—unless students have access to an actual system to apply their knowledge.

That's why, in January 2022, YukonU deployed a mobile water treatment plant.

Made possible with funding from CANNOR, YWWOP, City of Whitehorse, Government of Yukon, and a discount from the manufacturer, B.C.-based BI Purewater, this industry-quality mobile plant is housed in a winterized 24-foot trailer which provides hands-on training in communities and mine sites across Yukon.

"This mobile treatment plant is a gamechanger for water operator training in Yukon. It alleviates pressure on working water plants which, until now, were the only place for students to gain their required practical training hours and work experience."

Wherever you are based, online and in-person water industry training options are flowing steadily at Yukon University, with plenty more room to grow.

"People just need to tell us what they need. We're ready to get to work providing it."

Find out more at yukonu.ca/ywwop. ✘

PDAC 2023 Awards recognize five outstanding industry leaders

The Prospectors & Developers Association of Canada (PDAC) is honoured to announce that five top international and domestic performers were selected for their distinctions, contributions, and successes in mineral exploration and development.

Now in its 45th year, the annual PDAC Awards showcase individuals, teams, and companies who are exceptional leaders of the industry.

Congratulations to the following PDAC 2023 Award recipients for their outstanding accomplishments.

- **Chris Taylor and the Great Bear Resources Exploration Team (Bill Dennis Award)**
  For the discovery of the Dixie gold deposit when others believed all the multi-million ounce deposits in Ontario's Red Lake camp had been found.

- **Glenn Nolan (Skookum Jim Award)**
  For his leadership in fostering economic opportunities for First Nations on their traditional lands, and for his long history of volunteerism.

- **The Lundin Foundation (Sustainability Award)**
  For creating an organization funded by mining revenue with the sole purpose of providing lasting benefits for communities surrounding Lundin Group of Companies' operations.

- **Chalice Mining's Kevin Frost & Morgan Frejabise (Thayer Lindsley Award)**
  For the Julimar Nickel-Copper-PGE discovery under cover near Perth, Australia in 2020.

- **Alamos Gold's John A. McCluskey (Viola R. MacMillan Award)**
  For showing leadership and a willingness to take risks in the acquisition and development of the Island Gold Mine in Northern Ontario.

"PDAC Awards can be considered the Golden Globes of mineral exploration and development, and I am proud to announce the five deserving recipients that were selected for 2023," said Alex Christopher, PDAC president. "We know that our industry is vital for the social and economic strength of Canada, and by honouring excellence through PDAC Awards, we can showcase the responsible ways that mineral exploration and mining makes modern life possible today, tomorrow, and into the low-carbon future we are headed."

PDAC 2023 will take place in person in Toronto, Canada from March 5-8, 2023. Photo courtesy of the PDAC.

Recipients will be celebrated at a prestigious Awards Gala in Toronto on Tuesday, March 7, during the PDAC 2023 Convention. Tickets can be purchased in December once the PDAC Convention registration is open.

PDAC's Board of Directors select award recipients based on recommendations of the association's Awards Committee. More information about PDAC 2023 Award Recipients is available on our website at www.pdac.ca/about-pdac/awards/2023-award-recipients.

Please visit the website for information about PDAC Awards and 2024 nominations.

ABOUT PDAC

The Prospectors & Developers Association of Canada (PDAC) is the leading voice of the mineral exploration and development community, an industry that supports 719,000 people in direct and indirect employment, and contributes $106 billion to Canada's GDP every year. Representing over 6,000 members around the world, PDAC's work centres on supporting a competitive, responsible, and sustainable mineral sector.

PDAC 2023 will take place in person in Toronto, Canada from March 5-8, 2023. Please visit www.pdac.ca for more information. ✘

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