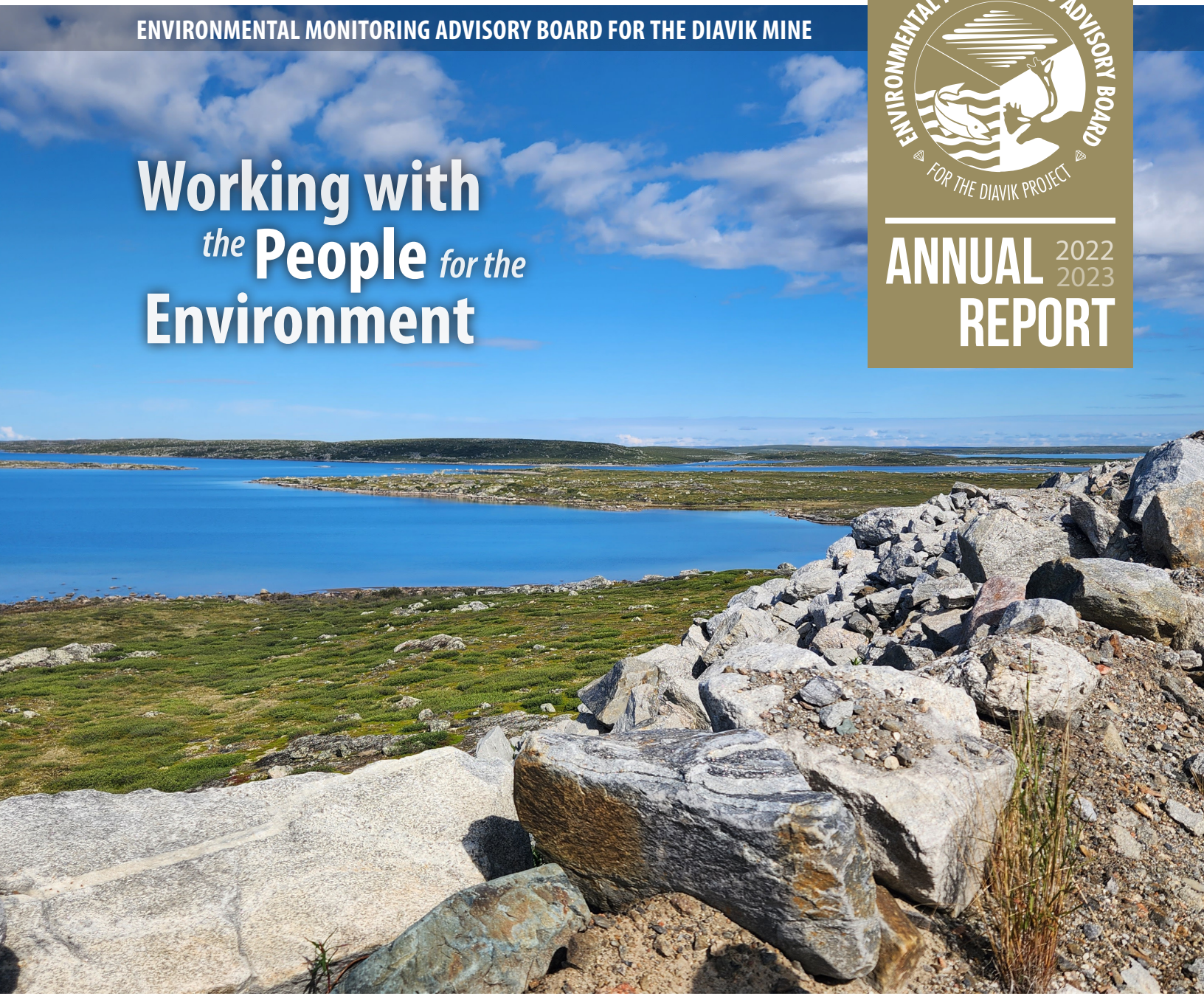
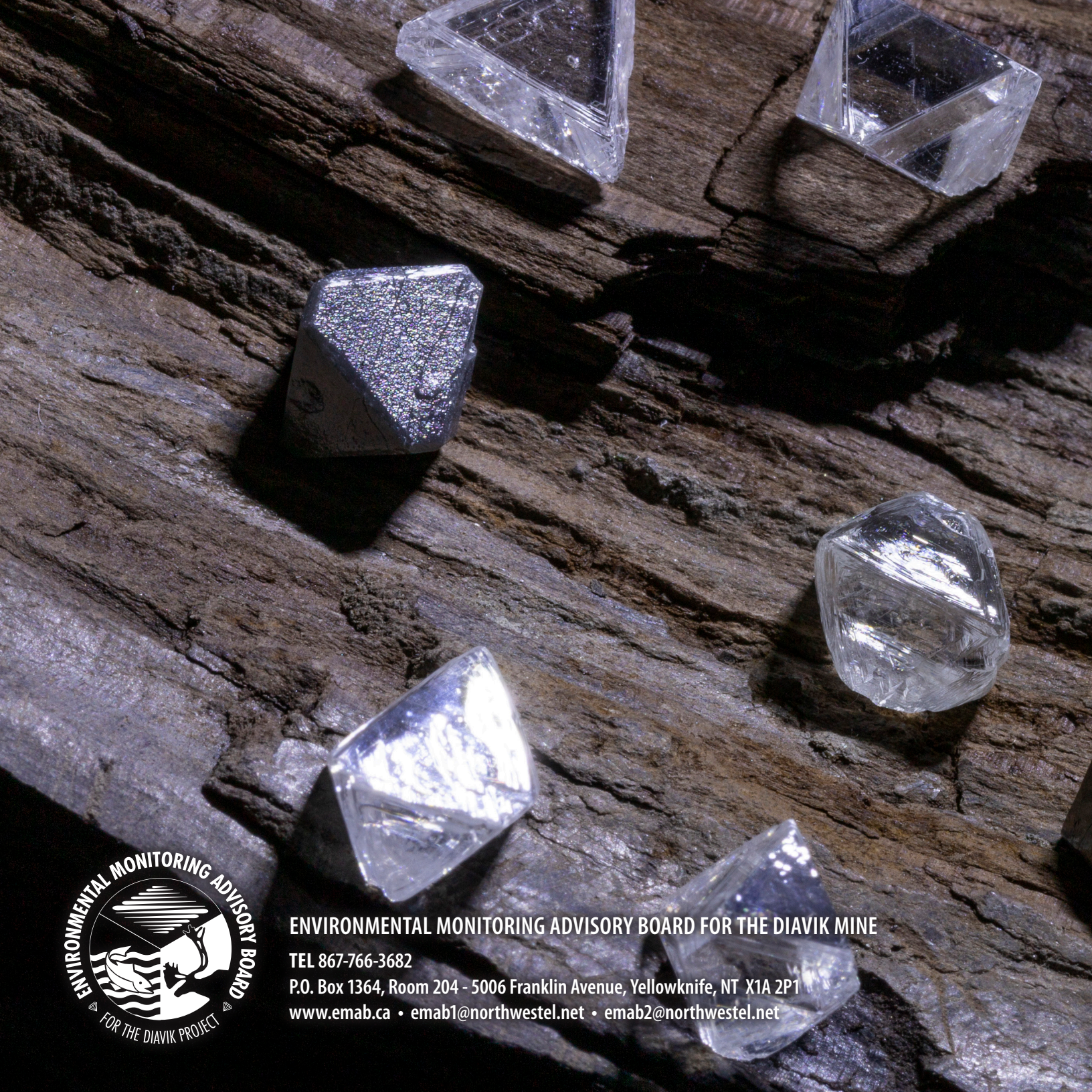
ENVIRONMENTAL MONITORING ADVISORY BOARD FOR THE DIAVIK MINE

Working with *the* People *for the* Environment

ENVIRONMENTAL MONITORING ADVISORY BOARD FOR THE DIAVIK PROJECT

ANNUAL REPORT 2022 2023





ENVIRONMENTAL MONITORING ADVISORY BOARD FOR THE DIAVIK MINE

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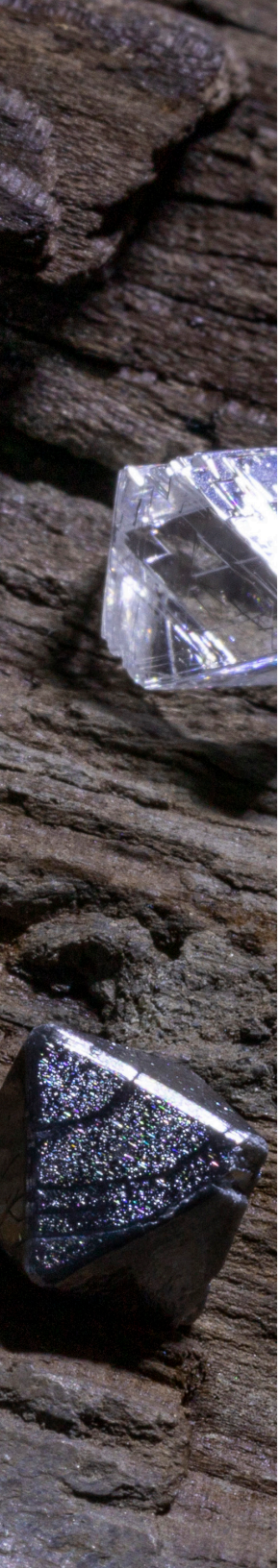


TABLE OF CONTENTS

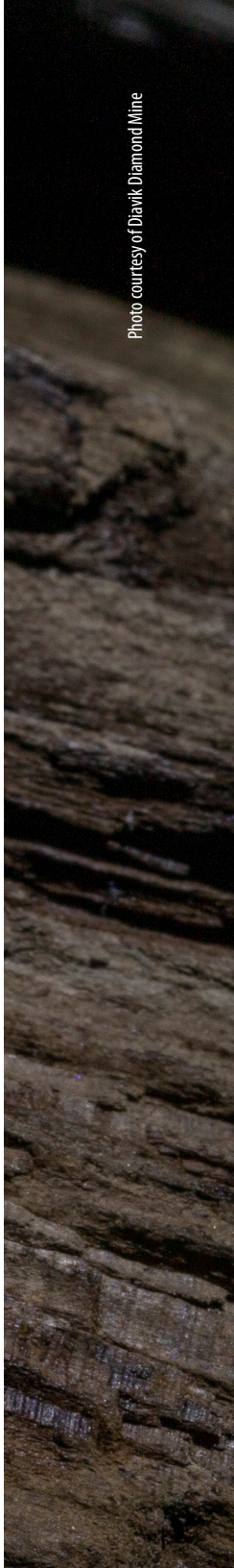


Photo courtesy of Diavik Diamond Mine

REPORT CARD ON THE ENVIRONMENT

Photo courtesy of Diavik Diamond Mine

Diavik Staff Conducting Environmental Monitoring.

PURPOSE

This report card has three purposes:

- Set out broad changes in the environment at Diavik since the mine started.
- Compare changes to predictions Diavik made during the Environmental Assessment of the project.
- Assess how well Diavik and the regulators are managing the changes.

WATER

[see pages 23-28 for more details]

The main way Diavik monitors water and fish in Lac de Gras (LdG) is through the Aquatic Effects Monitoring Program. Water quality at Diavik is within the Water Licence limits, and within the predictions Diavik made.

Highlights for 2022-23:

- 2022 was a "comprehensive" monitoring year. As outlined in the AEMP Design Plan 6.0, a comprehensive year entails sampling in all designated sampling areas in the lake to allow a detailed assessment of Mine-related effects on water quality, nutrients, sediment quality, and the plankton, benthic invertebrate, and fish communities (see the "Fish and Aquatic Life" section on the next page).
- LdG continues to experience nutrient enrichment as a result of Diavik's activities:
  - Nutrient enrichment is from an increase of phosphorus and nitrogen caused by Diavik's effluent discharge into LdG.
  - More nutrients leads to an increase in chlorophyll *a*, and feeds the growth of algae, which can be harmful to freshwater ecosystems.
- Nutrient enrichment is variable in Lac de Gras.
  - 26% in 2017, 15% in 2018, 0.1% in 2019, 22% in 2020,100% in 2021, and **61% in 2022**

    - » Predicted extent was 20% of LdG.
    - » EMAB will continue to monitor the extent of nutrient enrichment in LdG.
  - › EMAB would like Diavik to take samples from all areas of LdG every year. Right now Diavik only samples the far-field every three years.
- Diavik applied to amend its water licence to allow them to breach collection ponds and discharge to LdG. EMAB stated the application was unacceptable and did not provide sufficient protection for human, wildlife or aquatic life.

FISH AND AQUATIC LIFE

[see pages 23-28 for more details]

Lac de Gras is home to many aquatic species such as fish, benthic invertebrates (bugs that live on the lake bottom) and plankton (microscopic plants and animals that live in the water) that depend on each other in a food chain. Diavik measures all these species to get a picture of overall aquatic health in the lake. Currently, monitoring results for fish and other aquatic life are within water licence limits and predictions.

Highlights for 2022-23:

- There are different types of plankton near the mine compared to farther away, as well as a larger amount of plankton and a higher number of benthic invertebrates, because of increased nutrient levels where the mine discharges treated water. The number and species of benthic invertebrates in a given area can affect fish populations, as fish eat benthics.
- At the 2021 TK Fish Camp, Elders would not eat the fish because they appeared unhealthy and had lots of parasites compared to previous years.
  - › The purpose of the camp is for Elders to do fish palatability testing to assess whether fish have changed.

Triaenophorus Parasite in Lake Trout

  - › Diavik followed up with a report that concluded parasites are normal in LdG.
  - › TK Camp participants remained concerned about the amount of parasites in 2021.

WILDLIFE

[see pages 50-56 for more details]

Diavik monitors caribou, grizzly bear, wolverine, raptors and the vegetation they feed on through a Wildlife Monitoring Program (WMP). In general the mine's effects on these animals and plants are within the predictions Diavik made during the environmental assessment. While the Bathurst caribou population has declined from 186,000 animals in 2003 to 6,240 in 2021 (the most recent year Bathurst caribou were surveyed) the contribution of the mine to this drop remains unknown.

Highlights for 2022-23:

- The Minister approved Diavik's updated Wildlife Management and Monitoring Plan in July 2022, with seven conditions. At the time of writing, all conditions except Condition 6 had been met. See Wildlife Monitoring Program section for more details on the current status of the Plan.

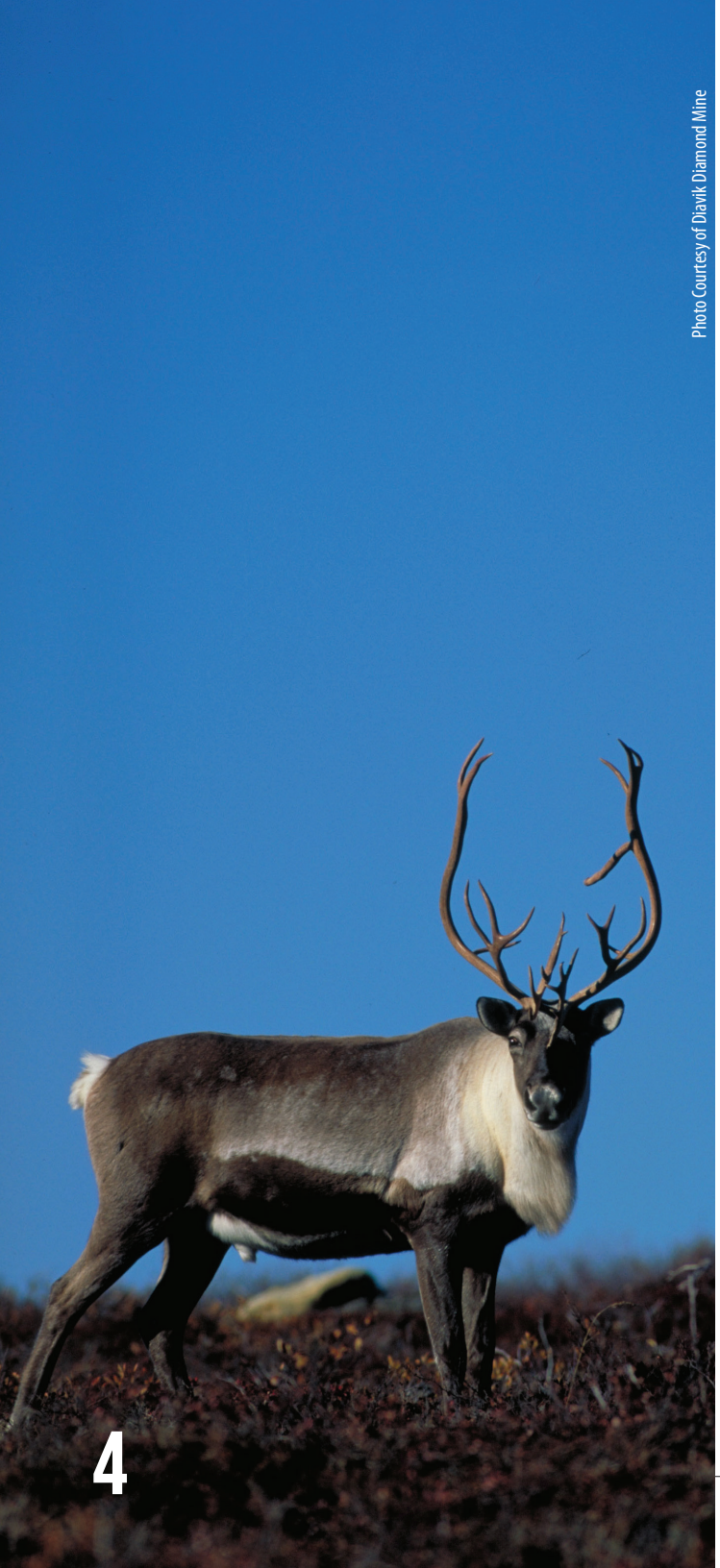


Photo Courtesy of Diavik Diamond Mine

- › Condition 6 requires Diavik to collaborate with EMAB to improve the ability of the caribou behavior monitoring program, "to determine if caribou behaviour changes with distance from the mines." Diavik has not initiated this collaboration.

- Diavik proposed an updated approach to Zone of Influence (ZOI) analysis. EMAB made comments on it.
- There are much fewer caribou around the mine than in the past. This is likely because the number of caribou has declined, and the remaining animals stay further north than they used to.
- Diavik says there is no caribou ZOI around the mine but EMAB and GNWT believe Diavik's analysis is flawed. Diavik was required to provide an updated ZOI analysis as an addendum to the 2022 Wildlife Monitoring and Management Report (WMMR). Previous scientific studies that use aerial survey and satellite collar data show a ZOI around the mine of about 14 km, that varies from year to year.
  - › EMAB recommended that Diavik use more advanced methods for ZOI surveys, such as reinstating the aerial surveys, using satellite collar data, or the use of drones.
  - › Diavik analyzed caribou behavior data from 2010 to 2021 but there was not enough data to make solid conclusions about how the mine affected caribou behavior. Caribou spend more time around the mine in winter. However, it can be dangerous for Diavik staff to go outside and do caribou surveys in the winter due to very cold weather and short days.
- Diavik has discontinued grizzly bear and wolverine hair snagging programs because the populations seem stable.
  - › Last year EMAB recommended Diavik work with the GNWT to develop triggers for future hair snagging programs, to make sure populations remain stable.
    - » GNWT approved the WMMP with both grizzly and wolverine hair snagging programs removed.

- Vegetation is more abundant and diverse near the mine. Vegetation near the mine has changed in abundance and type with greater richness near the mine.

AIR QUALITY

[see pages 56-59 for more details]

Diavik monitors air emissions and dust that falls to the ground through its Environmental Air Quality Monitoring Program (EAQMP). The results are generally within predictions but EMAB has concerns about the way the monitoring is being done, and recent changes to the monitoring program.

Highlights for 2022-23:

- Total Suspended Particulate (TSP) monitoring was removed from the EAQMP in 2020; TSP is a very important variable that is made up of dust and air emissions.
  - TSP comes from sources like exhaust from mine operations, and dust particles produced from blasting rock and road traffic.
- EMAB disagreed with Diavik removing TSP monitoring, and submitted a request for the Minister of ENR (now ECC) to review Diavik's EAQMP in 2020.
  - ECC completed an internal review in 2023.
  - Diavik has proposed to collaborate with EMAB to revise the EAQMP.
- EMAB has recommended Diavik take samples of the yellow haze that blankets the mine on very cold days.

CLOSURE PLANS

[see pages 44-50 for more details]

Diavik's Final Closure and Reclamation Plan was circulated for comment in November 2022. Overall, EMAB found the plan needed substantial revisions. Several changes made to the closure criteria were weaker than previous versions and may not ensure a healthy environment safe for people, wildlife, and aquatic life after closure.

Highlights from 2022-23:

- **2021 CRP Progress Report and Updated RECLAIM Estimate**: PKC Design still has lots of uncertainty. WLWB rejected the design. Security for NWRSA should be based on work completed and uncertainty with cover performance.
- **Closure of A418 Pit and Deposition of PK**: Pit is cleaned up and closed and PK is being deposited.
- **Submission of FCRP 1.0:** EMAB had many concerns including:
  - **Traditional Knowledge**: The FCRP does not include a TK Monitoring Plan. Diavik has had many years to develop the plan, but appears to have made little progress on the meaningful development and integration of TK monitoring into the closure plan.
  - **Closure Objectives and Criteria:** Diavik's proposed closure criteria have not progressed in a positive direction. Removing Drinking Water Guidelines and AEMP Benchmarks do not increase the safety of water for humans, wildlife and aquatic life. Revegetation and wildlife safety criteria need to be strengthened. Some TK Panel recommendations have not been addressed. EMAB has made a lot of comments and recommendations for improvements to criteria.
  - **Waste Discharge from Collection Ponds:** Diavik is proposing to breach its collection ponds and allow any discharge from the mine site to drain untreated into LdG. Diavik claims this discharge is not a waste, and should not be subject to Effluent Quality Criteria (EQC's), which are legally enforceable. Diavik proposes to monitor and manage the discharge through a "Surface

Water Action Level Framework" (SWALF). EMAB concluded that the SWALF does not seem very enforceable. Additionally, Diavik's approach to monitoring the discharge does not identify the mixing zone for each discharge, or include sufficient monitoring locations or frequency. Its Surface Water Action Level Framework is not sufficient to ensure the discharge and receiving waters are safe for humans, wildlife and aquatic life.

- **Mixing Zones:** EMAB would like mixing zones to be as small as possible. EMAB recommended the actual size of the mixing zones be investigated with a plume delineation study. We also recommended more rigorous monitoring, and to ensure chronic effects to aquatic life are not expected beyond the edge of the mixing zone.
- **Site Restoration and Revegetation:** Site restoration and revegetation is inadequate in the FCRP. Diavik's revegetation design does not meet mining industry standards in Canada. Diavik should be targeting revegetation of at least 70% of the footprint, similar to the amount that was there before development. They should ensure the vegetation is self-sustaining and similar to before the mine. There are a number of TK Panel recommendations related to site revegetation that Diavik has not addressed adequately. Diavik is still not using the recommendations from the U of Alberta Revegetation Study that it commissioned, with the justification that the additional efforts were not seen as "beneficial".
- **Contaminated Soils:** Diavik is still proposing to bury hydrocarbon contaminated soils that don't meet agricultural standards after remediation, instead of shipping them offsite. EMAB does not agree with this approach.
- **PKC Designs:** Diavik is now planning to cover the PKC with a 1.5 m layer of waste rock. The PKC will freeze eventually (but could take a long time), and any extra water will drain out via a spillway to LdG. EMAB likes the idea of a dry rock cover and considers it an improvement on the previous plan to leave a pond in the middle of the facility. However the design is conceptual and has not been proven. Diavik has also planned for this design to be free of any long-term maintenance, which EMAB does not think is realistic. There are uncertainties in this design that may need to be addressed down the road, for example the quality of water seeping out of the PKC, the possibility of PK migrating up through the cover, and how climate change will affect the design.
- **North Waste Rock Storage Area:** The North Waste Rock Storage Area may impact water quality if the cover does not perform as expected. If the cover thaws it could result in contaminated runoff, so it needs to be monitored until there is no risk to water around the island.
- **South Waste Rock Storage Area:** Design is inadequate and may be unsafe for animals to cross. Diavik should decrease the slope and smooth out the sides. The design is too steep and rocky for wildlife to safely climb and cross.
- **Climate Change:** Diavik should use the most up to date climate change predictions as the basis for its designs. Climate change could impact the success of Diavik's closure designs.
- **Security and Long-term Maintenance and Monitoring:** Diavik says that the mine site is being closed in such a way that no long-term maintenance or monitoring will be needed. Diavik is proposing short monitoring periods in the range of five years to show closure is proceeding as designed. EMAB believes Diavik's approach is overly optimistic and that adequate security should be held for an appropriate time so any issues can be fixed post-closure. In the case of the PKC and NWRSA, EMAB expects monitoring will be needed for a very long time (decades), particularly taking into account the possible effects of climate change.

ABOUT US

EMAB Photo

Community Members investigating Diavik Mine Site

HOW EMAB WAS FORMED

The Environmental Monitoring Advisory Board (EMAB or the Board) was created by the Environmental Agreement for the Diavik Diamond Mine. The Environmental Agreement came into effect in March 2000. It was signed by five Aboriginal Parties, the Federal and Territorial governments and Diavik. EMAB is the environmental watchdog organization created by the Environmental Agreement. EMAB makes sure the environment around Diavik remains protected. The Environmental Agreement states EMAB will work independently and at arm's length from Diavik and the other Parties who signed the agreement.

WHY THE ENVIRONMENTAL AGREEMENT IS IMPORTANT

The Environmental Agreement is a legal contract between the Parties. It says what Diavik and the Parties must do to minimize environmental effects of the mine. The Environmental Agreement says Diavik must meaningfully involve the Aboriginal Parties in environmental monitoring at Diavik mine. This includes the use of Traditional Knowledge and Inuit Qaujimajatuqangit (TK/IQ). The Environmental Agreement sets out EMAB's mandate.

WHAT EMAB DOES

EMAB was set up in 2001 and is in its 22nd year of operations. EMAB's mandate covers four main areas:

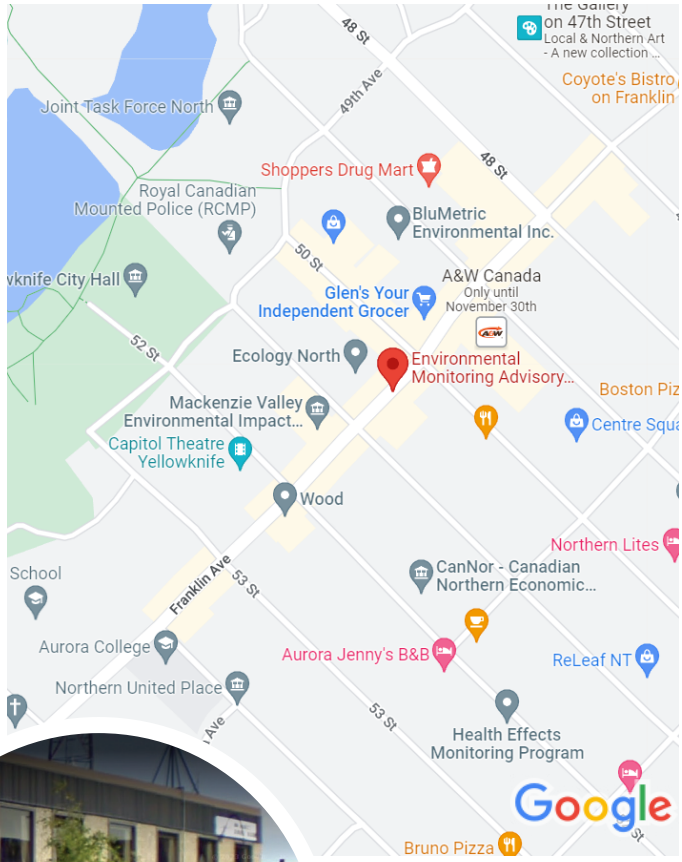
1. Oversight and Monitoring.
2. Aboriginal and Community Involvement.
3. Communications.
4. Leadership and Governance.

WHO WE ARE

There are eight Parties to the Environmental Agreement. Each Party may appoint one Director to the Board. EMAB has two staff members:

- Executive Director.
- Environmental Specialist.

Since December of 2013, the GNWT and the Government of Canada have taken steps to amend the Environmental Agreement as a result of the Devolution process. Their plan is for Canada to remain a Party but with many of Canada's responsibilities transferred to the GNWT. This is an ongoing process. Canada has delegated its authority regarding the Environmental Agreement to the GNWT in the meantime.



WHERE WE ARE LOCATED

Our office is in downtown Yellowknife at 5006 Franklin Ave, suite 204 on the 2nd floor of the 50/50 Mini Mall.

Phone: **867-766-3682**

Website: **www.emab.ca**

Email: **emab1@northwestel.net**

Facebook: **facebook.com/EMAB2015**

CHAIR'S MESSAGE

EMAB Photo

At EMAB our role is to do everything in our power to protect the water, animals, fish and air at the Diavik mine and surrounding area. We are the watchdog on Diavik and the regulators to make sure they are doing their best for the environment around the mine. We also keep the Parties to the Environmental Agreement for the Diavik mine, and their communities, informed about what is going on at the mine and what EMAB is doing. Board members are appointed by each of their Parties to help protect the environment around the mine.

We were saddened by the loss of Jack Kaniak, our long-time KIA appointee, in May of 2024. Jack was a colleague and friend, and Elder, and we very much appreciated his perspectives. Jack's contributions informed EMAB's decisions and ensured that the interests of KIA, and Kugluktuk in particular, were part of EMAB's decision-making. We all miss him.

Diavik will stop mining diamonds early in 2026. After that, it will work on closing the mine by 2029. Diavik has been developing its closure plans since the mine opened, and has submitted four versions of the plan over the last 20 years, with more detail in each one. This year Diavik submitted its proposed Final Closure Plan. It also arranged for four public sessions with EMAB, Indigenous Governments and regulators to go over all parts of the plan, including a site tour. EMAB attended all the public sessions and did a thorough technical review of the Plan. We sent all our reviews and comments to each of the Parties, as well as the WLWB.

The Closure Plan is a very large, highly technical document with 62 appendices totaling 7,000 pages of information. Our review was the biggest EMAB has ever done, and we made over 330 comments and recommendations. At the end of our review we felt the

Final Closure Plan needs quite a bit more work to be good enough to satisfy EMAB and all the Parties. We have heard from communities that they want the minesite to be returned as closely as possible to the way it was before the mine started, and we used this approach to guide our review. We are concerned about the lack of a TK Closure Monitoring Plan and encourage Diavik to develop this in a timely way. The WLWB has required Diavik to include TK Monitoring in the closure plan.

Diavik also applied to amend its water licence for authorization to breach the collection ponds that surround the mine, and allow any discharge to flow into Lac de Gras. This was also a key part of the Closure Plan. EMAB reviewed the application in detail and made over 100 comments and recommendations. We were concerned with the safety of the discharge and possible effects on the waters and fish around Diavik, as well as on human and wildlife health; and about the monitoring to assess the effects. We participated in all aspects of the review including technical sessions and a hearing in late May 2023 where we told the WLWB that the application was unacceptable in its current form.

Diavik held two TK Panel meetings this year. EMAB continues to be concerned about the results of the 2021 TK Fish Camp at Lac de Gras, and follow-up sampling. The results of the Fish Camp were very concerning as all the Elders refused to eat the fish because they appeared to be unhealthy. The Elders particularly noted that the fish appeared to be starving, with big heads and skinny bodies, and the high number of cysts and parasites in the fish. They also noted the colour of the water had changed and was darker than in the past. The Elders felt that the mine was likely the cause of the fish condition, possibly due to dust coming from the mine. The Elders were also concerned about the way video footage of the mine was edited, and felt that the video did not represent their comments accurately. We were concerned that Diavik might potentially compromise the Panel's independence or influence the Panel decisions. We recommended Diavik not get involved in Panel deliberations and decisions, and only provide information or input if requested by the Panel. We also recommended Diavik keep track of the number and type of all parasites in each fish.

EMAB is now four years into our 2019-24 Action Plan. We will review the Action Plan and make any adjustments taking into account that Diavik will be changing from the operational phase to the closure phase in the next three years. We will continue to focus on technical reviews of plans and reports in our key priority areas while working with communities to keep them informed of EMAB's role, activities and key findings and recommendations.

This will be another busy year coming up for EMAB as the mine gets closer to closing. We will continue to work with Affected Communities to keep you informed and involved in helping to protect the environment at Diavik. Your views and concerns are very important to our work and I encourage anyone with ideas or concerns to talk to your local Board member or contact EMAB.

Finally, EMAB welcomed a new Board member from GNWT this year: Kelly Fischer replaced Ngeta Kabiri in October. I would like to thank Kabiri for his hard work and contributions to EMAB.

Marsi Cho
Charlie Catholique,
Chair

WHAT HAVE WE DONE THIS YEAR?

EMAB works with the people of the Affected Communities to help protect the environment around the Diavik mine.

This is a summary of our activities in 2022-23, with more detail on the following pages. Readers can also visit our website: **www.emab.ca**.

COVID-19:

The COVID-19 pandemic was declared over in May 2022. Public Health restrictions in the NWT ended in April 2022. It had little effect on EMAB's activities in 2022-23. We have done our best to make sure our staff, our Board members, members of our communities and others we work with were safe and that we did not expose them to the virus.

GOVERNANCE:

The Board continues to follow our Action Plan for 2019-24. EMAB's emphasis continues on doing technical reviews of Diavik's plans and reports, and making them accessible, particularly to Aboriginal Parties and Affected Communities. We provide these to the Parties for their information and use in making their own interventions to regulators. The plan also recognizes the changed role of the Traditional Knowledge Panel, and EMAB's role in working with the Panel. It highlights the need for tracking collection and use of TK/IQ by Diavik.

COMMUNITY INVOLVEMENT:

EMAB did not hold any community update meetings this year. Our Board members from Affected Communities continue in their role of communicating with communities.

EMAB Photo

EMAB Executive Director Inspecting Revegetation Plots with Diavik Staff

Community Members Inspecting PKC During 2022 FCRP Visit

EMAB Chair Inspecting Landfarm

OPERATIONS:

EMAB spent $637,080 in 2022-23 of a budget of $637,475, plus an additional $58,000 contribution from Diavik. The difference will be returned to Diavik or requested to be rolled over to 2023-24.

REVIEWING REPORTS:

In 2022-23 EMAB reviewed 17 reports and plans from Diavik, including documents related to a water licence amendment application and Diavik's Final Closure Plan; most of them were also reviewed by technical experts. These reports are required by the water licence, fisheries authorizations and the Environmental Agreement. EMAB focuses on reports that are in our priority areas (water, air, wildlife, closure and TK/IQ).

Two of our main activities this year were to review and make recommendations about Diavik's new application to allow them to break collection ponds and discharge directly to Lac de Gras (LdG), and to review Diavik's 7,000 page Final Closure Plan.

COMMUNICATIONS:

EMAB regularly updated our website. We circulated our annual report in January as well as a two-page annual report summary. People can comment on reports or EMAB recommendations through our Facebook page: facebook.com/EMAB2015.

BOARD MEETINGS:

The Board met six times in 2022-23 as a combination of face-to-face and conference call. The Board did a site visit in June.

The Board membership changed during 2022-23. A new Board member was appointed by GNWT, and the Government of Canada seat remained vacant.

WHAT DO WE DO?

REVIEW Diavik's monitoring programs and reports with the help of technical experts.

PROVIDE comments and recommendations to Diavik, the regulators and Parties to the Environmental Agreement.

EVALUATE Diavik and regulators to make sure commitments are kept.

PARTICIPATE in the regulatory process as a reviewer and intervenor.

ADDRESS regulatory gaps e.g., air quality and securities.

COMMUNICATE through workshops, community information sessions, our website and annual report.

ASSESS Diavik's use of TK/IQ in environmental monitoring program design.

SUPPORT participation of Aboriginal Peoples in monitoring Diavik.

LISTEN to community concerns and bring those forward to Diavik.

WHO ARE WE?

There are eight parties to the Environmental Agreement. Each party appoints a member to the Board.

Charlie Catholique, Chair
Łutselk'e Dene First Nation

Jack Kaniak, Vice Chair
(Passed away May 2023)
Kitikmeot Inuit Association

Violet Camsell-Blondin, Secretary Treasurer
Tłı̨chǫ Government

Kelly Fischer
Government of the Northwest Territories

Marc Whitford
North Slave Métis Alliance

Ryan Miller
Yellowknives Dene First Nation

Gord Macdonald
Diavik Diamond Mines (2012) Inc.

Vacant – Canada

Kelly Fischer replaced Ngeta Kabiri for GNWT in October 2022.

DIAVIK NOW

(courtesy of Diavik)

Diavik at a glance

- Four ore bodies: A21, A154 South, A154 North, and A418 (Now complete).
- Spending (2000 to 2022): C $9.8 billion ($7 billion Northern).
- Operations workforce (2022): 1,230 employees (roughly 43% being Northerners).
- 2022 rough diamond production: 4.7 million carats.
- Reserves: 4.4 million tonnes at 2.2 carats per tonne (31 December 2022).
- Total rough diamond production: 140.8 million carats (2003 to 2022).

Photo courtesy of Diavik Diamond Mine

ENVIRONMENTAL SETTING OF DIAVIK MINE

Lac de Gras (LdG) is a large lake, 60 kilometers in length, with an average width of 16 kilometers and 740 kilometers of shoreline. This lake is located roughly in the center of the Slave Geological Province, north of the tree line, and in Canada's Southern Arctic ecozone. The area is cold and dry. LdG is the headwaters of the Coppermine River, which flows 520 kilometers north to the Arctic Ocean. Typical of arctic lakes, it is cold with long ice-covered periods and with little food for fish and other creatures. Fish species include Lake Trout, Cisco, Round Whitefish, Arctic Grayling and Burbot. LdG is also near the center of the Bathurst caribou herd range. The Bathurst caribou population has declined considerably from 186,000 in 2003 to 6,240 in 2021 (most recent GNWT numbers). Since 2016 there has been a noticeable increase in Beverly/Ahiak caribou in the LdG area in the winter and spring. The Beverly herd has also declined from 136,000 in 2011 to 103,000 in 2018 (most recent GNWT numbers). Many other animals include the LdG area in their home ranges, such as grizzly bears, wolves, wolverines, smaller mammals, migratory birds and waterfowl.

EMAB Photo

INVOLVING AND SUPPORTING COMMUNITIES

EMAB Photo

EMAB Board members appointed by Aboriginal Parties are a key link between the Board and Affected Communities. They are able to update community members on EMAB activities and report to the Board on concerns raised by the community. In the past EMAB has set aside a budget to support members to update their communities, but with cuts to EMAB's overall budget and a lack of uptake by Board members, this community consultation budget is now minimal.

EMAB reviewed 17 reports and plans in 2022-23. All these reviews were forwarded to the Parties to the Environmental Agreement and the land/environment managers for each Party. Technical reviews always include a plain-language summary to make them more useful for general readers, especially in Affected Communities. EMAB also makes these reports available on our website.

EMAB did not hold any community updates in 2022-23. GNWT lifted its public health emergency at the beginning of the year but many communities remained cautious after that. Combined with community scheduling issues we were not able to arrange any community updates.

Following the finalization of EMAB's Action Plan for 2019-24, EMAB added some additional actions to provide more information to communities. In particular EMAB now provides a 1-2 page summary of each Board meeting to the leadership of each Aboriginal Party. EMAB has also developed a 2-page annual report summary which is available on our website and provided to community members as a brochure.

COMMUNITY INVOLVEMENT IN CLOSURE AND POST-CLOSURE MONITORING

EMAB has a mandate to make recommendations about participation of communities/community members in training and environmental monitoring at Diavik, and has been pursuing Diavik for information on Diavik's plans for community involvement in monitoring during and after closure, to support possible recommendations.

In April 2022 Diavik told EMAB that it plans to work directly with each community, on community involvement in monitoring. Diavik has said the once they finish human resources planning they will engage directly with communities to allow sufficient time to prepare for employment opportunities, and will provide all required training. EMAB will continue to follow-up with Diavik and report back.

Note to readers: Community involvement in monitoring is a separate issue from TK Closure Monitoring, which we report on later in this section.

TRADITIONAL KNOWLEDGE/ INUIT QAUJIMAJATUQANGIT (TK/IQ)

One of EMAB's objectives is to assess the use of TK/IQ in Diavik's monitoring programs. We also request that Diavik provide an annual update on use of TK/IQ at the mine. Staying aware of Diavik's use of TK/IQ in environmental management at the mine is a priority for EMAB. Ensuring that involvement of community members in monitoring is meaningful is also a priority. EMAB has tried various ways to encourage Diavik to take more action to meaningfully involve Indigenous groups. Meaningful involvement of Indigenous groups in monitoring is an EA commitment.

EMAB is pleased to see that Diavik has made some efforts to include TK/IQ in closure planning through the TK Panel. Panel recommendations, and Diavik's responses, are included as part of Diavik's closure planning reports and can be found on the EMAB website: **www.emab.ca**. Full TK Panel reports can also be found on EMAB's website.

EMAB reviews of Diavik's closure planning include assessing how Diavik has incorporated TK Panel recommendations in its closure planning and designs.

In 2011 EMAB became more actively involved in bringing TK/IQ holders together as a Traditional Knowledge Panel, to address issues such as caribou and closure planning. Then in 2013 Diavik began to take a greater role in facilitating the Traditional Knowledge Panel, with EMAB assessing the results of the work and Diavik's response. EMAB also made recommendations to Diavik on ways to more effectively work with the panel. The Panel had made 256 recommendations as of June 2022, not including recommendations during the TK Fish Camps. Diavik has put the TK Panel on hold.

The WLWB has directed Diavik to describe how each TK Panel Recommendation is incorporated into the final closure plan, and a rationale for each recommendation that was not included. For a summary of EMAB's review of how Diavik addressed TK Panel Recommendations in its Final Closure Plan see page 45, or see all our recommendations on our website, **www.emab.ca**.

TK PANEL IN 2022-23

Diavik convened two TK Panel meetings during 2022-23: in April 2022 there was a meeting to consider closure of the PKC, and in June there was a meeting to review all the recommendations the Panel had made since it was formed in 2011. Since then Diavik informed EMAB at our August 2022 meeting that it is putting the TK panel on "pause" pending next steps in the development of the TK Closure Monitoring Plan.

EMAB has expressed concerns about Diavik's governance of the TK Panel, particularly in relation to the independence of the Panel, as discussed in last year's report. The Board again highlighted to Diavik the importance of ensuring the Panel's decision-making process is transparent and

EMAB Photo

TK Panel Session

independent. We highlighted the need for the Panel to be involved in any decisions that affect it, including choice of facilitators. Diavik stated that it has always tried to keep the TK Panel recommendations independent and committed to advise the Panel in advance if any changes to facilitation are being considered.

In March 2023 EMAB recommended principles that any future TK Panel should follow:

- The Panel must be independent of Diavik. Diavik's role is to support the Panel, not to set direction. Any actions that have the potential to affect the Panel's decisions or deliberations should be initiated or approved by the Panel.
- Diavik should not provide input to the Panel's deliberations unless requested by the Panel.
- Diavik should not be directly involved in Panel meetings or preparation or verification of Panel reports except where the Panel requests information.
- For greater clarity, the Panel should be independently facilitated and should have approval of its facilitators. This is not a decision that Diavik can make independently of the Panel's approval.
- EMAB takes an interest in how the Panel is administered, and ensuring the Panel members are independent of Diavik, and plans to attend any future meetings of the Panel.

EMAB also discovered that the process for Panel report verification changed after Diavik's new facilitation team started. EMAB was specifically concerned that while the Panel members had an opportunity to make comments on draft Panel reports #13, #14 and #15, the Panel as a whole did not have the opportunity to approve the final version of these reports, after comments were incorporated. This final step is important in ensuring that comments are incorporated correctly and that all the Panel members agree with the content of the final report. EMAB noted our concern to Diavik, and on our website, so readers are aware.


Photo courtesy of Thorpe Consulting

TK Camp 2021


Photo courtesy of Diavik Diamond Mine

Lake Trout Heart and Parasites

2021 TK FISH CAMP

EMAB reported on Diavik's 2021 Traditional Knowledge Fish Camp in last year's annual report. EMAB was concerned that the camp participants all refused to eat the fish caught during the camp because of their unhealthy appearance and number of parasites and cysts. This same issue came up during the 2018 TK Fish Camp where participants noticed an increase in parasites and cysts. Participants also had concerns about the LdG water - only six of 51 participants agreeing to taste tea made with the water. It took more time to finalize the TK Panel report on the fish camp, with Panel verification meetings held in December 2021 and a final verification meeting in June 2022. We noted that Diavik made presentations to the Panel making the argument that the amount of parasites in fish was normal for lakes in the area, and was not different than previous fish camps.

Participants also had concerns about the video documentation of the project. Participants found that their statements concerning the condition of the fish were not presented properly in the edited version of the video they saw, and did not agree to approve the video for release. They felt that the video did not show enough of the concerns they expressed during the camp. Diavik agreed to work with the participants to add back missing parts of their video statements but eventually decided not to release the video because they couldn't find common ground with the participants. A number of communities expressed interest in reviewing the unedited video footage from the camp, and Diavik eventually agreed to provide this on a community-by-community basis, where community leadership were required to sign a non-disclosure agreement prior to receiving the video.

Diavik arranged for a special study to follow-up fish sampling after the 2021 TK Fish Camp. Diavik sampled lake trout in August 2022 and February 2023. They included one of the participants from the 2021 TK Fish Camp in the sampling. Diavik presented the results to EMAB in June 2023 but have not yet provided the final report.

The main conclusions from the presentation were that the fish were in overall good health, that mercury levels in


EMAB Photo

Parasites In Fish 2021 TK Fish Camp

Photo courtesy of Thorpe Consulting

TK Camp 2021

the trout were in the range of previous samples, and that all the fish had parasites. Unfortunately, data collection from the TK Fish Camps and the follow-up study did not investigate the number of parasites found in each fish, and so they were unable to compare number of parasites over time.

EMAB HAS RECOMMENDED that Diavik begin identifying the number and type of parasites in each fish.

The Panel report recommends the need to study the cumulative effects of dust from the mine on the water and sediment, as they felt that this may be the reason for the changes they observed in the fish and water.

EMAB RECOMMENDED Diavik investigate the effects of dust from the mine on the water and sediment of Lac de Gras.

DIAVIK RESPONDED that the effects of dust on water and sediment are addressed in the AEMP reports, and that no additional investigations are warranted.

PROGRESS ON TK CLOSURE MONITORING PLAN

In March 2022, EMAB requested Parties provide opinions on holding a meeting to discuss TK Closure Monitoring. Diavik's response provided a progress report on their TK Monitoring Plan for Closure, including a draft paper on their TK monitoring approach and proposed Cultural Water Use Criteria. At the April 2022 EMAB meeting, EMAB discussed Diavik's response and offered recommendations.

In August Diavik informed EMAB it was taking a new approach for the TK Monitoring Plan using an Expression of Interest (EOI) process, where invited parties could bid for a contract to develop the TK Monitoring Plan.

The invitations included Parties to the EA, Development Corporations and three Indigenous Organizations that were involved in the PK to Mine Workings Water Licence Amendment. EMAB had concerns about this approach. Diavik didn't consult with communities before deciding on the EOI approach. EMAB highlighted issues with the process, which appeared to give Diavik full control while leaving communities responsible for development of the Plan. The EOI approach didn't seem to meet WLWB requirements and Diavik's Engagement Plan, with no input opportunity for comment from communities or EMAB, except through the WLWB review process. The Board continued discussions with Diavik on the EOI process until November, then decided to write a letter to Diavik setting out our concerns and recommending Diavik arrange a meeting of the Parties to provide input to development of the TK Monitoring Plan.

SUMMARY OF EMAB RECOMMENDATIONS ON DIAVIK EOI PROCESS

- Hold a meeting with all Aboriginal Parties in January 2023 to discuss the TK Monitoring Plan, Closure, and future directions. The meeting should be facilitated by an independent party.
- Include input from all Aboriginal Parties and gain their full support for the TK Monitoring Plan. Ensure that everyone has the opportunity to participate in TK Monitoring at Diavik.
- After the first draft of the TK Monitoring Plan is ready, Diavik should have a meeting with all the Parties to gather input before finalizing it. The draft Plan should be shared two weeks before the meeting.
- Involve all communities in developing the Plan and participating in TK Monitoring at Diavik.
- Ensure that all communities have the capacity to be part of the process, and enough time should be given to develop the Plan properly.
- Aboriginal Parties must be involved in key decisions.
- Make sure that sufficient funding is available for the TK Monitoring efforts.

TRADITIONAL KNOWLEDGE WORKING GROUP

Diavik did arrange a meeting of the Parties on January 20, 2023, but did not facilitate a discussion on the TK Monitoring Plan. Instead, a TK Working Group was established. The group's objective is to develop the TK Monitoring Plan through discussions and collaboration involving all parties and indigenous communities. EMAB has expressed a desire to observe the TK Working Group meetings, but has not been included, or provided with the minutes.

TRADITIONAL KNOWLEDGE AND THE FINAL CLOSURE PLAN

Diavik has not included a TK Monitoring Plan in the FCRP despite having ample time to develop it. Their approach has changed multiple times, but no concrete plan has been proposed. Diavik mentioned a TK Closure Watching Program in its Final Closure Plan but didn't explain how it fits with the TK Monitoring Plan. The program includes Seasonal On-Site Observers during active closure, Area Closure Watching after active closure, and Verification Sampling.

Additionally, Diavik hasn't effectively demonstrated how TK Panel Recommendations were incorporated into the FCRP. In EMAB's view, many of the TK Panel Recommendations have not been included in the FCRP, and the WLWB direction on use of TK has not been fulfilled.

OVERSIGHT AND MONITORING

EMAB Photo

Site Visit 2022

EMAB monitors Diavik and regulators to make sure they are doing a thorough job protecting the environment around the Diavik mine, and are keeping the promises they made in the Environmental Agreement.

Most of EMAB's focus is on Diavik's environmental monitoring programs and reports, and on the way the regulators handle them. When EMAB notes concerns coming from regulators we take that as a signal that we need to know more about the issues. These issues are outlined in the following pages.

Each year we do our own reviews of the Wildlife Monitoring Program report and the AEMP report. We also review reports on Air Quality and on Closure and Reclamation. We review other reports and documents on a case-by-case basis.

WHO ARE THE REGULATORS AND MANAGERS?

- **Wek'èezhìı Land and Water Board (WLWB)** is responsible for the issuance of Diavik's water licence and land use permits and the technical review of all documents required under the licence and permits. The WLWB is a regional panel under the Mackenzie Valley Land and Water Board.

- **Canada**
  - **Department of Fisheries and Oceans (DFO)** reviews some of the reports submitted under the water licence and all the reports submitted under the fisheries authorizations.
  - **Environment and Climate Change Canada (ECCC)** reviews the reports required by the water licence focusing on water and air quality as well as section 36 of the Fisheries Act.

- **Government of the Northwest Territories (GNWT)**
  - **Environment and Climate Change (ECC)** - On April 1, 2023 the Department of Environment and Natural Resources and the Department of Lands were joined into a new Department of Environment and Climate Change. ECC now includes the mandates of the former two departments. Throughout this report we will refer to ECC rather than ENR or Lands.
  - **Department of Lands** reviews reports required by the land use permits. Lands has an inspector assigned to Diavik. This inspector updates the Board regularly to keep us aware of what is happening at the site. The inspector is also responsible for ensuring Diavik meets the terms of its water licence, land use permits and land leases.
  - **Environment and Natural Resources (ENR)** has responsibility for environmental protection, including air and water quality, and provides detailed reviews of reports in these areas. It also has regulatory responsibility for wildlife, including monitoring under the *Wildlife Act*. It also proposes better ways to monitor effects of Diavik on wildlife. The Minister approves Diavik's Type A water licence including amendments.
- **Wek'èezhìi Renewable Resources Board (WRRB)** is a wildlife co-management authority established by the Tłı̨chǫ Agreement. The WRRB is responsible for managing wildlife and wildlife habitat (forests, plants and protected areas) in the Wek'èezhìı area. It reviews reports submitted under the Water Licence including amendments.

ECC LEGISLATION UPDATE

EMAB has reported on two legislative initiatives by GNWT's Department of Environment and Climate Change (ECC) that started in 2017:

- Changes to the Waters Act as it relates to Diavik's water licence, and
- Changes to the Environmental Protection Act, including enacting air regulations.

However, in an effort to accommodate the capacity of partner Indigenous governments and organizations the GNWT is currently focused on the 5-Year Review of the Devolution Agreement. When this is complete, ECC will shift focus to amending the *Waters Act, Environmental Protection Act* and developing air regulations. EMAB is concerned about the lack of air regulations and need for changes to the *Waters Act* and encourages ECC to move forward with these initiatives as a priority.

AQUATIC EFFECTS MONITORING PROGRAM

Diavik's Aquatic Effects Monitoring Plan (AEMP) monitors:

- Dust
- Water quality
- Eutrophication indicators
- Sediment quality
- Plankton
- Benthic invertebrates
- Fish health

Diavik submits many different reports for the AEMP. These include Re-evaluation Reports, Design Plans, and Annual Reports. EMAB submits recommendations on Diavik's AEMP reports. Below is a summary of the highlights for this year. The full report documents, and list of EMAB recommendations can be found on our website.

TECHNICAL DOCUMENTS EMAB RECEIVED FOR REVIEW IN 2022-23

Report Name	Date Received	Regulatory Instrument
Seepage Report (Annual, 2021)	March 31, 2022	Water Licence
AEMP Reference Conditions Report 2.0	May 31, 2022	Water Licence
2021 Wildlife Management & Monitoring Report (Annual, 2021)	April 4, 2022	Wildlife Act Environmental Agreement
2021 Wildlife Management & Monitoring Report Addendum	June 20, 2022	Wildlife Act Environmental Agreement
MVLWB Engagement and Consultation Policy (Draft)	June 20, 2022	MVRMA
MVLWB Closure Cost Estimation Guidelines (Draft)	June 21, 2022	MVRMA
Processed Kimberlite Management Plan 7.0	July 8, 2022	Water Licence
Draft Environmental Agreement Annual Report (Annual, 2021)	July 12, 2022	Environmental Agreement
Environmental Air Quality Monitoring Report (EAQMP) (Annual, 2021)	July 20, 2022	Environmental Agreement
Closure Progress Report (Annual, 2021)	July 20, 2022	Water Licence
Water Management Plan 16	September 9, 2022	Water Licence
GNWT Minister's Request for Ruling Regarding WL Amendment	September 19, 2022	Water Licence
Revised Wildlife Management and Monitoring Plan	October 13, 2022	Wildlife Act
Aquatic Effects Monitoring Program (AEMP) Design Plan 6.1	November 1, 2022	Water Licence
Water License Amendment - Progressive Reclamation - Natural Drainages	November 24, 2022	Water Licence
AEMP Reference Conditions Report 2.1	December 6, 2022	Water Licence
Final Closure and Reclamation Plan (FCRP) 1.0	December 23, 2022	Water Licence
Caribou Zone of Influence Analysis Plan	February 28, 2023	Wildlife Act
AEMP Reference Conditions Report 2.2	March 13, 2023	Water Licence
Seepage Report (Annual, 2022)	March 28, 2023	Water Licence
Wildlife Management & Monitoring Report (WMMR) (Annual, 2022)	May 1, 2023	Wildlife Act Environmental Agreement

THE ENVIRONMENTAL AGREEMENT AND THE WATER LICENCE

The water licence and the Environmental Agreement both contain requirements for the AEMP. Most of the water licence requirements are more detailed than those in the Environmental Agreement. The WLWB cannot make Diavik meet any of the Environmental Agreement commitments unless they are also in the water licence. In the Environmental Agreement Diavik said it would do its best to involve Aboriginal People in designing monitoring programs, and that all its monitoring programs would include activities to:

- **Consider TK/IQ.**
- **Establish or confirm thresholds or early warning signs.**
- **Trigger adaptive mitigation measures.**
- **Provide ways to involve each of the Aboriginal Peoples in the monitoring programs.**
- **Provide training opportunities for each of the Aboriginal Peoples.**

EMAB is working with Diavik to help it meet its commitments as described throughout this annual report.

Photo courtesy of Diavik Diamond Mine

2017-2019 AEMP RE-EVALUATION REPORT ADDENDUM

As part of the approval of the 2017-19 AEMP Re-evaluation, the WLWB required that Diavik submit an Addendum addressing nine outstanding issues. EMAB reported our recommendations on the Addendum in the 2021/2022 EMAB Annual Report, but WLWB had not made a decision at that time. The WLWB approved the Addendum on September 2, 2022. Below is a summary of the decisions made by the WLWB on EMAB's recommendations. Please note the AEMP Re-evaluation Report Addendum decisions directly influence the AEMP Design 6.0 – where the decisions on the two reports are duplicated we have addressed them only in the AEMP Design Plan below - refer to that section for more information. For a full copy of our review and recommendations visit: **www.emab.ca**.

DUST DEPOSITION

Diavik did not provide analysis for all metals found in the snow surveys.

EMAB RECOMMENDATION: Diavik should include detailed analysis for other metals – particularly those that were elevated in the water and/or sediment OR provide a clear rationale for not including other parameters.

WLWB DECISION: The next version of the AEMP Design Plan must include a description of the selection process or criteria for parameters used in snow water chemistry.

SEDIMENT QUALITY

Methods for sediment quality sampling have changed over time, possibly affecting interpretation of trends.

EMAB RECOMMENDATION: Diavik should analyze sediment sampling results separately before and after the sampling method changed.

WLWB DECISION: Diavik is to assess in-depth and address any potential implications of the change in sediment sampling method in the next Aquatic Effects Re-evaluation Report.

SLIMY SCULPIN METALS – DATA ANALYSIS

EMAB has noted apparent issues with the 2007 slimy sculpin metals data that affects comparability of results to later years.

EMAB RECOMMENDATION: Diavik should review and recalculate the normal ranges for all slimy sculpin metals data. Using the recalculated normal ranges, redo the comparisons to normal ranges.

WLWB DECISION: Diavik must revisit this data and resulting calculations to ensure an accurate picture of metals in slimy sculpin.

EMAB RECOMMENDATION: Diavik should provide a table identifying analytical laboratories, methods, and detection limits for metals in Slimy Sculpin by year.

WLWB DECISION: The WLWB did not address this recommendation.

MERCURY IN LAKE TROUT – DESCRIPTION OF TRIGGERS FOR MONITORING PROGRAM

Diavik's response does not adequately describe how a Lake Trout mercury survey would be triggered.

EMAB RECOMMENDATION: Diavik should provide a clear, detailed description of when a mercury in Lake Trout survey would occur.

WLWB DECISION: In the next re-evaluation report, Diavik must propose a response framework with Action Levels. The response action must include a mercury in Lake Trout survey.

AEMP DESIGN PLAN 6.0

The AEMP Design Plan describes how Diavik will carry out water, sediment, and biological monitoring in Lac de Gras, and how it will respond to changes detected by the monitoring. Diavik is required to review and update the AEMP Design Plan every three years following the three-year summary report. This allows Diavik to make changes to the program based on findings to date.

EMAB reported on the AEMP Design Plan 6.0 in the 2021-22 EMAB Annual Report. At the time of writing last year's report the WLWB had not made a decision on this Plan. The WLWB approved the AEMP Design Plan 6.0 on September 2, 2022 and required some revisions to be included in 6.1. Below is a summary of the decisions made by the WLWB related to EMAB's key recommendations. For a full copy of our review and recommendations visit: **www.emab.ca**.

LAKE TROUT MERCURY ANALYSIS

EMAB RECOMMENDATIONS: Continue analyzing mercury from a range of sizes of lake trout as part of TK Fish Tasting study, and

Review results from the fish-tasting study and develop an early warning trigger for lake trout mercury sampling.

WLWB DECISION: In the 2020-22 AEMP Re-evaluation Report:

i. Consider incorporating the Traditional Knowledge (TK) program results into a response framework (e.g., fish tissue chemistry or fish health); or

ii. At a minimum, provide more details of how the results from the TK program will be used to interpret other AEMP results following an Action Level exceedance.

ANALYZE TRENDS FOR OTHER METALS IN LAKE TROUT

EMAB RECOMMENDATION: Analyze trends over time for other metals found in lake trout, considering increases in metals found in slimy sculpin.

WLWB DECISION: Diavik has addressed EMAB's comment but has been directed to look at fish size as a predictor of mercury and selenium concentrations in slimy sculpin in the Reference Conditions Report 2.

CHLOROPHYLL *a* FOR CUMULATIVE EFFECTS ASSESSMENT

EMAB RECOMMENDATION: Add chlorophyll *a* to cumulative effects assessment.

WLWB DECISION: It is adequate that chlorophyll *a* is measured in the cumulative effects assessment depending on results at the far-field stations.

MEETING MDMER MONITORING REQUIREMENTS

EMAB RECOMMENDATION: Diavik to clarify if it intends to include all aspects of the MDMER in its monitoring; if so, Diavik should add a fish species and measurement of egg counts and fertility to fish monitoring, and chronic toxicity testing of effluent on an algae species.

WLWB DECISION: Discussions are ongoing between ECCC and Diavik about including MDMER requirements in the AEMP, and ECCC has not recommended these measurements be added to the AEMP Design at this time.

Diavik submitted its AEMP Design Plan 6.1 to the WLWB on November 1, 2022. The WLWB distributed this updated design plan for review on January 18, 2023 because Diavik was proposing to remove evaluation of effects of dust deposition on water quality and eutrophication. EMAB did not have any comments. The WLWB approved the AEMP Design Plan 6.1 on April 19, 2023. The Board also provided additional direction for the 2020-2022 RER and the next version of the AEMP Design Plan.


Photo courtesy of Diavik Diamond Mine

Electrofishing in Lac de Gras - September 2022

2021 AEMP REPORT

EMAB reported on the 2021 Aquatic Effects Monitoring Program (AEMP) in the 2021-22 EMAB Annual Report. At the time of writing last year's report the WLWB had not made a decision on the report. The WLWB approved the report on October 19, 2022. Below is a summary of decisions from the WLWB related to EMAB's recommendations. For a full copy of the review and our recommendations, visit our website: **www.emab.ca**.

TK FISH CAMP RESULTS

EMAB RECOMMENDATION: Diavik should provide the results of the 2021 TK Fish Camp in time to allow review of the report before the next open water AEMP sampling.

Diavik should revise the report to acknowledge the Elders refused to taste the fish or water during the 2021 TK Fish Camp.

WLWB DECISION: WLWB accepted that the report of the 2021 TK Fish Camp would be included with the 2022 AEMP report, as proposed by Diavik. They also accepted that Diavik clarified that it provide the information about Elders refusing to taste the fish in the 2022 AEMP report.

PHYTOPLANKTON BIOMASS DATA ISSUES

EMAB RECOMMENDATION: Diavik should discuss possible data quality issues for phytoplankton biomass.

Diavik should conduct a correlation analysis between chlorophyll *a* and phytoplankton biomass.

WLWB DECISION: WLWB accepted Diavik's statement that there were no phytoplankton biomass data issues and said there will be opportunities to consider the relationship between chlorophyll *a* and phytoplankton biomass in the 2022 AEMP report and the 2020-22 AEMP Re-evaluation Report.

REFERENCE CONDITIONS REPORT 2.0

Diavik submits AEMP Reference Conditions Reports to explain how they calculate the typical ranges for all the measurements in the AEMP. Diavik submitted its Reference Conditions Report 2.0 to the WLWB on May 31, 2022. The WLWB circulated the report on June 27, 2022. EMAB had our technical consultants at North-South Consultants review the RCR 2.0. We submitted 4 recommendations to the WLWB. Comments and recommendations were also submitted by GNWT-ECC. The WLWB did not approve the RCR 2.0. Below is a summary of our review, with key recommendations and WLWB decisions. For a full copy of the review and our recommendations, visit our website: **www.emab.ca**.

DETECTION LIMITS SUMMARY TABLE

EMAB RECOMMENDATION: Provide all metals in fish results with detection limits (the minimum amount of each metal that can be accurately detected) electronically.

WLWB DECISION: Diavik must provide a table summarizing detection limits for each metal with RCR 2.1, and indicate samples with different detection limits. As detection limits change over time, it makes it difficult to compare metal results from year to year.

DISCREPANCIES AND REVISED NORMAL RANGES

EMAB RECOMMENDATION: Conduct a review of metals in fish data for accuracy. Compare working files to laboratory Certificates of Analysis (COAs).

WLWB DECISION: Diavik should identify discrepancies in metals in fish data. If found, revise normal ranges and provide a table summarizing discrepancies in RCR 2.1.

EMAB RECOMMENDATION: Revise normal range calculation for boron and other metals if dataset errors are found.

WLWB DECISION: Revise standard normal range for boron in Slimy Sculpin tissue to 2010 detection limit of 0.2 micrograms per gram (ug/g) wet weight.

MERCURY MEASUREMENTS

SIZE-STANDARDIZED NORMAL RANGES

Since mercury builds up in fish over time, older, larger fish tend to have higher mercury levels than younger ones. To allow comparing mercury amounts in fish, biologists calculate size-standardized normal ranges. Diavik used fish weight to do this standardization for mercury and selenium; normally this is done using fish length or fish age, not weight.

EMAB RECOMMENDATION: Analyze 2013 mercury dataset and derive size-standardized normal ranges. Present results and size-standardized ranges based on fish weight and fish length and provide the calculations and results.

WLWB DECISION: Calculate size-standardized normal ranges of mercury and selenium in fish tissue based on the 2013 dataset.

FISH WEIGHT AND LENGTH INFORMATION

EMAB RECOMMENDATION: Present fish weight and length range used for deriving normal ranges of metals in sculpin within each composite sample.

WLWB DECISION: Present fish weight and length range for deriving normal ranges in each composite sample. Propose weight or length size-standardized normal range of mercury and selenium for approval.

DATASET REVIEW AND CORRECTION

EMAB RECOMMENDATION: Review and confirm datasets used for reports are identical and match laboratory results. Revise normal ranges to correct errors.

WLWB Decision: Assess impact of revised normal ranges on previous reports and provide rationale in 2020 - 2022 RER.

REFERENCE CONDITIONS REPORT 2.1

The WLWB circulated Diavik's Reference Conditions Report (RCR) 2.1 report on January 6, 2023. EMAB had our technical consultants at North-South Consultants review the report. We submitted 1 recommendation to the WLWB. Comments and recommendations were also submitted by GNWT-ECC. The WLWB approved the Reference Conditions Report 2.1, with revisions required, on February 22, 2023. Below is a summary of our recommendation and WLWB decision. For a full copy of the review and our recommendations, visit our website: **www.emab.ca**.

EMAB was concerned that Diavik did the size-standardization for 2010 and 2013 differently, which could affect results.

EMAB RECOMMENDATION: Use consistent length and weight for comparing mercury and selenium levels among years.

WLWB DECISION: The Board approves size-standardized and raw data normal ranges for mercury and selenium. The WLWB directed Diavik to provide information about the limitations of the new normal ranges for fish tissue chemistry, and include the limitations of the 2010 data compared to 2013 data, and ongoing fall AEMP monitoring data.

SPILL REPORT FOR DIAVIK DIAMOND MINE 2022-23
(GNWT DATABASE)

Spill No.	Date	Commodity	Quantity (Liters)	Source
2022151	April 27, 2022	Petroleum - lubricating oil (lube, hydraulic)	250	Breakage
2022167	May 6, 2022	Petroleum - lubricating oil (lube, hydraulic)	6	Unknown Cause
2022388	July 31, 2022	Other	3500	Breakage
2022407	August 8, 2022	Wastewater (sewage, mine tailings)	35	Fitting Leak
2022427	August 20, 2022	Wastewater (sewage, mine tailings)	30000	Other
2022515	October 27, 2022	Wastewater (sewage, mine tailings)	50	Fitting Leak
2023013	January 12, 2023	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	500	Tank Leak
2023102	February 7, 2023	Other	450 000 Cubic Meters	Breakage
2023109	March 19, 2023	Other	16000	Pipe Leaks
2023112	March 21, 2023	Wastewater (sewage, mine tailings)	500	Breakage
2023118	March 26, 2023	Other	2500	Not shown

UNDERGROUND SPILLS:

In 2022, there was a 44% decrease in the number of hydrocarbon spills and a 57% decrease in the volume of hydrocarbons spilled compared to 2021. These spills are considered to have an effect on the hydrocarbon contamination in sediments in the North Inlet.

Volume and Number of Underground Hydrocarbon Spills											
2017		2018		2019		2020		2021		2022	
Liters spilled	# of spills	Liters Spilled	# of spills	Liters Spilled	# of spills	Liters Spilled	# of spills	Liters Spilled	# of spills	Liters Spilled	# of spills
1850	94	1385	113	1955	121	1256	62	1617	59	534	35

DIAVIK SPILL - FEBRUARY 7, 2023

In March 2023, EMAB learned about a spill that occurred at the Diavik mine on February 7 of the same year. The spill was only reported to the Government of Northwest Territories (GNWT) on March 14. The spill was confined to the North Inlet area and did not harm the environment, which was good news. However, EMAB was worried about the delay of five weeks before Diavik notified authorities about the spill. According to the rules set out in the Spill Contingency Planning and Reporting Regulations under the Environmental Protection Act, Diavik was supposed to report the spill immediately.

EMAB RECOMMENDATION: EMAB recommends Diavik investigate the cause of the delay in reporting the February 7, 2023 spill and take all necessary steps to ensure any future spills are reported immediately to the GNWT as required under the Spill Contingency Planning and Reporting Regulations. EMAB also recommends that Diavik report back to EMAB on any lessons learned from this incident that will aid in preventing future spills.

SUMMARY OF DIAVIK RESPONSE: On February 7th, 2023, due to extreme cold, a joint in the 9105 underground dewatering pipeline at the North Inlet Containment Facility broke, releasing about 450,000 cubic meters of water. The team thought it wasn't a big issue because the water stayed in the facility, and didn't notify the Environment Department. They planned to fix it in the spring. However, on March 13th, the environmental staff learned about the situation and reported it to the Inspector on March 14th.

After the incident, Diavik talked to the crews and the Environment Department taught everyone that any accidental releases, whether inside or outside containment, should be immediately reported to them. They also reminded everyone about the proper procedures to prevent communication issues in the future.

WATER LICENCE AMENDMENT: PROGRESSIVE RECLAMATION

In the 2021-22 EMAB Annual Report, we included a section on Diavik's Progressive Reclamation water licence amendment (WLA).

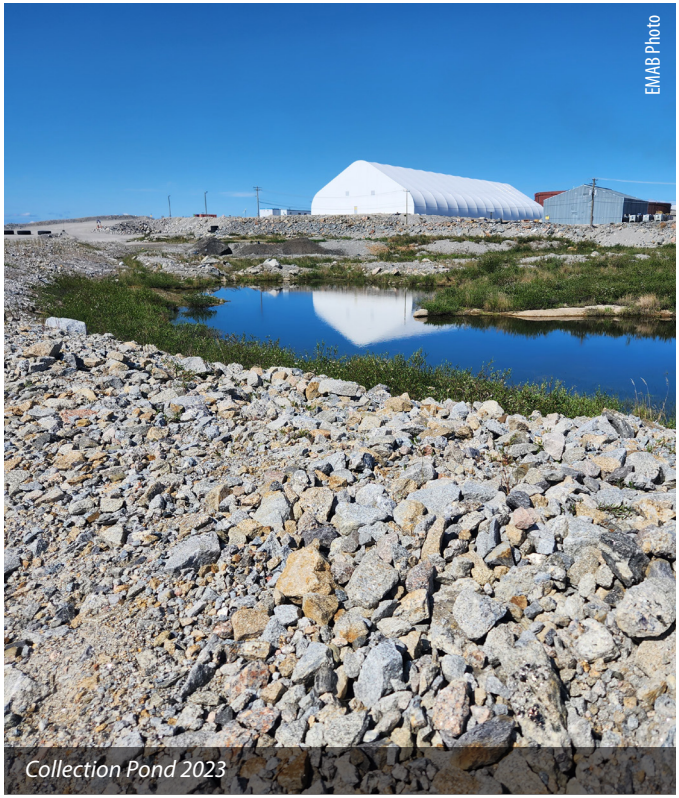
On June 29, 2022, the Minister informed the WLWB he was unable to approve the WLA for Diavik due to three legal issues. The WLWB and Tłı̨chǫ Government responded clarifying their concerns with the Minister's decision. The Minister responded in August 2022 to further clarify his decision not to approve the recommended water licence, and to request a ruling from the WLWB to re-open the public record to hear additional information on the WLA, to address the issue without restarting the entire amendment process.

To do this, the WLWB asked all the parties involved in this process to comment on the Minister's request for a ruling. EMAB sought legal advice and concluded that the WLWB could reopen the proceedings, and provided a review on the Request for Ruling. TG, DKFN, and Diavik also provided comments.

EMAB RECOMMENDATION: EMAB recommends that the WLWB agree to the Minister's Request for Ruling and reopen its Public Record to admit evidence regarding, and consider the issues raised by the Minister.

In October, 2022 the WLWB decided not to grant the Minister's request to reopen the record for the Diavik Type A Water Licence Amendment Application. Instead, the WLWB presented two options for recommended licences to the Minister:

- Option 1: Approve the original version of the Licence that was sent in June 2022, as per section 47 of the Waters Act.


EMAB Photo

Collection Pond 2023

- Option 2: Approve a different version of the amended licence, which allows Diavik to take water from Lac de Gras to fill the open pits, but excludes all the changes related to decommissioning collection ponds.

In November, 2022 the Minister approved Option 2: to approve a different version of the amended licence allowing Diavik to fill the open pits but excluding amendments allowing breaching of collection ponds.

The Minister agreed to continue discussions with WLWB on the issues regarding the application, the decommissioning of collection ponds and discharge of waste.

WATER LICENCE AMENDMENT: NATURAL DRAINAGES

Diavik applied to amend its water license in December 2022. The purpose of Diavik's application was to allow progressive reclamation of the mine by restoring 'natural drainages' on site:

- Breaching collection ponds that currently surround the site to catch runoff.
  - › Runoff in collection ponds is pumped to the North Inlet for treatment and discharge.
- Allow runoff from the ponds to flow (untreated) directly into Lac de Gras (LdG).

Diavik argued that the runoff is not a waste (as defined in the *Waters Act*) so does not need to be regulated. Instead, Diavik proposed a Surface Water Action Level Framework (SWALF) to respond to water quality and toxicological triggers.

This 3000-page application built on Diavik's previous amendment request, that the Minister ended up rejecting (see Water Licence Amendment for Progressive Reclamation section on pages 30-31 and in 2021-22 Annual Report). The application included sections on:

- Detailed plans for breaching ponds, including timelines.
  - › Some ponds collect drainage from PKC and NWRSA.
- Data from existing ponds, water quality models, and predictions of discharge water quality.
- Water quality monitoring and SWALF.
  - › Included changes to criteria for meeting closure objectives.
- Human Health and Ecological Risk Assessment.
- Closure AEMP Design.

Photo courtesy of Diavik Diamond Mine

Location of Collection Ponds

At the same time as the amendment application, Diavik also submitted a Final Closure and Reclamation Plan which included much of the same information as for the amendment application (see section on FCRP on pages 44-49).

The process for reviewing the amendment application was:

- Reviewers provide comments and recommendations on the application.
- WLWB Technical Sessions on the application.
- Reviewers develop interventions on the application.
- Public Hearings and follow-up.
- Review of draft water licence.
- Reviewers submit closing arguments.
- WLWB develops a recommended water licence.
- Minister approves, or rejects, the recommended licence.

EMAB Photo

Pond 11 Future Breach Location

EMAB has been involved in the entire review process. In this section we will provide a summary of our key concerns and recommendations. A full version of all EMAB's submissions can be found on our website: **www.emab.ca**.

EMAB contracted expert consultants to review specific aspects of the Application, including Slater Environmental, North-South, and Arcadis Canada. We also did internal reviews of the application. Reviews were also submitted by ECC, Tłı̨chǫ Government, and Deninu Kue First Nation.

OVERVIEW OF EMAB CONCERNS ABOUT APPLICATION

EMAB had several concerns about Diavik's application, including:

- Diavik claim that the discharge from collection ponds is not waste; EMAB disagreed with this.
- Instead of setting specific contaminant limits on discharges, Diavik wanted to manage the discharge using a Surface Water Action Level Framework (SWALF). EMAB had many concerns about the SWALF including weak triggers, slow and inadequate actions, and ability to be enforced. Additional concerns with the SWALF included:
  - Removal of Drinking Water Guidelines.
  - Removal of AEMP Benchmarks.
  - Monitoring sites located too far from affected areas.
  - Does not adequately protect health of humans, wildlife, fish and other aquatic life.
- Modelling and predictions raised a lot of questions, especially regarding runoff from PKC.
- Monitoring plans were not detailed enough and did not identify actual mixing zones.
- Traditional Knowledge wasn't adequately considered in the application.

EMAB made 110 comments and recommendations on the application. In EMAB's opinion, Diavik's Water Licence Amendment Application proposal was not acceptable.

SUMMARY OF EMAB INTERVENTION AND RECOMMENDATIONS TO WATER LICENCE HEARING

The WLWB held a Technical Workshop on March 6-8, 2023 and a Public Hearing from May 30 to June 1, 2023, to discuss Diavik's request to change its Water Licence.

The **Technical Workshop** went through all aspects of the application. Some of the main issues raised were:

- Whether the discharge from the ponds is a waste; what would be appropriate effluent quality criteria (EQC) to consider.
- Revisions to the SWALF: triggers for TSS, hydrocarbons, early warning triggers, cultural criteria.
  - Link between AEMP and SWALF.
  - Process for investigating cause of a trigger being exceeded.
- Concerns about PKC Closure Design, predictions about the PKC cover and effects of settlement of the PK over time, and effects on quality of the discharge from the PKC.
- Use of most recent climate change data in models.
- Justification of closure AEMP design.
- Justification for not planning for any long-term maintenance at the site.

Six groups participated in the **Hearing**:

- Tłı̨chǫ Government (TG).
- Deninu Kue First Nation (DKFN).
- Yellowknives Dene First Nation (YKDFN).
- Environment and Climate Change Canada (ECCC).

- Government of the Northwest Territories – Environment and Climate Change (GNWT-ECC).
- Environmental Monitoring Advisory Board (EMAB).

EMAB made 104 recommendations in our 47-page intervention covering many areas of concern:

NEED FOR DATA TO VERIFY WATER QUALITY PREDICTIONS

One of EMAB's concerns with the proposed Water Licence Amendment is that it relies on modelling in place of actual data, and makes predictions far from where the discharge is released into Lac de Gras (LdG). Diavik's model makes predictions that are at least 200 meters offshore, and often 500 meters. These predictions do not help to understand the effects closer to the shore, where the discharge will be less diluted. EMAB would like to see predictions at 100 meters offshore or less.

DIAVIK'S PROPOSED MONITORING PLAN FOR THE DISCHARGES NEEDS TO BE IMPROVED

EMAB's view is that Diavik should not be authorized to breach all ponds, but instead limit the breaching to one or two ponds to collect data to inform decommissioning of other ponds in future. The Water Licence needs to be renewed by 2025, and the data would help improve their decommissioning plans when they eventually close the site.

EMAB RECOMMENDATION: To only consider allowing the breaching of Ponds 2 & 7, rather than all ponds, to collect data to assess environmental effects and verify predictions.

REGULATING DISCHARGE: DISCHARGE IS A WASTE

Diavik stated that the discharge from their ponds is not waste, even though the water released at breaches is predicted to exceed drinking water quality standards for humans and wildlife drinking water guidelines. The discharge also contains substances that exceed the levels considered safe for aquatic life according to AEMP Benchmarks.

EMAB RECOMMENDATION: Designate the discharge from ponds as waste and take samples where the discharge enters Lac de Gras to better understand its impact on the water quality and aquatic, human and wildlife health.

INADEQUATE MONITORING

Diavik did not include essential information in their monitoring plans:

- Monitoring that clearly defines mixing zones.
- Monitoring water quality at the point where the discharge enters the lake, and at a distance of 100 meters from that point.
- A sampling plan for each catchment, including information on sediment, benthics (organisms living in or on the lake bottom), and fish.

EMAB RECOMMENDATION: Diavik should provide all information required in Decommissioning Plan description for each pond before any approval.

EMAB RECOMMENDATION: Diavik should establish specific limits for all potentially harmful substances in each pond and ensure they don't exceed those limits.

USE OF TRADITIONAL KNOWLEDGE

Diavik has not made any plans to use Traditional Knowledge (TK) monitoring of the discharges, or of how the discharge might affect cultural water use.

EMAB RECOMMENDATION: If Diavik wants approval to breach the ponds, they must include plans for TK Monitoring. Additionally, if Diavik claims that meeting AEMP Benchmarks (environmental standards) also meets cultural criteria, they need to provide evidence to support this claim. EMAB is concerned that Diavik might use this as a reason to not do cultural criteria monitoring.

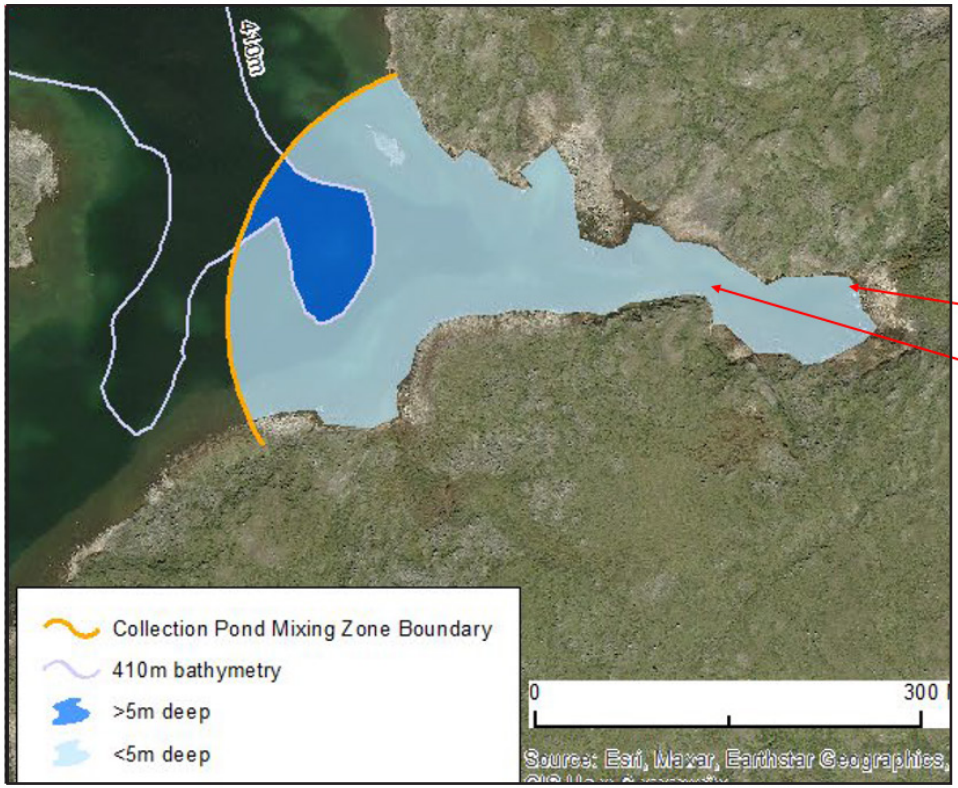
WATER QUALITY MODELLING

ARC 1 VS. MIXING ZONE

Diavik's water quality model makes predictions at a location in LdG called "Arc 1." The distance to Arc 1 from the point where the discharge enters Lac de Gras varies between 200 to 500 meters.

According to the model's predictions, the water quality is expected to become diluted to safe levels by Arc 1. However, it's important to note that these predictions are based on the conditions at Arc 1 and not specifically at the edge of the mixing zone. The WLWB requires that mixing zones meet 13 criteria outlined in the Guidelines for Effluent Mixing Zones including that the size of the mixing zone should be as small as possible, with a target maximum of 100 meters.

In the mixing zone there should be no acute toxicity (causes death of aquatic plants or animals), and at the edge of the mixing zone there should be no chronic toxicity (negative effects on aquatic plants or animals that doesn't kill them, such as decreased reproduction or size).



WATER QUALITY MODELLING: ACCURACY

EMAB has concerns about the modelling used for predictions. We want Diavik to verify the model's predictions are as accurate as possible e.g. ensuring the right information goes into the model, mixing zone sizes, and accounting for the effects of climate change. Importantly, the predictions need to be verified with real-world data.

EMAB RECOMMENDATION: Provide table(s) of data used in runoff models to assist with identifying what factors are the most significant in each drainage.

EMAB RECOMMENDATION: Conduct runoff modeling using more conservative background water quality inputs and compare to predictions.

CLOSURE CRITERIA

HUMAN DRINKING WATER

Diavik proposed removing the closure criteria related to human drinking water quality from Surface Water Closure Objective SW1. (SW refers to "site-wide"). In place of drinking water guidelines for SW1, the new criteria is based on recreational guidelines, which are 20 times higher than drinking water guidelines. This means that Diavik would no longer be required to ensure mine-affected areas of LdG are safe to drink. EMAB disagrees with this.

EMAB RECOMMENDATION: Add Drinking Water Guidelines back into SW1.

AQUATIC HEALTH

Diavik made changes to their proposed closure criteria for water quality regarding fish and aquatic life. They removed the requirement to meet AEMP Benchmarks.

EMAB RECOMMENDATION: Add back meeting AEMP Benchmarks at the mixing zone edge to closure criteria for SW2.

EMAB RECOMMENDATION: Do toxicity testing on more species – fish, benthics, algae/aquatic plants.

SNP MONITORING

Most of the discharge from Diavik will occur during the freshet (spring melt) or after heavy rain. They plan to monitor the discharge at two locations:

- At the dam breach where the release happens.
- At Arc 1, as predicted by their model.

However, it might be unsafe to monitor the discharge at Arc 1 during the freshet due to potentially hazardous ice conditions during spring melt.

SUMMARY OF EMAB RECOMMENDATIONS:

- Conduct a plume survey to show how the discharge mixes with the surrounding water.
- Have more sampling locations:
  - Where the stream enters LdG (where people and animals are most likely to drink water).
  - At the edge of the mixing zone as defined by the plume survey, or 100 meters away from the discharge point.
- Monitor the sediment quality in the mixing zone to understand possible accumulation of contaminants from discharge over time, and add this to closure criteria.
- Remove Diavik's restriction of minimum 5 m sampling depth (Diavik can sample from any depth).
- Plan to monitor whenever there is discharge.
- Have an alternative plan for monitoring when it's not safe to do it in the usual location.
- Monitor for a longer period in areas where there might be acid rock drainage issues.
- Any changes to the monitoring plan must be approved by WLWB.

SURFACE WATER ACTION LEVEL FRAMEWORK

EMAB does not view Diavik's Surface Water Action Level Framework (SWALF) as adequate to protect water quality in the waters around East Island, or the health of aquatic life, wildlife or humans. The SWALF assumes that discharge from the breached dams is not a waste, and will be diluted sufficiently by the time it enters LdG that water quality will be protected, and the health of aquatic life, wildlife or humans will be protected.

We think the proposed monitoring for the SWALF is insufficient because there are not enough monitoring locations and data is not collected often enough.

SWALF: TRIGGERS, RESPONSES AND ENFORCEMENT

EMAB is concerned that the SWALF triggers and responses may not be strong enough to adequately protect humans and the environment. In addition, response times for the SWALF triggers and actions are too slow to ensure protection of humans, wildlife or aquatic life. The SWALF should include 'triggers' and 'responses' that stop discharge when there is potential for negative effects. The SWALF triggers are also not directly enforceable; they lead to actions which will take time to carry out. For example, the SWALF says that if runoff water chemistry is greater than 80% of human health recreational guidelines then Diavik will:

- Resample to confirm; if the sample result is confirmed Diavik will:
- Investigate the cause, identify options, and undertake a detailed risk assessment (this last could take a year).

Any enforcement decision would require reviewing Diavik's action response to decide if it was carried out adequately and within a reasonable time. A normal water licence has Effluent Quality Criteria (EQC's) to regulate waste, such as collection pond discharges. If an EQC is exceeded, enforcement action can be taken immediately.

Looking East at Pond 3 - June 10, 2022

SUMMARY OF EMAB RECOMMENDATIONS

- Add triggers, and monitoring, where discharge enters LdG, and edge of mixing zone (not Arc 1).
- Add AEMP Benchmark triggers at edge of mixing zone (not Arc 1).
- Add Drinking Water Guidelines triggers where discharge enters LdG.
- Integrate Cultural Use Criteria.
- Add early warning triggers.
- Explain how SWALF would be enforced.
- Add trigger/response that stops the discharge, to avoid any harmful effects while the cause is investigated. This is particularly important when there is chronic toxicity (at the IC20 level) at the edge of the true mixing zone.

SWALF: ENVIRONMENTAL TRADE-OFF STUDY

Diavik has proposed an Environmental Trade-off Study should be done if there are no practical mitigations for the cause of the problem. This study would determine the costs and benefits of releasing the discharge compared to treating the water for in perpetuity. EMAB is concerned that such a study could impact the closure goals and objectives.

EMAB RECOMMENDATION: Diavik needs to clarify how the Environmental Trade-off Study will be conducted, including the factors to be considered, the stakeholders involved, the timeframe, and the decision-making process.

POND DECOMMISSIONING

SUMMARY OF EMAB RECOMMENDATIONS:

- Only Ponds 2 & 7 should be considered for approval for decommissioning in this amendment decision.
- Any changes to the Decommissioning Schedule must be approved by WLWB.
- Diavik must demonstrate that water quality is suitable all year before breaching any pond.
- Treat pond sediment like contaminated soil and analyze it for any harmful contaminants.
- No approval for breaching until closure activities that might cause erosion in the catchment area (such as bulldozing roads) are finished. This would avoid possible sediment being released to LdG.
- Assess the risk of erosion during periods of heavy rainfall.

CLOSURE AEMP

The Closure AEMP (Aquatic Effects Monitoring Program) is a plan that focuses on monitoring the effects of the discharges on aquatic health in the areas where discharges occur around East Island. It is set to begin in 2025, after some ponds have already been planned to be breached. Data should be collected for at least a year before breaching, to see any changes after the discharge starts.

EMAB RECOMMENDATION: Collect AEMP data before any discharges take place. This data will be compared with the results obtained after the discharge starts to assess its impact.

EMAB RECOMMENDATION: To implement the Closure AEMP before 2025 for any ponds that are scheduled to be breached before that time.

According to the modeling, the area where the greatest discharge effect is expected is C3 bay, the discharge area from the PKC. C3 bay does not have an AEMP site identified.

EMAB RECOMMENDATION: Sample all components in C3 bay and gather at least one year of data before any discharge occurs.

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

The Human Health and Ecological Risk Assessment (HHERA) is a study that predicts and evaluates potential risks to people and the environment ten years after Diavik closes its operations.

The assessment is based on predictions of the levels of harmful substances in the area. EMAB raised some questions about the accuracy of these predictions, as they rely on reference data which may not fully capture all possible risks. Some risks may be underestimated.

To address this, a more comprehensive risk management approach is needed to ensure potential risks are properly addressed. The predictions should be compared with actual data.

SUMMARY OF KEY EMAB RECOMMENDATIONS ON HHERA

- Compare the current water quality in specific reference areas to how it was before any development occurred.
- Reduce the size of mixing zones where water from different sources comes together and ensure that there are no harmful effects observed at the edge of these mixing zones.
- Identify all risks that exceed the natural background levels of contaminants.
- Include more discussion about parameters that may pose unacceptable risks to the environment.
- Verify the modeling results with real-time monitoring and toxicity testing.

OUTCOME AND FOLLOW UP TO WATER LICENCE HEARING

One of the main issues that came up many times at the hearing was the question of whether the discharge from Diavik's collection ponds was a waste, and whether or not the discharge needs to be regulated using Effluent Quality Criteria (EQC). All of the participants in the hearing concluded that the discharge would be a waste and should be regulated. The WLWB will decide on this question as it develops the recommended water licence.

Normally the company would propose EQC's for discharge of any contaminants, and provide a justification for each EQC. But since Diavik has argued the discharge is not a waste, it did not propose EQC, and has taken the position that EQC's are not required.

In its intervention, GNWT proposed EQC's based on the data Diavik provided in its application. There were three contaminants that were particularly concerning: copper, silver and uranium, which all exceeded acute toxicity levels in one or more collection ponds. At the hearing Diavik argued GNWT didn't follow the correct procedure when it developed its proposed EQC. In particular Diavik noted that one of the requirements for EQC is that they must be achievable, and that a number of GNWT's EQC's would not be achievable.

EMAB and other interveners agreed that EQC are required to regulate the discharge.

At the end of the hearing GNWT agreed to re-calculate its proposed EQC's as an undertaking, based on information from Diavik, and Diavik agreed to identify EQC's that it felt would be achievable. These undertakings were not complete at the time this report was written. EMAB will review these.

There were a number of other undertakings including:

- Detailed information on copper toxicity from mines across Canada.
- Enforceability of the SWALF.
- Can Diavik meet water, wildlife and human health closure criteria while depositing waste to LdG?
- Could the mine be closed successfully if EQC's were exceeded?

NEXT STEPS

There are a few more important steps before the WLWB prepares a recommended water licence for consideration by the Minister:

- Undertakings on EQC proposed by GNWT, and responses.
  - › EMAB will respond.
- Circulation of draft water licence.
  - › EMAB will respond.
- Submission of Closing Arguments to address outstanding issues.
  - › EMAB will submit Closing Arguments.
- WLWB considers all evidence and prepares a recommended water licence.

PKC MANAGEMENT PLAN 7.0 AND CULTURAL USE CRITERIA

In June, 2022, Diavik submitted its PKC Management Plan Version 7.0 to the WLWB, as well as the Cultural Use Criteria Summary Report. The cultural criteria for water quality are conditions that must be met after Diavik puts Processed Kimberlite (PK) into the pits. They assess whether water quality is acceptable for cultural use before, during, and after flooding of the pits and breaching the dam to connect the pit lake to LdG.

In 2021, Diavik was storing much more water in the Processed Kimberlite Containment Facility (PKCF) than planned, with 400,000 m3 instead of 100,000 m3, increasing risks related to the containment dams. EMAB asked Diavik for an explanation and a plan to reduce the volume. Diavik responded that the larger pond resulted from raising the dam and spillway higher than the PK material, and it would naturally shrink as more materials were added. They claimed experts had reviewed and approved this design.

To dispose of PK in the A418 Pit, Diavik needs to build a new pipeline from the process plant to the pit. Diavik said that any leaks from most parts of the pipeline would flow to the mine water collection system or the pit.

The WLWB distributed the PKC Management Plan 7.0 (PKMP) and the Cultural Use Criteria Summary Report for review on July 21, 2022. EMAB had Slater Environmental (SEC) do a technical review of the plan, which guided the 15 recommendations EMAB submitted. Comments and recommendations were also submitted by Tłı̨chǫ Government, WLWB, and ECC. The WLWB approved the Cultural Use Criteria and the Plan on October 27, 2022, with revisions required. The Board approved 7.1 of the PKMP on April 27, 2023 with all directives fulfilled. For a full list of EMAB recommendations, and to see the whole PKC Management Plan review, visit our website: **www.emab.ca**

Here is a summary of our review and key recommendations:

POTENTIAL FLOODING

EMAB was concerned that the PKMP didn't make clear how much extra rain or snowmelt the PKC was designed to contain, as there were differences in related design documents.

EMAB RECOMMENDATION: Diavik should be required to clarify the rain event that the PKC is designed to manage and store.

WLWB DECISION: 7.1 of the PK Management Plan is to include a revised definition of Inflow Design Flood in the glossary to clarify the timeframe associated with an IDF.

MONITORING DATA

The plan for monitoring water quality in the A418 Pit has three phases. EMAB stated that Diavik needs more data about PK going into the pit to understand the potential effects better. Diavik committed to quarterly sampling of the PK and water, and checking decant pipeline water every two weeks. But it was not clear what Diavik will sample, and when, and the data may not show the quality of the porewater (the water that comes out of the PK as it settles).

EMAB RECOMMENDATION: In order to ensure that the monitoring program will collect the data necessary to support modelling, Diavik should be required to seek input from the Independent Review Panel about the monitoring and data needs. This engagement should take place either before the start of PK deposition, or very early in the operations phase.

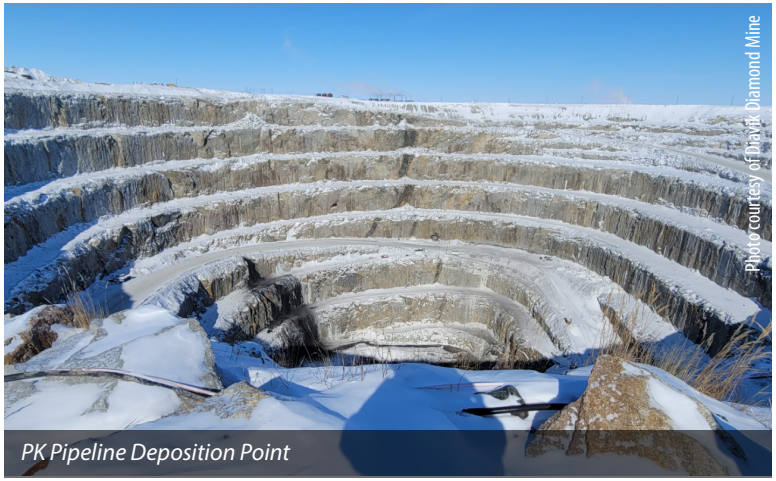


Photo courtesy of Diavik Diamond Mine

PK Pipeline Deposition Point

WLWB DECISION: Diavik is to analyse porewater chemistry under anaerobic conditions for processed kimberlite samples taken just prior to, as well as during deposition. The results are to be provided with the PKMW Modelling Plan update to be submitted prior to flooding

CULTURAL USE CRITERIA AND AEMP BENCHMARKS

EMAB RECOMMENDATION: Diavik must provide evidence that the cultural use criteria will be met at closure. Diavik should explain and provide evidence to support its statement that cultural use criteria will be met by achieving AEMP benchmarks, showing a direct linkage between each of the cultural criteria and the AEMP benchmarks.

WLWB DECISION: Diavik must demonstrate how water quality monitoring for AEMP Effects Benchmarks compares to cultural use criteria to confirm the inference that meeting AEMP Benchmarks will lead to meeting cultural use criteria.

EMAB RECOMMENDATION: Diavik should advance the development of long-term monitoring of the pit lake informed by Traditional Knowledge and the cultural use criteria.

WHAT IS THE PKC FACILITY?

The PKC Facility is where Diavik's tailings are dumped after the diamonds are taken out of the kimberlite. The tailings (called fine processed kimberlite or PK, similar to sand) are over 50 metres deep and are contained in a dammed area. For many years there was a pond located near the center of the PKC that changed size depending on the time of year and the mine's activities. There is a thick layer of very fine PK under and around the pond area that is like quicksand. It is also called slimes. Any person or animal walking on it would sink in.

Photo courtesy of Diavik Diamond Mine


EMAB Photo

PKC Cover from North Waste Rock Storage Area

WLWB DECISION: Diavik has committed to provide this information in the FCRP.

EMAB RECOMMENDATION: The 2020 virtual consultation with LKDFN was inadequate, because the internet was so poor that LKDFN members were unable to view Diavik's presentation or provide meaningful recommendations. Diavik did not provide an opportunity for further consultation after this event. In EMAB's view, Diavik should not use the report on LKDFN participation included in the workshop summary report, and instead arrange for an in-person workshop with LKDFN elders and other community members to complete the cultural water use criteria workshop and receive full input from LKDFN.

WLWB DECISION: The WLWB did not comment on this issue in their April 27, 2023 Reasons for Decision.

COMMENTS ON MVLWB ENGAGEMENT AND CONSULTATION POLICY

In June 2022, MVLWB submitted its Engagement and Consultation Policy to the Parties for their review. The policy guides how they interact with Indigenous communities, stakeholders, and the public in decisions related to land and water use in the Mackenzie Valley. This policy outlines principles, consultation processes, engagement with Indigenous communities, public involvement, timelines, conflict resolution, and monitoring and evaluation. EMAB participated in the review process of several draft revisions of the policy.

EMAB made one recommendation on the policy, regarding evaluation. Pine Point Mining, GNWT-Lands, CAN-NOR, Acho Dene Koe First Nation, TG and Deline Got'ine also made comments.

EMAB RECOMMENDATION: The MVLWB Engagement and Consultation Policy should include an evaluation component, with an emphasis on participation of Indigenous communities and organizations in the reviews of projects that take place on their traditionally used territory. The intent would be to collect information on participation, and any obstacles, to support potential policy amendments that would help to increase the participation of Indigenous communities and organizations.

In January 2023, the Mackenzie Valley Land and Water Board (MVLWB) finalized its Engagement and Consultation Policy. For the most up-to-date information, visit the MVLWB's website (www.mvlwb.com) or contact them directly.

CLOSURE AND RECLAMATION

Diavik initiated a number of closure-related activities during 2022-23:

- The most significant activity was the first draft of Diavik's Final Closure and Reclamation Plan (FCRP), submitted in December 2022.
  - Before submitting the proposed FCRP Diavik organized four meetings to present the plan to communities, regulators and EMAB.
  - WLWB organized an FCRP workshop in March of 2023.
- Diavik submitted the 2021 Closure and Reclamation Progress Report in July 2022.
- Diavik finished mining the A418 pit and cleaned it up in preparation for starting to deposit PK, as approved through the PKMW water licence amendment (see 2020-21 Annual Report).

COMMENTS ON 2021 CRP PROGRESS REPORT AND UPDATED RECLAIM ESTIMATE

In July 2022 the WLWB circulated Diavik's 2021 Annual Closure and Reclamation Plan Progress Report. While the Progress Report itself doesn't need WLWB approval, certain items within it do. Diavik asked the Board to:

- Confirm or approve six identified items related to the progressive reclamation of the processed kimberlite containment (PKC) facility.
- Approve the 2021 Reclamation Completion Report for recent progressive reclamation of the North WRSA.
- Approve the return of security associated with both WRSA progressive reclamation and proposed PKC Closure design.

Slater Environmental provided technical review for EMAB. EMAB submitted 24 comments and recommendations to the WLWB. ECC and TG also provided their comments and recommendations. Below is a summary of our review, with key recommendations and WLWB decisions. For more details and the full review, you can visit EMAB's website at **www.emab.ca.**

SUMMARY OF KEY EMAB RECOMMENDATIONS

CLOSURE DESIGN FOR PKCF COVER AND REQUEST FOR SECURITY REDUCTION

EMAB RECOMMENDATION: The construction of the proposed cover on beach areas of the PKCF should not be approved. A more comprehensive design is needed to demonstrate that the proposed cover will achieve closure objectives and closure criteria. The design should provide rationale for a proposed cover configuration, including cover thickness and materials. Do not approve request for security reduction.

WLWB DECISION: Not approve proposed PKC Zone 1 Design.

WLWB DECISION: To reject the proposed security return request for the PKC Zone 1 Design.

REEVALUATING SECURITY FOR NORTH WRSA

EMAB RECOMMENDATION: Adjust the security for the North WRSA based on completed work; address future cover performance uncertainties.

WLWB DECISION: Diavik should address deviations or deficiencies in cover construction's impact on achieving North WRSA closure objectives, and demonstrate sufficient security to address uncertainties related to achieving those objectives.

FINAL CLOSURE AND RECLAMATION PLAN

In December 2022, the WLWB distributed Diavik's Final Closure and Reclamation Plan, FCRP 1.0, for comment. EMAB did a detailed review and made 300 recommendations by the May 26, 2023 deadline. DFO, ECCC, LKDFN, YKDFN, DKFN, TG and ECC (Waters, Wildlife, Inspectors) all made comments.

EMAB hired several consultants to review different sections of the FCRP. The consultants were: Slater Environmental, North-South Consultants, Arcadis Canada, MSES and Randy Knapp. We also sub-contracted a revegetation expert and climate change expertise. Many of the comments were the same as for the Water Licence Amendment for Natural Drainages (pages 31-39) since the discharge from the collection ponds is a large part of the FCRP. There are also comments on revegetation, TK, the PKC, North Inlet, contaminated soil, effects of climate change etc.

The FCRP is very detailed and comprehensive, with 62 appendices and totaling over 7,000 pages. EMAB found it does not meet many key parts of the overall direction from communities to return the site as closely as possible to pre-development conditions. It also does not meet several of the closure objectives, and it does not fulfill several of WLWB's revisions and decisions on ICRP 4.1. We believe it will require substantial revisions before it can be approved.

CLOSURE INFORMATION SESSIONS

Prior to release of the FCRP, Diavik held four different sessions in 2022 to share information about the key parts of its closure plan with Indigenous governments, regulators and EMAB. One of the sessions was a site visit to see ongoing closure activities. EMAB was pleased that Diavik undertook these sessions and found the information useful.

FCRP WORKSHOP

In March 2023, the WLWB organized a workshop for interested Parties to discuss questions and concerns about the FCRP directly with Diavik and their consultants. Items discussed included:

- Proposed changes to closure criteria for meeting closure objectives.
- Proposed closure engineering designs, especially for the PKC, NWRSA and SWRSA.
  - Protection for wildlife.
- Security and RECLAIM estimate.
- Revegetation.
- Consideration of effects of climate change, especially on engineering designs.
- TK Monitoring.
- Performance Assessment Reporting for the mine components.

SUMMARY OF KEY INFORMATION REQUESTS AND UNDERTAKINGS SUMMARY

WLWB directed Diavik to answer a number of Information Requests (IR) during the workshop:

- Details about the landfill design and operations to ensure it can contain contaminated soil materials, like hydrocarbon-contaminated soil.
  - Diavik said it got approval for using the current landfill as a disposal site for inert waste during mine closure. Diavik chose deep placement to manage PHC-contaminated material safely. The landfill cover design encourages permafrost formation and is a cost-effective solution.
- A stability analysis comparing the NCRP design with newer guidelines to show it meets the required standards.
  - Diavik attached a Technical Memo regarding Classification of North Country Rock Pile.

Landfill

Tires in landfill

There were also IR's to GNWT:

- Estimate when GNWT will provide details about its expectations and process for relinquishing mine sites in the Mackenzie Valley.
  - › GNWT said the timing for relinquishing a mine site in the Mackenzie Valley depends on its performance after closure and meeting the required criteria. Each site is unique, so there's no standard timing for relinquishment that applies to all sites.
- If Diavik's estimate for closure costs in the FCRP is different from GNWT's, the GNWT needs to submit their own estimate for review. If Diavik feels it's necessary, they should provide a revised closure cost estimate. Additionally, Diavik should explain the reasons behind any differences between their estimate and the GNWT's estimate.
  - › GNWT-ECC provided a closure cost estimate for the FCRP as requested by WLWB. They expect another security review after the final FCRP decision.

SUMMARY OF KEY EMAB RECOMMENDATIONS ON FCRP

TRADITIONAL KNOWLEDGE

The FCRP does not include a closure TK Monitoring Plan (TKMP), or a detailed workplan for developing a plan. Diavik has been talking about developing a TKMP for over 10 years, but they have changed their approach multiple times without coming up with a satisfactory proposal. EMAB's view is that the FCRP should not be approved until it includes a TKMP that is acceptable to the Indigenous governments.

Diavik did propose a TK Closure Watching Program in the FCRP, but it's unclear how this program is related to the TKMP. The watching program involves having four on-site observers during active closure and conducting area closure watching and verification sampling. However, the approach is very general and does not meet the requirements for an acceptable TKMP.

Diavik did not do a very good job of showing how it addressed the TK Panel Recommendations, or included them in the FCRP. Diavik has been inconsistent, incomplete and selective in addressing the recommendations. Where Diavik says it addressed a TK Panel recommendation it does not refer to a specific section of the plan where the recommendation has been included. It provides insufficient justifications for the TK Panel recommendations it did not accept.

ENGAGEMENT

Diavik did a good job documenting the questions and answers on the FCRP during its information sessions. EMAB does not consider the sessions as fulfilling the WLWB direction to Diavik to engage with EMAB given the large number of organizations involved and lack of ability to discuss alternative approaches in detail. Much of its other engagement did not describe issues raised or how they were resolved.

CLOSURE OBJECTIVES AND CRITERIA

Diavik's proposed closure criteria have not improved. The suggested changes to site-wide criteria are inadequate to ensure that water is safe for people, wildlife, and aquatic life. The criteria for revegetation and wildlife safety need to be made stronger. Some recommendations from the TK Panel have not been addressed. EMAB proposed a revised objective that active revegetation should cover a similar area as was covered before the mine was developed, and should establish self-sustaining vegetation cover and communities similar to those that were present.

SITE RESTORATION AND REVEGETATION

Diavik's plans for site restoration and revegetation are insufficient. Their revegetation plan does not meet industry standards in Canada. Diavik should aim to revegetate 70% of the mining footprint, which is the approximate amount of the island that was vegetated before the mine was developed. Instead Diavik proposes to revegetate less than 20%, and will not revegetate either the PKC or the waste rock piles. Diavik has not committed to ensure the new plants are similar to those that were on the island, or to make sure that the plants survive over the long term. Diavik has not adequately addressed several of the TK Panel's recommendations about revegetation. Additionally, Diavik is not using the expert advice from the University of Alberta Revegetation Study it commissioned, citing insufficient benefits as the reason.

WASTE DISCHARGE FROM COLLECTION PONDS

Diavik's proposal for breaching collection ponds and discharging waste into Lac de Gras (LdG) is unacceptable. This proposal, and EMAB's concerns, are discussed in detail in the section on the Water Licence Amendment for Natural Drainages on pages 31-39.

Revegetation Plots with PKC Dam in the Background

Comments on the Water Licence Amendment for Natural Drainages include comments on Diavik's Closure Aquatic Effects Monitoring Program, and on its Human Health and Ecological Risk Assessment.

A major component of regulating the discharge is the Surface Water Action Level Framework. EMAB does not agree that the SWALF is an effective way to protect water quality, or human, wildlife or aquatic life from the collection pond discharge. We also raised questions about if and how the SWALF would also apply to discharges from the NWRSA, open pits, or North Inlet.

CONTAMINATED SOILS

Diavik plans to bury contaminated soils that don't meet agricultural standards instead of removing them offsite. EMAB's position is that no contaminated soil should be left on site.

PKC DESIGN

Diavik is proposing to cover the PKC with a 1.5 m layer of waste rock, and to let the PK freeze. Now that PK is being deposited in the A418 pit, Diavik expects water in the PKC to drain out. They also plan to dig a trench that would collect any water and direct it to a spillway that would discharge to LdG. Diavik has begun covering the outer sections with rock. The centre area, called Zone 2 has a lot of extra-fine PK that is too soft to support a cover. Diavik plans to wait for it to freeze before trying to place a cover. Freezing could take many years.

The PKC design is conceptual and unproven. It has several uncertainties. EMAB's position is that it is not ready for approval, and we raised some fundamental concerns including:

- Placing the cover on PK slimes in the middle of the PKC. Possibility of slimes migrating up through the cover.
- The stability of the cover over the slimes.
- The impact of PK settling on the cover and the spillway, which could result in a pond developing.
- The quality of water running out through the PKC spillway, and predictions about seepage.
- Climate change not adequately taken into account.


EMAB Photo

PKC Pond and Sump


Photo courtesy of Diavik Diamond Mine

Blue Arrows Show How Water Will Flow From PKC Into Trench and Sump and Out Through Spillway

Diavik stated that the final PKC Design would likely change over time, and did not need to be approved by the WLWB. WLWB clarified that any final engineering design must be approved by the Board.

EMAB is also concerned that Diavik has not included any long-term maintenance activity, and has said the closed mine will not require any maintenance. We are also concerned that it has proposed monitoring periods that are not long enough. The PKC dams will need to be inspected and maintained as long as they contain PK.

WASTE ROCK PILES

The North Waste Rock Storage Area (NWRSA) has the potential to seep contaminated water if the rock does not stay frozen (e.g., in the event of climate warming). EMAB's view is that thermal and physical monitoring of the NWRSA should continue until there is no longer a water quality risk associated with the facility, and permafrost conditions in the facility have stabilized.

As noted under PKC (above) Diavik says it has developed designs for the mine that do not require any maintenance. If the rock pile is not staying frozen as planned, Diavik would have to thicken the cover to keep the pile frozen. EMAB does not agree that Diavik's designs can be considered maintenance-free in the long-term.

Diavik should follow the TK Panel's recommendations for waste rock piles, including the South Waste Rock Storage Area (SWRSA) and NWRSA. TK Panel recommendations include revegetating the rock piles to match pre-development conditions and ensuring safe passage and use of rock piles for wildlife (e.g., caribou). The SWRSA design does not include re-sloping or smoothing except for a small ramp.

NORTH INLET

Sediments in the North Inlet (NI) are contaminated with hydrocarbons. Diavik conducted a "Hydrocarbon Reducing Bacteria Study" through McGill University to see if certain bacteria could naturally clean up oil contamination in the North Inlet. Diavik tested in both summer and winter conditions and found that bacteria could help clean up the oil in NI, but it would take time and might not work as well in the cold winter months. Diavik believes the hydrocarbons could be cleaned up naturally in a relatively short time.


Photo courtesy of Diavik Diamond Mine

North Waste Rock Storage Area


EMAB Photo

Steep Slope of South Waste Rock Storage Area

Once the oil is cleaned up and sediments meet sediment quality guidelines, Diavik would breach the dam and re-connect the NI to LdG. If the sediment can't be cleaned up sufficiently then Diavik plans to make an opening in the dam that would allow water to move between the NI and LdG, but prevent fish or other aquatic life from getting in.

CLIMATE CHANGE

There is a lot of concern about the possible effects of climate change on parts of the mine that require freezing: in particular the PKC, the PKC dams and the NWRSA. If these thaw out they could lead to contaminated water being discharged into LdG, or affect the stability of the structures themselves.

Diavik is using some outdated information on climate change predictions, and should update climate change projections with the latest information, especially for the NWRSA and PKC.

SECURITY

Diavik will likely need to provide a revised plan with updated security estimates. Most concerns are about long-term maintenance, monitoring, and financial holdbacks. Diavik believes there won't be any maintenance needed, but EMAB's view is this is too optimistic. Uncertainty about the NWRSA and PKC designs will require significant holdbacks until Diavik has demonstrated the designs are working.

If maintenance is required the costs could be substantial, possibly involving constructing an ice road or some other means to transport equipment to the site.

NEXT STEPS

Now that all the comments have been submitted, Diavik will have an opportunity to respond, and then the WLWB will make a decision. EMAB will continue to provide updates on the status of the FCRP.

TK CLOSURE MONITORING PLAN

One of the requirements for the FCRP is a TK Closure Monitoring Plan (TKMP). As we noted above, EMAB is disappointed that the plan does not include a TK Monitoring Plan, and has recommended the FCRP not be approved until a TKMP is ready.

We have included a more detailed discussion on development of the TK Monitoring Plan on page 20 in the section on Involving and Supporting Communities.

CLOSURE OF A418 PIT AND DEPOSITION OF PK

As discussed in EMAB's 2020-21 Annual Report, Diavik has been approved to dispose of PK into the A418 pit once they have completed mining it. Diavik's plan is to clean up the pit, then deposit PK using a pipeline from the processing plant. The PK is expected to flow to the bottom


EMAB Photo

PK Flowing into Pits from Pipeline

A418 flooding

of the mine workings. Diavik will pump out and treat the water that is squeezed out of the PK as it settles. At closure, the top of the PK is expected to be about 200-300 m below the lake surface. Once depositing of PK has finished Diavik will cover it with freshwater from LdG. Diavik predicts that the PK will form a separate layer under the freshwater "cap." Diavik will test the top 40 m for water quality. Once it meets the AEMP effects benchmarks and closure/cultural criteria, the A418 pit lake will be reconnected to LdG by breaching the A418 dikes.

Decommissioning of the A418 pit began at the end of 2022. Diavik removed hazardous waste (fuel, debris. garbage, sewage tanks, etc.) from the pit and cleaned up spill sites prior to flooding. In many cases, Diavik has left non-hazardous materials (e.g., fixed piping, dry transformers) in the pit where they will be covered during flooding. The Inspector reviews the removal activities every two weeks during the decommissioning process (or as deemed necessary), and must authorize any flooding of any underground level. With the low oxygen levels in the water, the non-hazardous materials are not expected to harm water quality.

Elders and communities oppose leaving any mining debris at site, including in the flooded pits and in the landfill.

WILDLIFE MANAGEMENT AND MONITORING PROGRAM

The Environmental Agreement requires Diavik to monitor the effect of the mine on wildlife.

Diavik has been monitoring wildlife since 2002.

In 2019 new Wildlife Act Regulations came into force that required Diavik to submit a Wildlife Management and Monitoring Plan (WMMP) for approval by the Minister of ECC.

In September 2020 ECC directed Diavik to submit an updated WMMP by April 1, 2021, that met the requirements of the new regulations. ECC approved the WMMP, with conditions, on July 15, 2022.

The study area for Diavik covers the East Island of Lac de Gras, where Diavik is located, as well as the West Island and part of the mainland south of Diavik, covering an L-shaped area of 1,200 square kilometers.

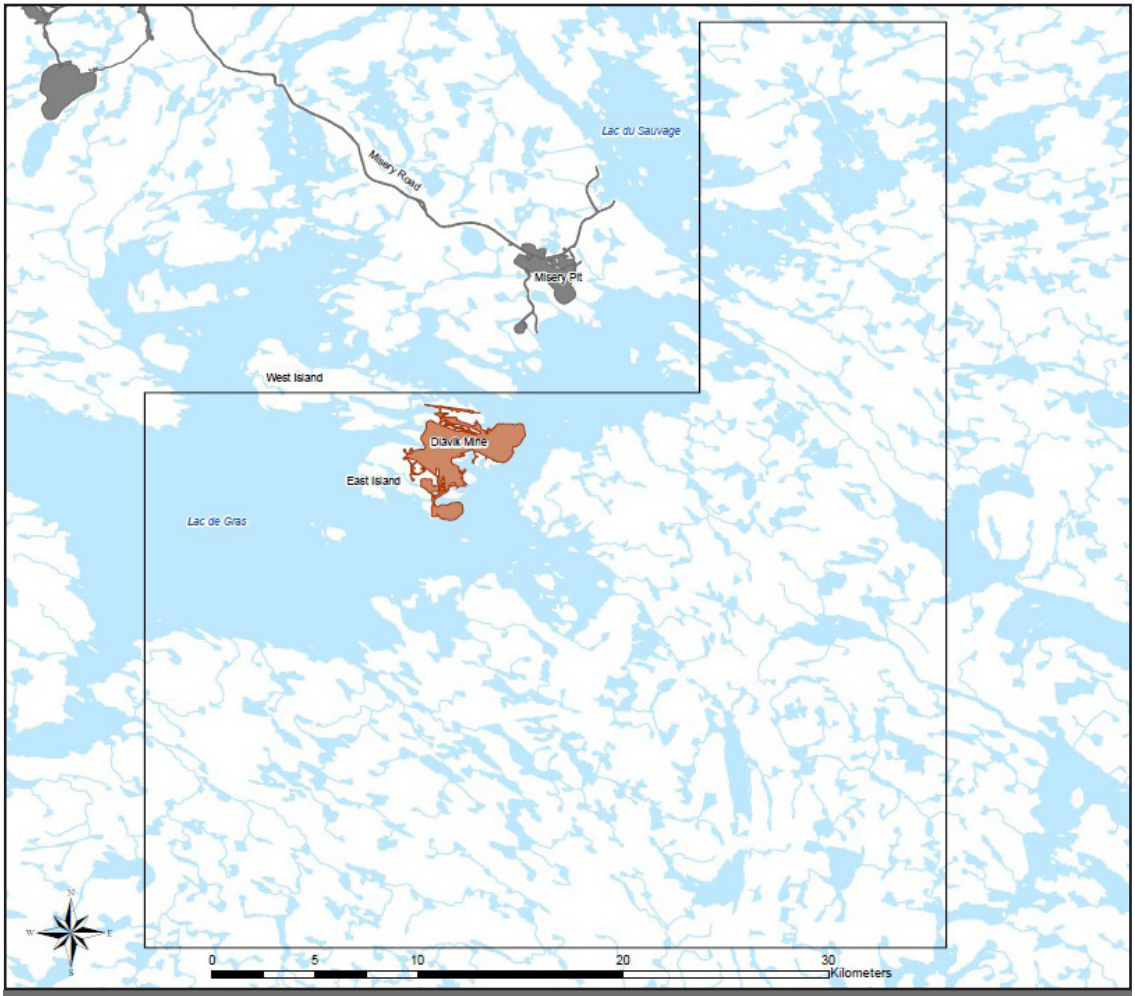
The main species studied are barren-ground caribou, grizzly bear and wolverine, as well as the vegetation they eat.

WMMP

When the Minister approved the WMMP he set seven conditions to be met in an updated version of the Plan, within 90 days. Diavik submitted its revised WMMP on October 13, 2022.

DIAVIK REVISED WMMP

Diavik submitted its revised Wildlife Management and Monitoring Plan (WWMP) to ECC and EMAB on October 13, 2022, including responses to all the ECC conditions. On January 11, 2023 EMAB submitted seven comments and recommendations to ECC. ECC responded to EMAB's comments on March 16, 2023.



Map of Diavik Wildlife Study Area

SUMMARY OF KEY EMAB RECOMMENDATIONS AND ECC RESPONSES

CONDITION 1: Diavik must provide a detailed description of how they will analyze the Zone of Influence (ZOI) on caribou, six months in advance of the 2023 WMMP report.

Diavik submitted the draft ZOI Analysis Methods to ECC on November 10, 2022 with a revised version on February 20, 2023 (see sub-section below for EMAB's review). ECC has not said how it would determine whether Diavik needed to change the methods, or approve the report, at the time of writing this annual report.

EMAB RECOMMENDATION: EMAB recommends ECC coordinate reviews of Diavik wildlife submissions using procedures similar to the WLWB.

ECC RESPONSE: The GNWT is working on transparent public reviews and improving the review process for ECC. ECC circulated the ZOI Analysis Plan on February 28, 2023, with a 30-day public review period.

CONDITION 2: Diavik needs to report yearly estimates of the ZOI whenever they have a sufficient sample.

EMAB RECOMMENDATION: ECC to circulate Diavik's proposed methods for ZOI Analysis Plan in time to allow for comments.

ECC RESPONSE: ECC directed Diavik to respond to reviewer comments on ZOI Analysis Plan and show how feedback will be incorporated into the WMMP.

CONDITION 3: If necessary, Diavik must assist in coordinating aerial surveys of the ZOI with the GNWT.

Diavik said that it will consider future contributions towards regional-scale wildlife monitoring and/or cumulative effects research, assessment, or management. Diavik has contributed to these in the past. EMAB believes Diavik's statement is vague, and does not clearly fulfill the GNWT condition.

EMAB RECOMMENDATION: EMAB recommends that ECC require Diavik to make a clearer commitment to contributing to GNWT-coordinated ZOI monitoring efforts.

ECC RESPONSE: Diavik is required to follow Approval Condition 3, which says Diavik must join future aerial surveys of the ZOI if needed.

CONDITION 4: Before depositing PK into a pit, Diavik must submit and obtain approval for procedures to monitor and deter wildlife in the pit, six months ahead of time.

Diavik stated that they would provide an updated standard operating procedure (SOP) on monitoring and deterring wildlife while filling A418 pit with PK, for review by the GNWT-ECC. Diavik noted that ECC approval is not required for SOP's. EMAB made recommendations on raptor nest monitoring and on waterbird monitoring and mitigation in the revised WMMP SOPs.

EMAB RECOMMENDATION: ECC to require Diavik to discuss waterbird monitoring and mitigation in detail in the revised WMMP or relevant SOP and discuss how birds/wildlife will be deterred from pit waters.

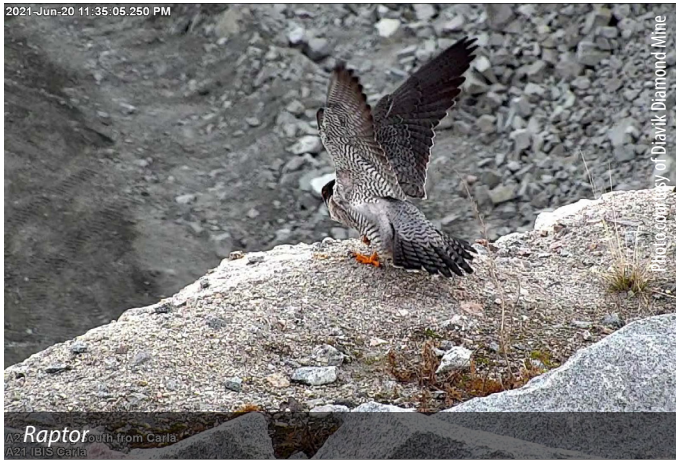
ECC RESPONSE: ECC directs Diavik to involve ECCC in waterbird management plans, share updates with ECCC, and send revised plans to ECC and EMAB for review.

EMAB RECOMMENDATION: EMAB recommends Diavik promptly contact ECC when pumped levels of processed Kimberlite are anticipated to reach any raptor nest within six weeks (i.e. applying safety measures, QA and QC measures).

ECC RESPONSE: ECC advises Diavik to contact them six weeks before flooding raptors' nests and share nest status. The Wildlife Act prohibits disturbing or taking bird nests, especially raptors listed in Schedule B of the Wildlife General Regulations.

CONDITION 5: Diavik must increase the blast exclusion zone for caribou to at least 1 km.

Diavik fulfilled this condition.



Raptor

Grizzly

CONDITION 6: Diavik should collaborate with EMAB and submit a plan for approval to improve monitoring of caribou behavior within four months.

ECC had directed Diavik to collaborate with EMAB on ways to improve caribou behaviour monitoring. Diavik stated it would discontinue group scan monitoring and only do collar movement analysis, but did not discuss this with EMAB.

EMAB believes Diavik has not fulfilled ECC's Condition 6.

Diavik also proposed to do a pooled analysis of existing group scan data and compare it to the 2011 results, in the 2022 WMMR (EMAB had not reviewed Diavik's analysis at time of writing).

EMAB RECOMMENDATION: ECC not accept discontinuance of caribou behaviour monitoring in Diavik's WMMP. Any alternative method, such as geofence collar analysis, should take place in addition to the existing behaviour monitoring requirement.

ECC RESPONSE: Approval Condition 6 requires Diavik and EMAB to collaborate and submit a plan within 120 days to improve the caribou behavior monitoring program. ECC supports EMAB's involvement in selecting the monitoring methods.

CONDITION 7: Diavik is required to submit annual WMMP reports to ECC by April 30 each year.

Diavik agreed to submit WMMP reports by April 30 each year.

WILDLIFE MONITORING & MANAGEMENT PLAN (WMMP) ADDENDUM

Diavik submitted their 2021 WMMP Addendum "Exploratory Collared Caribou Movement Analysis Technical Memorandum" to EMAB and ECC on June 20, 2022. This was an analysis of all caribou movement data from GPS collars between 2010 and 2021 in the Diavik area in relation to ZOI monitoring. EMAB had Management and Solutions in Environmental Science Inc. (MSES) do a technical review. EMAB submitted two comments and recommendations to Diavik and one to GNWT. For the full recommendations on Diavik's 2021 WMMP Addendum, visit our website at: **www.emab.ca**.

AUDIOLOGGERS

EMAB is working with researchers looking into monitoring caribou behaviour using small audiologgers attached to caribou collars. These can monitor caribou movements, such as bending down to feed, along with sounds, such as chewing, to identify caribou behaviours, including responses to blasting or traffic sounds. The audiologgers record all the caribou sounds and movements in real time; then they drop off and researchers retrieve them and analyze the data.

EMAB Photo

Caribou at the Mine

SUMMARY OF EMAB RECOMMENDATIONS:

ZONE OF INFLUENCE (ZOI)

EMAB questioned why Diavik only focused on the 3 km zone around the mine, while disregarding caribou behaviour data to 30 km.

EMAB RECOMMENDATION: EMAB recommends Diavik look at how caribou move and behave both near and far from the mine and compare the results to see if there is a difference. If caribou move and behave differently when they are close to the mine vs far from the mine, that can help show whether the mine is having an impact on caribou movement and behaviour.

Diavik responded that they submitted their ZOI Analysis Plan for review to the GNWT-ECC on Nov 10, 2022, to meet Condition 1 of the GNWT-ECC Minister's approval. They suggested EMAB submit ZOI recommendations through the GNWT process.

EFFECTS OF MINES ON CARIBOU BEHAVIOR

There isn't much data on the effects of mines on caribou behaviour. We know there is a ZOI, so the mines are having an effect. We don't have much scientific evidence on whether sounds (such as blasting), smells or the sight of the mine, or something else, affect the way caribou behave. The Addendum calls for better vehicle data to understand caribou movement in relation to mine-related activity.

EMAB RECOMMENDATION: EMAB recommends Diavik include a discussion about how it will fill the sensory disturbance knowledge gap before closure. In addition, EMAB recommends exploring use of Acoustic Recording Units (ARUs) at different distances to the mine to help assess the effects of noise on caribou behaviour.

Diavik responded that they are not collecting caribou behavioral scan monitoring any more. They now rely on location data from collared caribou, but the fix rate is not often enough to detect caribou responses to blasts or vehicle traffic. Diavik uses Mine-activity indices to identify sources of sensory disturbance, including noise, instead of ARU's.

WHAT IS A GEOFENCE COLLAR?

Geofence collars are programmed to send location data at different rates depending on where the caribou is. This is called the fix rate. Right now the collars provide a location once every hour within 30 km of Ekati or Diavik mines or 10 km of the winter road. This is the most often these collars can provide a fix. When the caribou are further away the collars only provide a location once a day. The collars run off a battery, so the more they send a location the shorter the time before the battery runs out.

CARIBOU COLLAR DATA

Diavik suggested increasing the data collection frequency even more as caribou get closer to the mines to allow for more detailed analysis of their movement.

EMAB RECOMMENDATION: ECC to consider shorter GPS collar fix rates for caribou, nearer the mine complex.

ECC responded that the collars can't provide locations more often than once per hour.

DIAVIK UPDATED ZONE OF INFLUENCE ANALYSIS PLAN

In response to Condition 1 on the WMMP approval, Diavik submitted its updated Caribou Zone of Influence Analysis Plan on February 20, 2023. ECC circulated the Plan to parties for review. EMAB consultant MSES completed a technical review of the plan and submitted two comments and recommendations to ECC. TG also submitted comments on the plan.

For a full list of recommendations on Diavik's Updated Zone of Influence Analysis Plan, visit our website at: **www.emab.ca**.

CARIBOU RANGE OVERLAP WITH MINES

In its Caribou ZOI Analysis Plan, Diavik proposes to review caribou annual-seasonal ranges only if the range contains both Diavik and Ekati mines and at least 90% of the study area (i.e., the 2012 aerial survey study area). For example, if the post-calving range for a given year does not completely contain the Diavik-Ekati mine complex, then no ZOI analysis would be completed. Diavik's reason was to make sure that if caribou don't come near the mine, this isn't seen as showing that the mine caused this, when caribou might not be going there for other reasons. EMAB is concerned that the 90% overlap threshold might lead to analysis not being done very often.

EMAB RECOMMENDATION: Diavik to answer the following questions in detail:

a) Why was 90% chosen as the study area-seasonal range overlap cutoff instead of another amount? Why is 100% overlap of the Ekati-Diavik mine complex required?

b) How flexible will the 90% threshold be if it means ZOI analysis rarely happens? Could a lower threshold still give useful information?

2021 WILDLIFE MONITORING REPORT

EMAB reported on the 2021 Wildlife Monitoring Report in the 2021-22 EMAB Annual Report. ECC also made comments on the report. This report was submitted before the WMMP was approved by ECC, so does not require approval of the Minister. At the time of writing last year's report, Diavik had not responded to comments. Below is a summary of EMAB recommendations and Diavik responses.

SUMMARY OF KEY EMAB RECOMMENDATIONS AND DIAVIK RESPONSES:

ZONE OF INFLUENCE

EMAB RECOMMENDATION: EMAB hopes to see yearly estimates of the affected area as the Mine gets closer to closing down.

DIAVIK RESPONSE: Diavik follows Diavik's Wildlife Management and Monitoring Plan (WWMP) to track ZOI. Diavik will analyze annual ZOI patterns using collared caribou data based on ZOI Technical Task Group guidelines. Previous data (2009 to 2017) showed varying patterns, with some years caribou avoiding the mine and others show caribou were attracted to it.

EMAB RECOMMENDATION: Provide yearly estimates of the ZOI size to EMAB. This will allow us to monitor changes during Mine closure and reclamation more frequently, rather than waiting for the Comprehensive Wildlife Monitoring Reports every three years.

DIAVIK RESPONSE: ZOI monitoring won't be included in annual reports as it doesn't affect Diavik Mine operations. Instead, ZOI estimates will follow the schedule in the WMMP (DDMI 2021).

2022 WILDLIFE MONITORING REPORT

Diavik submitted their 2022 Wildlife Monitoring Report (WMR) to EMAB and ECC-Wildlife on May 1, 2023. EMAB has commissioned Management and Solutions in Environmental Science Inc. (MSES) to do a technical reviewof the report was still in progress at time of writing.

ENVIRONMENTAL AIR QUALITY MONITORING PROGRAM

Diavik's Environmental Air Quality Monitoring Program (EAQMP) started in 2012. The program is required by the EA, but is not required by the water licence, or reviewed/ approved by the WLWB. Diavik submits an EAQMP report annually to EMAB and the GNWT for review

2021 EAQMP ANNUAL REPORT

Diavik submitted its 2021 EAQMP in July 2022. EMAB had Arcadis do a technical review of the annual report and submitted 5 recommendations to Diavik on January 6, 2023. ECC also provided comments to Diavik on the 2021 EAQMP report. For a full list of recommendations on Diavik's 2021 EAQMP visit our website: **www.emab.ca**.

SUMMARY OF KEY EMAB RECOMMENDATIONS

DUSTFALL MONITORING

Diavik monitors dustfall at the mine. Dustfall is the amount of total suspended particulate (TSP) that falls out of the air and settles on the ground. Larger, heavier particles are not able to travel as far, and settle closer to the mine, while smaller dust particles can be carried farther from the mine by the wind. Diavik measures dustfall at different distances from the mine. Diavik collects dust with dust gauges and snow core samples, and tests for chemicals in the dust. Dustfall and snow core monitoring show that A21 open pit operations are impacting dust levels off-site.

The report showed that the main source of dust was from unpaved roads and the airstrip, and mining of the A21 open pit.

EMAB RECOMMENDATION: A detailed comparison of monitored and modelled dustfall should be included with the EAQMP Report.

DIAVIK RESPONSE: Comparing modeled and measured dustfall rates yearly has limited value. The model used one year of weather data (2002) that may not be representative of other years. Wind variability causes different dust deposition rates each year. Mining changes emission rates and locations, and the modeled year (2015) differs from other years. The dustfall rates at measurement sites reflect yearly variations. Some sites were excluded from the model's results, and background dust rates were underestimated by assuming zero deposition.

AIR EMISSIONS

Diavik calculates air emissions as part of the EAQMP.

EMAB RECOMMENDATION: Details of the National Pollutant Release Inventory (NPRI) and Green House Gas (GHG) calculations should be included in the report, or a reference to an external document containing such details, to allow for validation of methods and quantities reported. Diavik should show all its work in deriving the numbers (inputs and calculation methodology).

DIAVIK RESPONSE: Diavik uses equations from the most current Quantifications Requirement document available on the Canada.ca webpage to calculate emissions reported through the GHGRP. Diavik gave a more in depth explanation on NPRI and GHG emissions, outlining specific equations used for the calculations.

MINISTERS' REVIEW OF EAQMMP 2.0 AND GNWT AIR QUALITY GUIDELINE

EMAB requested the Minister investigate Diavik's EAQMP on July 31, 2020. Our technical analysis showed the program was inadequate. The Minister agreed to investigate but decided GNWT would develop an Air Quality Guideline first. The Guideline was finalized in April 2023. EMAB made comments on the draft Guideline, and was pleased with the final version.

The Guideline covers four main aspects of air quality monitoring:

- Meteorological monitoring (monitoring the weather conditions).


EMAB Photo

Photo Taken of Mine From TK Camp on a Clear Day


EMAB Photo

Photo Taken of Mine From TK Camp on a Dusty Day

Photo courtesy of Diavik Diamond Mine

Dust Gauge at Site 7 in Winter

- Particulate matter (PM) monitoring:
  - Particulate matter is tiny particles and droplets suspended in the air, such as dust, smoke, and vehicle emissions. They can impact human health and air quality. The guideline requires monitoring of Total Suspended Particulates (TSP) and PM2.5 (particulate matter 2.5 micrometers or smaller). TSP is a measure of all solid and liquid particles in the air.
- Dustfall monitoring.
- Monitoring of sulfur dioxide and nitrogen dioxide.

EMAB's main concern about Diavik's EAQMMP was that they stopped monitoring TSP.

After finalizing the Guideline, the Minister announced that the GNWT-ECC will investigate Diavik's Environmental Air Quality Management and Monitoring Program (EAQMMP). They will review the program based on their Guideline, the Environmental Agreement, and the commitments made by Diavik in the Comprehensive Study Report. Once the investigation is complete, the Minister will decide if Diavik's EAQMMP meets the Guideline. There is no specific timeline for the Minister's determination, but Diavik will have 60 days to respond after the decision is made.

On July 25, 2023 Diavik informed GNWT that they had proposed collaborating with EMAB on revising the EAQMMP, to address inadequacies identified by EMAB. On August 1, 2023 Diavik wrote to EMAB inviting us to collaborate with them to revise the EAQMMP. EMAB will follow up this issue with Diavik and ECC, and keep readers updated on any revisions to Diavik's air quality monitoring.

YELLOW HAZE

EMAB has raised concerns about the yellow haze over Diavik during the cold winter months for several years. In March 2020, EMAB recommended Diavik sample the yellow haze. Diavik responded that they were unaware of a yellow haze phenomenon, and that they have not seen a yellow haze over the mine.

EMAB's technical experts at Arcadis say it's likely that the yellow haze is due to air pollution related to combustion (nitrogen oxides from vehicle exhaust, generators, boilers etc.) during temperature inversion conditions.

Temperature inversions happen during calm periods in the winter, where heat from the sun warms the air near the ground. Overnight, the ground temperature drops, and the warm air is replaced with cold air. The warmer air rises and acts like a lid, trapping the cool air, and any pollution, like vehicle exhaust. This layer of warmer air is called an inversion layer.

EMAB recommended Diavik sample for nitrogen dioxide (NO_2) and take picture to know if the sample was taken during a yellow haze event. This way Diavik can compare levels of NO_2 during yellow haze events and when there is no yellow haze.

In July 2022, EMAB sent Diavik a recommendation to sample the yellow haze for the fourth time.

SUMMARY OF EMAB RECOMMENDATIONS AND DIAVIK RESPONSES

EMAB RECOMMENDATION: Diavik should develop and share a yellow haze monitoring plan with EMAB. The plan should cover monitoring duration, frequency, locations based on EMAB suggestions, and any sampling limitations.

EMAB RECOMMENDATION: The monitoring plan should have daily air quality sampling and visual confirmation. It should include the coldest months of the year, December to March.

EMAB RECOMMENDATION: The plan should ideally have four recommended sampling locations but can be adjusted if needed. The remaining locations should be in active areas like the camp, haul roads, or near the pits.

Diavik decided to place the proposed sampling program on hold until the GNWT Air Quality Monitoring Guidelines were ready. Now these guidelines are available, EMAB expects Diavik will use them to plan their air quality monitoring, including checking for Yellow Haze.

Diavik has not provided any update on Yellow Haze monitoring at time of writing this report. EMAB will follow up this issue with Diavik and the ECC.

ENVIRONMENTAL AGREEMENT ANNUAL REPORT

As part of the EA, Diavik must submit an Annual Report to the Parties, the Government of Nunavut, and EMAB. The purpose of the Environmental Agreement Annual Report (EAAR) is to summarize the mine's activities and results of the environmental monitoring programs from the past year. The EAAR must be approved by the Minister. The purpose of the EAAR is to summarize the mine's activities and results of the environmental monitoring programs from the past year.

Diavik submitted their draft 2021 EAAR on July 12, 2022. EMAB reviewed the report and submitted 13 recommendations. All recommendations can be found on EMAB's website.

EMAB's main concern was Diavik's justification for stopping TSP monitoring.

Diavik sent a revised EAAR on September 12, 2022 to EMAB and the Minister. EMAB stated that our comments had been adequately addressed.

MINISTER DECISION: On December 21, 2022 the Minister determined that the 2021 EAAR was satisfactory.

REPORT CARD ON DIAVIK AND THE REGULATORS

EMAB's mandate includes oversight of the regulatory process. This section summarizes how Diavik and other Parties have responded to EMAB recommendations. It also summarizes the level of engagement of the various regulators responsible for the Diavik file.

WATER LICENCE

Diavik's responsiveness to EMAB recommendations last year has been good with respect to issues related to its water licence, including closure planning. Diavik has responded promptly and thoroughly to EMAB's recommendations as made through the WLWB review process.

Regulator responses to Diavik's requests and reports has been variable (see Table of Reviewer Responses below).

Haul Truck

Fox

Since 2015 EMAB has been expressing concern about the involvement of two key federal government departments in the review of monitoring reports and management plans related to Diavik's Water Licence. EMAB's view is that both the Department of Fisheries and Oceans, and Environment and Climate Change Canada have an important role to play in providing oversight on Diavik's impact on the air and water in the Diavik mine area. EMAB has recommended ECCC, and DFO in particular, be more active in making comments and recommendations. EMAB continues to be disappointed by DFO's lack of substantive comment on reports that bear on the health of fish and fish habitat.

EMAB met with DFO at the June 2023 Board meeting. We discussed our concern that DFO doesn't review very many reports and documents from Diavik that relate to fish and fish habitat. DFO stated that the Designation Order assigning ECCC with responsibility for commenting on effects of contaminants on fish and fish habitat still stands. Where issues overlap, DFO works with ECCC. DFO suggested that EMAB present any concerns about this process to DFO in writing.

DFO commented on one of the five documents listed in the Table of Reviewer Responses. They did not intervene at the Water Licence Amendment Proceeding for Natural Drainages, although they did attend the hearing as well as the Technical Session.

EMAB notes that DFO has an ongoing process to implement the amended *Fisheries Act* and it is our hope that this renewed interest will also result in greater DFO engagement in reviewing reports from Diavik under their Water Licence.

This year ECCC commented on two of the reports listed. They intervened at the Water Licence Amendment Proceeding for Natural Drainages, and participated in the Technical Session.

ECC Waters commented on all the reports we looked at and fully participated in the Natural Drainages Water Licence Amendment Proceeding. We commend their continued thorough and substantive reviews of the Diavik Water Licence plans and reports.

Similarly, the WLWB consistently provides detailed reviews of all documents submitted by Diavik for review.

TABLE OF REVIEWER RESPONSES

Report	Reviewer			
	ECCC	DFO	ECC	EMAB
FCRP	commented	commented	commented	commented
Closure Progress Report - 2021	no comment	no comment	commented	commented
AEMP Reference Conditions Report 2	no comment	no comment	commented	commented
Water Licence Amendment – Natural Drainages	commented	no comment	commented	commented
Water Licence Hearing – Natural Drainages	intervened	no intervention	intervened	intervened
PKC Management Plan 7	no comment	no comment	commented	commented

We note that the WRRB has made submissions on a number of water licence report reviews stating that they had no comments.

We were very pleased with the input from regulators on the FCRP, and particularly note that ECC included review of Diavik's Closure Wildlife Monitoring and Closure Air Quality Monitoring.

The Inspector visited the Diavik mine site ten times during the year. The Inspector made two presentations to EMAB throughout the year on the results of the inspections. The Inspector did not comment on Diavik's water licence amendment application for Natural Drainages, or intervene at the hearing, but did attend the Technical Session. He did not comment on any other reports.

WLWB has been reducing the time period for reviews, which has occasionally made it difficult for EMAB to engage consultants, provide adequate time for consultants to undertake technical reviews, receive and review technical reviews from consultants and approve them for submission to WLWB. In general the WLWB has accommodated EMAB where review period extensions were required. However EMAB is concerned that shorter review periods also make it more difficult for organizations with limited capacity to make comments, particularly small communities.

WILDLIFE MONITORING

The improvement in Diavik's responses to EMAB's recommendations on wildlife monitoring continued in 2022-23, following implementation of EMAB's recommendation tracking system.

- Diavik's responses on the 2021 WMP report and the 2021 WMMP Addendum were within the 60 day period required by the Environmental Agreement (EA).
- Diavik did not approach EMAB to collaborate on improving the caribou behavior monitoring program as directed by ECC as Condition 6 of its approval of Diavik's WMMP.

ECC-Wildlife involvement with Diavik's wildlife monitoring was variable in 2022

- ECC reviewed the 2021 WMP report.
- ECC was eight months late responding to EMAB's recommendations on the 2020 WMP report.
- ECC was eight and six months late responding to EMAB's recommendations on the draft WMMP – EMAB made the recommendations in September 2021 and December 2021 and ECC responded in July 2022.


Photo courtesy of Diavik Diamond Mine

- ECC responded within 60 days to EMAB's recommendations on the revised draft WMMP.
- There was some uncertainty among EMAB, Diavik and GNWT on the review process and timing for Diavik's WMMP Addendum and ZOI Analysis Methods. GNWT committed to establish a review system for WMMP documents similar to WLWB Online Review System.

AIR QUALITY MONITORING

Diavik's response to EMAB's recommendations on air quality monitoring continued to be satisfactory in 2022-23, following implementation of EMAB's recommendation tracking system.

Diavik submitted the 2021 EAQMP report and EMAB's review is discussed earlier in this report. EMAB made 5 recommendations and Diavik's response was within the 60 day period required by the EA.

ECC also made comments to Diavik on the 2021 EAQMP report.

As reported in EMAB's 2020-21 Annual Report, and updated earlier in this report, EMAB requested the Minister investigate whether Diavik's Air Quality Monitoring Program was adequate. This request was made in July 2020. ECC finalized an Air Quality Guideline in early 2023 and has completed a draft of its investigation of Diavik's air quality monitoring program. Diavik has invited EMAB to collaborate with them on revisions to the air quality monitoring.

INSPECTOR'S AUTHORITY TO GIVE DIRECTION

The delay in ECC's legislative updates means that any change to section 67(1) of the *Waters Act* will also be delayed. We believe the changes previously proposed by ECC would resolve our concern about possible limitations on the Inspector's authority to give direction to Diavik in the current wording of the Act. We trust that ECC will advance this change as soon as reasonably possible (see 2016-17 Annual Report for details on this issue).

COMMUNICATIONS

ANNUAL GENERAL MEETING (AGM)

Each fall, we hold our AGM in our Yellowknife office boardroom. Parties to the Environmental Agreement are invited to attend and provide input on EMAB's activities and direction. In 2022, EMAB's AGM was delayed until October. We held our AGM through a combination of virtual and in-person participation. The Executive were: Charlie Catholique: Chair, Jack Kaniak: Vice Chair and Violet Camsell-Blondin: Secretary-Treasurer.

EMAB DIRECTORS

EMAB Directors are one of the main ways EMAB communicates with Affected Communities. Our Directors are responsible for updating communities on what is going on at Diavik and bringing any concerns and questions about the environment at Diavik back to EMAB. Due to funding reductions from Diavik, and lack of uptake, EMAB has cut back the budget that covers Director consultation in communities.

COMMUNITY MEETINGS

As discussed in the section on Involving and Supporting Communities, EMAB holds public updates in the communities of the Aboriginal Parties. The goal is to keep people informed and allow them to ask questions and voice opinions and concerns. We did not hold any community updates in 2022-23.

PUBLIC LIBRARY

EMAB is responsible for making sure that people have access to materials that relate to the Environmental Agreement. Anyone interested can visit our office and access plans and reports, expert reviews, correspondence,


EMAB Photo

TK Panel Meeting

Board meeting minutes, maps and images. Our office hours are 9:00 a.m. – 5:00 p.m. Monday to Friday.

Much of our information is also available on our website, **www.emab.ca**

WEBSITE

EMAB's website is another way for EMAB to reach out to the people. We use our website to post our comments and recommendations on Diavik's WMP and EAQMP reports. We also post EMAB Annual Reports, Diavik's EAARs, meeting minutes and correspondence. FCRP/ICRP and AEMP comments can be found on the WLWB public registry. You can visit us at our website, **www.emab.ca** and our Facebook page, **facebook.com/EMAB2015**.

ANNUAL REPORT

EMAB circulates its annual report and a plain language summary to all Parties to the Environmental Agreement, as well as key leaders in the Affected Communities and throughout the NWT.

BROCHURE AND POSTER

EMAB has a brochure and poster summarizing our work. These are available on request.

EMAB GOVERNANCE AND OPERATIONS

Photo courtesy of Diavik Diamond Mine

Monitoring

The Board met six times in 2022-23 as a combination of face-to-face meetings and teleconferences. The Annual General Meeting took place October 5, 2022. The Board passed 31 email motions over the year.

Government of the Northwest Territories appointed Kelly Fischer to replace Ngeta Kabiri in October, 2022. All other members are continuing, and Canada's seat remains vacant.

BUDGET AND FINANCE

EMAB's budget for 2022-23 was $637,475; EMAB spent $645,486 during the year. We received an additional $58,000 that was in dispute after Diavik deducted the amount from its 2021-22 payment. EMAB had requested the funds roll over from the 2020-21 fiscal year to 2021-22 but Diavik disagreed. The dispute continued for over a year before Diavik decided to return the funds to EMAB in November 2022.

EMAB negotiates its budget with Diavik every two years, for the following two years. At the end of the two-year period any surplus must be returned to Diavik, except as agreed between Diavik and EMAB. The Environmental Agreement says that EMAB will try to keep any increases to the rate of inflation. EMAB recommends a budget to Diavik that we both have to agree on. If there is no agreement Diavik submits its own proposed budget to the Minister and he can choose EMAB's or Diavik's.

EMAB and Diavik did not agree on the 2023-25 budget. This was largely due to estimated costs of participating in the Natural Drainages Water Licence Amendment proceeding and the review of Diavik's Final Closure Plan, in 2023. These costs increased the budget slightly above

the estimated rate of inflation. Diavik and EMAB informed the Minister that we disagreed, and with GNWT's assistance we were able to come to an agreement in February 2023. Key points of the agreement were:

- Diavik agreed to a base payment of $563,100; an increase that equaled the rate of inflation.
- Diavik agreed to provide additional funding to cover estimated costs of participating in the Water Licence Hearing, with an initial payment of $10,000.
- EMAB and Diavik also agreed to remove the budget for review of unanticipated reports, with Diavik committing to providing additional funding for any unanticipated report reviews.
- EMAB and Diavik agreed to reduce the budget for review of a revised version of the FCRP in 2024-25 with a commitment from Diavik to provide any necessary additional funding once costs are known.
- Diavik agreed to consider providing additional funding for a workshop on the 2021 TK Fish Camp.

DIAVIK SITE VISIT

Board members and staff toured the Diavik site in June 2022 along with community members as part of Diavik's Closure Plan Information Sessions. We were able to see a great deal of work on progressive reclamation of the North Country Rock Pile, and some trial work on covering the PKC.

Site Visit 2022

ACTION PLAN

EMAB finalized and adopted an Action Plan for 2019-24 during 2019. Much of the plan aims at continuing EMAB's ongoing approach of focusing on technical reviews of key Diavik plans and reports, and keeping Affected Communities and others informed about activities at Diavik, and any issues or concerns. Some key changes to the plan include:

- Providing 1-2 page meeting summaries to Parties; these are now sent after each meeting.
- Continuing assessment of Diavik response to TK Panel recommendations; this is ongoing.
- Developing a 1-page summary of the role of EMAB Board members; this is ongoing.
- Addressing potential for conflict of interest at Board meetings through a broader COI policy; this has been finalized with legal advice.

EMAB will conduct a workshop on the Future Role of EMAB in 2023-24 that will provide a basis for updating the Action Plan.

CONFLICT OF INTEREST

The Board discussed the potential for conflict of interest where a member's Party may have a financial interest in a decision, along with expanding EMAB's current COI policy. The revised COI policy was finalized in August 2022.

ENVIRONMENTAL AGREEMENT

The Environmental Agreement (EA) applies while the mine is producing diamonds, and until full and final reclamation and abandonment, including completion

EMAB Photo

Wind Turbine at Diavik

of post-closure monitoring and maintenance. Once the mine stops production, in early 2026, the Minister can consult with the Parties and decide to reduce Diavik's duties under the EA as much as he feels is reasonable. The Minister can also set a schedule for winding EMAB down at that time.

EMAB's view is that the Board should continue to operate until closure is completed successfully. Board members are thinking about how EMAB's role will change during closure. We have contacted the Parties to find out whether they agree that EMAB should continue. So far four Parties have said they support EMAB continuing and we have not heard back from the other four.

In August 2022 Diavik requested the Minister start consultations on what will happen with EMAB and the EA after production stops. The Minister said his consultation will start after Diavik finishes producing diamonds, and suggested that Parties could make proposals about changes to the EA for discussion, before then.

In January 2023 Diavik invited the Parties to meet to discuss possible changes to the EA after closure, and especially to discuss a TK Monitoring Plan for Closure. The discussions led to forming two Working Groups:

- A TK Working Group to develop a TK Monitoring Plan for Closure with Diavik organizing the first meeting.
    - › The WG has met several time since and are developing a Terms of Reference and a job description for an Executive Director.
- An EA Working Group (EA WG) to consider possible updates to the EA.
    - › EMAB to hold a session to consider changes to its role and make recommendations to EA Working Group as a first step.

GNWT proposed amendments to the EA in 2013 to reflect the transfer of powers from Canada to GNWT under devolution. The draft Environmental Agreement amendments were circulated to the Parties to the Environmental Agreement for review and comment. Only one Party agreed to the proposed amendments to date. This process appears to be on hold and GNWT may not continue to pursue it. GNWT will respond to requests from Parties.

OPERATIONS

Dylan Price was EMAB's Environmental Specialist until July; Mohannad Elsalhy replaced him in August 2022. John McCullum has been the Executive Director since November 2015.

EMAB's Operations Manual was reviewed and updated.

WHAT ARE EMAB'S PLANS

Our priorities for 2023-24 will continue to focus on closure plan developments and the Diavik Natural Drainages Water Licence Amendment proceeding. Other planned activities include:

OVERSIGHT AND MONITORING

Continue to participate in the Natural Drainages Water Licence Amendment proceeding.

Continue to participate in ECC Ministerial investigation of adequacy of current Environmental Air Quality Monitoring Program.

Track Wildlife Management and Monitoring Program revisions submitted to ECC by Diavik.

Continue participation in GNWT-Lands (now ECC) initiative to develop regulations for the *Public Lands Act*.

Continue participation in ECC initiative to revise environmental legislation including the *Waters Act* and *Environmental Protection Act*.

Continue to monitor and participate in development of GNWT policy on security and long-term liability and monitoring for closed mine sites.

Review Reports:

- 2023 AEMP Annual Report
- 2020 – 2023 AEMP Re-evaluation Report
- 2023 Annual WMMP Report

Aerial of Diavik Diamond Mine

- 2023 EAQMP Report
- FCRP Revisions
- 2023 EAAR

ABORIGINAL AND COMMUNITY INVOLVEMENT

- Engage Communities through Board members and community update meetings.
- Assess implementation of TK Panel Recommendations including assessment of Diavik response and follow-up

COMMUNICATIONS

- Annual Report
- Website
- Public Registry
- Facebook Page
- Meeting Summaries

GOVERNANCE

- Hold regular meetings
- Oversee EMAB operations
- Review and continue to implement Action Plan for 2019-24, taking into account outcome of workshop on Future Role of EMAB

AUDITED FINANCIAL STATEMENTS

To the Board of Directors of
Environmental Monitoring Advisory Board

Opinion
We have audited the financial statements of Environmental Monitoring Advisory Board, which comprise the statement of financial position as at March 31, 2023, and the statements of operations, changes in net assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies and other schedules and supplementary information.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the organization as at March 31, 2023, and its results of operations and its cash flows for the year then ended in accordance with ASNPO.

Basis for Opinion
We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the organization in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements
Management is responsible for the preparation and fair presentation of the financial statements in accordance with ASNPO, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the organization's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the organization or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the organization's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements. As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the organization's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the organization's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the organization to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

EPR Yellowknife Accounting Prof. Corp.

Yellowknife, NWT
October 20, 2023

EPR Yellowknife Accounting Professional Corporation
Chartered Professional Accountants

ENVIRONMENTAL MONITORING ADVISORY BOARD
Statement of Operations
For the year ended March 31, 2023

	2023 Budget	2023 Actual	2022 Actual
Revenues			
Diavik Diamond Mines Inc.	$ 426,711	$ 484,711	$ 527,300
Transfer to deferred revenue - annual surplus	-	144,987	(95,630)
Transfer to (from) deferred revenue	153,630	61,777	(111,134)
Contributions repaid (repayable)	111,134	(61,777)	111,134
Interest income	4,000	3,898	1,044
	695,475	633,596	432,714
Expenditures			
Amortization	-	3,484	3,665
Administration, Schedule 1	70,361	72,930	71,249
Management Services, Schedule 2	218,900	216,471	185,798
Governance, Schedule 3	131,845	124,140	98,011
Oversight and monitoring, Schedule 4	239,044	211,822	67,277
Involving and supporting communities, Schedule 5	25,125	-	-
Communications, Schedule 6	10,200	8,233	10,379
	695,475	637,080	436,379
Surplus (deficit) before transfer of capital items	-	(3,484)	(3,665)
Other item			
Transfer to Tangible Capital Asset Fund	-	3,484	3,665
Surplus for the year	$ -	$ -	$ -

ENVIRONMENTAL MONITORING ADVISORY BOARD
Statement of Changes in Net Assets
For the year ended March 31, 2023

	Operating Fund	Tangible Capital Asset Fund	Total 2023	Total 2022
Balance, opening	$ -	$ 17,535	$ 17,535	$ 21,200
Surplus	-	-	-	-
Amortization	(3,484)	-	(3,484)	(3,925)
Transfer from operating fund	3,484	(3,484)	-	-
Balance, closing	$ -	$ 14,051	$ 14,051	$ 17,535

ENVIRONMENTAL MONITORING ADVISORY BOARD
Statement of Financial Position
As at March 31, 2023

		2023		2022
ASSETS				
Current				
Cash	$	-	$	23,348
Prepaid expenses		5,547		1,278
Restricted cash (Note 3)		763,179		644,173
		768,726		668,799
Tangible Capital Assets (Note 4)		14,050		17,534
	$	782,776	$	686,333
LIABILITIES				
Current				
Bank indebtedness (Note 5)	$	16,731	$	-
Accounts payable and accrued liabilities (Note 6)		117,117		35,323
Deferred revenue (Note 7)		573,100		633,475
Contributions repayable (Note 8)		61,777		-
		768,725		668,798
Net Assets		14,051		17,535
	$	782,776	$	686,333

APPROVED ON BEHALF OF THE BOARD

Member

Member

ENVIRONMENTAL MONITORING ADVISORY BOARD
Statement of Cash Flows
For the year ended March 31, 2023

	2023	2022
Operating activities		
Surplus	$ -	$ -
Change in non-cash working capital items		
(Increase) decrease in prepaid expenses	(4,269)	2,437
Increase (decrease) in accounts payable and accrued liabilities	81,794	(41,567)
(Decrease) increase in deferred revenue	(60,375)	106,175
Increase (decrease) in contributions repayable	61,777	(111,134)
Increase (decrease) in cash	78,927	(44,089)
Cash, opening	667,521	711,610
Cash, closing	$ 746,448	$ 667,521

1. ORGANIZATION AND JURISDICTION

Environmental Monitoring Advisory Board (the "Board") is a not-for-profit organization established as a requirement of the *Diavik Environmental Agreement.* It aims to provide a meaningful role for Aboriginal People in the review and implementation of environmental monitoring plans with respect to the Diavik Diamond Mine site in the Northwest Territories. The Board will be in place until full and final reclamation of the mine is complete.

The Board is exempt from income tax under section 149(1)(l) of the *Income Tax Act*.

2. SIGNIFICANT ACCOUNTING POLICIES

The Board applies the Canadian accounting standards for not-for-profit organizations.

(a) *Financial instruments*

The Board initially measures its financial assets and liabilities at fair value. The Board subsequently measures its financial assets and financial liabilities at amortized cost, except for securities quoted in an active market, which are subsequently measured at fair value.

Financial assets measured at amortized cost include cash and restricted cash. Financial liabilities measured at amortized cost include accounts payable and accrued liabilities.

At the end of each reporting period, management assesses whether there are any indications that financial assets measured at cost or amortized cost may be impaired. If there is an indication of impairment, management determines whether a significant adverse change has occurred in the expected timing or the amount of future cash flows from the asset, in which case the asset's carrying amount is reduced to the highest expected value that is recoverable by either holding the asset, selling the asset or by exercising the right to any collateral. The carrying amount of the asset is reduced directly or through the use of an allowance account and the amount of the reduction is recognized as an impairment loss in operations. Previously recognized impairment losses may be reversed to the extent of any improvement. The amount of the reversal, to a maximum of the related accumulated impairment charges recorded in respect of the particular asset, is recognized in operations.

(b) *Fund accounting restricted*

The Board uses fund accounting to segregate transactions between its Operating Fund and Tangible Capital Asset Fund. The Operating Fund accounts for the Board's operating and administrative activities. The Tangible Capital Asset Fund reports the assets, liabilities, revenues and expenses related to tangible capital assets.

(c) *Tangible capital assets*

Tangible capital assets are recorded at original cost plus any costs of betterment less accumulated amortization and excludes any assets not in current use. Amortization is calculated when the tangible capital assets are ready in use by the declining balance at rates set out in note 4.

2. SIGNIFICANT ACCOUNTING POLICIES, continued

(d) *Revenue recognition*

The Board follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and its collection is reasonably assured. Contributions which are not expensed in the current year are set up as deferred funding to be used in the future year when services are provided and goods acquired or refundable contributions that must be repaid to the contributor. Interest income is recognized on the basis of the time funds are in the account and interest is accrued.

(e) *Unexpended funds*

On January 16, 2011 an Arbitration Award findings resulted in a change in accounting policy for the recognition and treatment of unexpended funds. Previously the Board classified the unexpended funds as unrestricted net assets. Beginning in 2011, unexpended funds are classified as net unexpended contributions repayable or deferred revenue. The Board may not accumulate unrestricted net assets from unexpended Diavik Diamond Mines Inc.

(f) *Allocated expenses*

The Board allocates expenditures according to its activities. Expenditures are allocated to Administration, Management Services, Board, Science Program, Involving and Supporting Communities and Communication.

(g) *Cash and cash equivalents*

Cash and cash equivalents consist primarily of cash in chequing account and restricted cash.

(h) *Use of estimates*

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. By their nature, these estimates are subject to measurement uncertainty. The effect of changes in such estimates on the financial statements in future periods could be significant. Accounts specifically affected by estimates in these financial statements are prepaid expenses, accounts payable and accrued liabilities, deferred revenue and contributions repayable..

3. RESTRICTED CASH

Restricted cash represents cash received from Diavik Diamond Mines Inc. that is intended for a specific purpose or represents the amount to repay.

	2023	2022
Carried forward funding	$ 336,468	$ 116,873
Cash received in advance for the 2021/2022 fiscal year	-	527,300
Cash received in advance for the 2022/2023 fiscal year	426,711	-
	$ 763,179	$ 644,173

4. TANGIBLE CAPITAL ASSETS

			2023	2022
	Cost	Accumulated amortization	Net	Net
Office equipment	$ 33,017	$ 32,635	$ 382	$ 546
Furniture and fixtures	24,209	23,603	606	866
Computer equipment	81,575	68,513	13,062	16,122
	$ 138,801	$ 124,751	$ 14,050	$ 17,534

5. BANK INDEBTEDNESS

The bank indebtedness balance represents the excess of outstanding cheques over the balance in the operating account as of the year-end date.

	2023	2022
Cash in bank	$ 24,192	$ 23,348
Outstanding cheques in excess of cash	(40,923)	-
	$ (16,731)	$ 23,348

6. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2023	2022
Trade accounts payable	$ 99,366	$ 21,553
Accrued payroll	9,257	7,529
Government remittance	8,494	6,241
	$ 117,117	$ 35,323

7. DEFERRED REVENUE

	Balance, opening	Received	Recognized	Balance, closing
Diavik Diamond Mines Inc.	$ 633,475	$ 573,100	$ (432,714)	$ 573,100

8. CONTRIBUTIONS REPAYABLE

	2023	2022
Diavik Diamond Mines Inc.	$ 61,777	$ -

9. ECONOMIC DEPENDENCE

The Board is dependent upon funding in the form of contributions from Diavik Diamond Mines Inc. Management is of the opinion that if the funding was reduced or altered, operations would be significantly affected. Under the Environment Agreement, $6M of funds is held to ensure that Diavik Diamond Mines Inc. meets all of its obligations

10. FINANCIAL INSTRUMENTS

Interest rate risk

Interest rate is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Board's financial assets that are exposed to interest rate risk consists of cash and restricted cash. The cash flow from variable rate financial instruments fluctuate as market rates of interest change. The risk has not changed from the prior year.

Credit risk

Credit risk is the risk that a third party to a financial instrument might fail to meet its obligations under the terms of the financial instrument. The Board does have credit risk in cash with a chartered bank in excess of the insurable limit throughout the year. Furthermore, the Board has a concentration risk as the full balance of cash is maintained with a single federally regulated financial institution. This risk has not changed from the prior year.

Liquidity risk

Liquidity risk is the risk that the Board cannot repay its obligations when they become due. The Board does have a liquidity risk in the accounts payable and accrued liabilities. the Board reduces its exposure to liquidity risk by ensuring a budget process is in place and through monitoring of expenses. This risk has not changed from the prior year.

11. COMMITMENTS

The Board is commited to a lease of office space until December 31, 2022. The Board has the option to renew the lease for an additional one-year period ended December 31, 2023 with the same terms and conditions. The lease was payable $2,493.75 per month (inc. GST) to December 31, 2021. The lease payable increased January 1, 2022 to $2,543.63 per month (inc. GST), an increase of 2%.

ENVIRONMENTAL MONITORING ADVISORY BOARD
Schedules of Expenditures
For the year ended March 31, 2023

SCHEDULE OF ADMINISTRATION

Schedule 1

	2023 Budget	2023 Actual	2022 Actual
Audit fees	$ 8,160	$ 7,726	$ 7,980
Bank charges and interest	850	1,088	865
Bookkeeping fees	5,900	4,074	4,336
Capital equipment	1,200	1,470	-
Insurance	4,080	4,498	4,319
Janitorial	3,000	1,371	1,005
Library/Publications	200	-	-
Office supplies	2,800	2,970	1,710
Postage and freight	520	426	714
Printing and photocopy	2,200	1,965	1,751
Professional fees	1,200	3,618	6,127
Rent	32,251	32,251	31,650
Repairs and maintenance	1,000	2,518	2,580
Telephone and internet	7,000	8,955	8,212
	$ 70,361	$ 72,930	$ 71,249

SCHEDULE OF MANAGEMENT SERVICES

Schedule 2

	2023 Budget	2023 Actual	2022 Actual
Employee benefits	$ 22,500	$ 14,251	$ 18,485
Employer's costs - CPP, EI, WSCC	12,900	17,880	14,339
Professional development	5,500	895	-
Salaries	178,000	183,445	152,974
	$ 218,900	$ 216,471	$ 185,798

ENVIRONMENTAL MONITORING ADVISORY BOARD
Schedules of Expenditures
For the year ended March 31, 2023

SCHEDULE OF GOVERNANCE **Schedule 3**

	2023 Budget	2023 Actual	2022 Actual
Accommodations	$ 11,000	$ 10,812	$ 5,803
Annual general meeting	1,621	1,621	-
Board of directors training	1,100	-	-
Executive Committee	4,989	9,070	4,475
Honoraria and teleconference	35,385	33,118	22,782
Meeting expenses	1,050	1,046	51
Per diems	9,400	5,710	5,146
Personnel committee	1,250	-	-
Preparation	50,000	47,368	52,871
Transportation	14,800	15,215	6,688
Board equipment	1,250	180	195
	$ 131,845	$ 124,140	$ 98,011

SCHEDULE OF OVERSIGHT AND MONITORING **Schedule 4**

	2023 Budget	2023 Actual	2022 Actual
Aquatic Effects Monitoring Program	$ 36,660	$ 32,164	$ 30,543
Air Quality Management Program	7,500	6,972	8,090
Interim Closure and Reclamation	122,200	107,642	3,570
Other Reviews and Reports	47,939	45,597	9,401
Traditional Knowledge Panel Review	10,216	2,508	-
Wildlife Monitoring Plan	14,529	16,939	15,673
	$ 239,044	$ 211,822	$ 67,277

ENVIRONMENTAL MONITORING ADVISORY BOARD
Schedules of Expenditures
For the year ended March 31, 2023

SCHEDULE OF INVOLVING AND SUPPORTING COMMUNITIES **Schedule 5**

	2023 Budget	2023 Actual	2022 Actual
Board member consultation honoraria	$ 4,900	$ -	$ -
Kitikmeot Inuit Association	6,550	-	-
Lutsel K'e	5,950	-	-
North Slave Metis Alliance	1,925	-	-
T'licho Government	3,300	-	-
Yellowknives Dene First Nation	2,500	-	-
	$ 25,125	$ -	$ -
Advertising, public relations and promotions	$ 1,800	$ 1,504	$ 371
Annual report	8,400	6,099	10,008
Website maintenance	-	630	-
	$ 10,200	$ 8,233	$ 10,379

EMAB RECOMMENDATIONS

EMAB RECOMMENDATIONS TABLE 2022-23

Reference Conditions Report 2.1
EMAB submitted 1 recommendation to Diavik via the WLWB on Reference Conditions Report 2.1. Highlights can be found on page 28. The complete list of recommendations can be found on the WLWB Public Registry.

Water Licence Amendment: Progressive Reclamation
EMAB submitted 1 recommendations to the WLWB on a Request for Ruling on the Water Licence Amendment: Progressive Reclamation. See pages 30-31. The complete list of recommendations can be found on the WLWB Public Registry.

Water Licence Amendment: Natural Drainages
EMAB submitted comments on Diavik's Amendment Application for Natural Drainages; EMAB also submitted an intervention to the water licence hearing.

EMAB submitted 110 recommendations to Diavik via the WLWB on the Water Licence Amendment Application for Natural Drainages. Highlights can be found on pages 31-39. The complete list of recommendations can be found on the WLWB Public Registry.
EMAB submitted 104 recommendations to the WLWB in our intervention to the water licence hearing. Highlights can be found on pages 33-34. The complete list of recommendations can be found on the WLWB Public Registry.

2021 Closure and Reclamation Plan Progress Report
EMAB submitted 24 recommendations to Diavik via the WLWB on the 2021 CRP Progress Report. See page 43. The complete list of recommendations can be found on the WLWB Public Registry.

PKC Management Plan 7.0
EMAB submitted 15 recommendations to Diavik via the WLWB on the PKC Management Plan 7.0. See pages 40-42. The complete list of recommendations can be found on the WLWB Public Registry.

MVLWB Enagagement Policy
EMAB submitted 1 recommendation to the MVLWB on the draft Engagement Policy. See pages 42. The complete list of recommendations can be found on the WLWB Public Registry.

Final Closure and Reclamation Plan (FCRP 1.0)
EMAB submitted 300 recommendations to Diavik via the WLWB on FCRP 1.0. Highlights can be found on pages 44-49. The complete list of recommendations can be found on the WLWB Public Registry.

2021 EAAR
EMAB submitted 13 recommendations to Diavik on the DRAFT 2021 EAAR. Diavik addressed most of the recommendations so EMAB did not comment on the Final Version of the 2021 EAAR. Highlights can be found on page 59. The complete list of recommendations can be found on our website: www.emab.ca.

Yellow Haze Monitoring

EMAB submitted 3 recommendations to Diavik on Yellow Haze monitoring. Highlights can be found on pages 58-59. EMAB's recommendations and Diavik's responses are listed below. EMAB's technical review of this document can be found on our website: www.emab.ca.

EMAB Recommendation	Diavik Response
DDMI-EAQ-29: Diavik should develop and share with EMAB an air quality monitoring plan stating the duration, frequency and the locations of the proposed monitoring based on previous EMAB recommendations, and any conditions that would prevent sampling.	DDMI has decided to place the previously proposed sampling program on hold until the GNWT Air Quality Monitoring Guidelines are developed. DDMI intends to use the guidelines, once developed, to inform the approach to air quality monitoring including for NOx, if appropriate.
DDMI-EAQ-30: The monitoring plan should include daily air quality sampling and visual confirmation, and should cover at least the coldest parts of the year (e.g., December-March).	DDMI has decided to place the previously proposed sampling program on hold until the GNWT Air Quality Monitoring Guidelines are developed. DDMI intends to use the guidelines, once developed, to inform the approach to air quality monitoring including for NOx, if appropriate.
DDMI-EAQ-31: The monitoring plan should ideally include the 4 recommended sampling locations, but may be adapted based on practicability. If sampling locations are reduced, the locations that are kept should be in the areas of most activity on site (i.e., camp area, haul roads, or near the pits).	DDMI has decided to place the previously proposed sampling program on hold until the GNWT Air Quality Monitoring Guidelines are developed. DDMI intends to use the guidelines, once developed, to inform the approach to air quality monitoring including for NOx, if appropriate.

2021 EAQMP Report

EMAB submitted 5 recommendations to Diavik on the 2021 EAQMP Report. Highlights can be found on pages 56-57. EMAB's recommendations and Diavik's responses are listed below. EMAB's technical review of this document can be found on our website: www.emab.ca.

EMAB Recommendation	Diavik Response
DDMI-EAQ-32: With the unknown source for the elevated dustfall estimated at Dust 11, EMAB recommends introduction of two (2) temporary stations to the north and east of the current Dust 11 station location, where the source of the dust can likely be verified..	The source of dust captured by station Dust 11 is not unknown, and is due to its proximity to the Waste Rock Storage Area - South Country Rock Pile (WRSA-SCRP). The WRSA-SCRP is the site of A21 waste rock deposition, as well as blasting/remining of deposited waste rock and subsequent haulage for construction activities onsite. This will be clarified in the 2022 EAQMR. Results have been elevated at station Dust 11 since the initial construction of the WRSA-SCRP in 2018. No further verification is required.
DDMI-EAQ-33: Data pertaining to meteorological observations and records of on-site activities, including any visual dust observation and mitigation logs, be used to document the cause/rationale for events of high dustfall values measured at the various stations..	Increases in dustfall values are related to A21 open pit mining and related WRSA-SCRP deveopment, and are all below historic observations from dust stations near to the A418/A154 pits during their open pit mine stages. Further evaluation is not required. Additionally, DDMI would like to clarify that the exceedances of the Alberta Ambient Air Quality objective for residential and recreational areas at Dust Stations 3, 10, and 11 flagged by Arcadis is neither unexpected nor unacceptable for locations immediately adjacent to an operating open pit mine and waste rock pile. There were no exceedances of the objective for industrial locations.

EMAB Recommendation	Diavik Response
DDMI-EAQ-34: A detailed comparison of monitored and modelled dustfall should be included within the EAQMP Report.	Comparing modelled and measured dustfall rates is of limited value on a year-to-year basis for a number of reasons, and is not being considered by DDMI. The model was run for one year of meteorology (2002) that is not necessarily representative of any other specific year. Wind speed and direction are naturally variable, which will result in spatially varying dust deposition rates from year to year. Also, particulate matter emission rates and locations will vary as mining activity changes. The modelled emission year (2015) is different from emissions during other years. The year-to year variability in meteorology and emissions is reflected by the year-to-year variability of dustfall deposition rates at measurement sites presented in the EAQMP Report (see Figures 3.1-2 and 3.1-3 in the 2021 Dust Deposition Report). Additionally, the results of the modelled dust deposition only include locations greater than 250 metres from the mine area boundary and many of the monitoring locations are within this range and therefore cannot be compared. Background dust deposition rates were also assumed to be zero which, based on the results of the control sites, is an underestimation.
DDMI-EAQ-35: Details of the NPRI and GHG calculations be included, or a reference to an external document containing such details, to allow for validation of methods and quantities reported. Referencing to an external document should provide the opportunity for EMAB to fully assess and validate the various inputs, calculation methodology, accuracy of the estimated emissions and finally, comment on the overall quantities reported to ECCC. EMAB recommends Diavik show all its work in deriving the numbers (inputs and calculation methodology).	As relayed to EMAB by DDMI in response to EMAB's recommendations on the 2020 EAQMP Report (Letter dated 16 May 2022), DDMI uses equations from the most current Quantifications Requirement document available on the canada.ca webpage (Canadas Greenhouse Reporting Program - Quantification Requirements) to calculate emissions reported through the GHGRP. More specifically, equations 2-2, 2-13, 11-18 and 11-19 are used to calculate total CO2, CH4, and N20 in the reporting year. Emission factors used are 2681 kg/kl (C02), .078 kg/kl (CH4), and .02 (N20). Emission factors are taken from the quantification requirements document.The NPRI is more complex and involves a number of (uneditable) workbooks to calculate total emissions. The workbooks are available from the NPRI toolbox webpage https://www.canada.ca/en/environment-climatechange/services/national-pollutant-release-inventory/report/tools-calculating-emissions.html#n6. As an example, DDMI uses the workbook "Large Stationary Fuel" to calculate emissions from diesel fuel used to generate power at site. The diesel-powered generators are one of the main contributors of NOX and CO (approx 80-90%) emissions at Diavik. DDMI believes it is not of value to document a step-by-step walk through of federally established and provided calculations to critically validate reported numbers. DDM has provided sufficient information to date on the calculations and resources used for these reporting programs and is of the opinion that they are exceptable.
DDMI-EAQ-36: The 2012 dispersion modelling assessment be updated to reflect current operations and be used to evaluate the appropriate locations for assessment of dustfall observations with predicted concentrations within the updated assessment.	For the same reasons that comparing modelled and measured dustfall for previous modelling studies are not recommended (see DDMI-EAQ-34 above), conducting additional modelling will not provide further value and is not being considered by DDMI at this time. The general locations where increased dustfall are expected are downwind of emissions sources and these regions already have dustfall stations. Additional modelling is not needed to locate these areas and continued monitoring will provide a more accurate assessment of actual dustfall deposition rates than would modelling.

2021 WMMP Addendum: Diavik Exploratory Collared Caribou Movement Analysis Technical Memorandum

EMAB submitted 2 recommendations to Diavik and 1 recommendation to the GNWT-ECC on the 2021 WMMP Addendum. Highlights can be found on page 53-55. EMAB's recommendations and Diavik's/ GNWT-ECC responses are listed below. EMAB's technical review of this document can be found on our website: **www.emab.ca**.

EMAB Recommendation	Diavik/ GNWT-ECC Response
DDMI-WMMP-74: We recommend including an analysis and discussion of caribou movement metrics in distance zones between 3 and 30 kms to provide further depth to our understanding of caribou movement as they approach Diavik and to evaluate how metrics vary among distance zones inside and out of previously identified ZOIs around the mine. We also recommend including an analysis and discussion about current use of historical movement pathways (as noted above and in Poole et al. 2021, DDEC, 2015) around the mine.	DDMI submitted its Zone of Influence (ZOI) Analysis Plan to the Government of Northwest Territories Environment and Natural Resources (GNWT-ENR) for review on Nov 10, 2022 meet Condition 1 of the GNWT-ENR Minister's July 15, 2022, conditional approval of Diavik's Tier 3 WMMP. It is DDMI's understanding that GNWT-ENR will distribute the analysis plan for review and therefore, DDMI suggest that EMAB submit any ZOI recommendations and comments through the GNWT process.
DDMI-WMMP-75: a) We recommend including a discussion about how this sensory disturbance knowledge gap will be filled before closure. b) We recommend exploring the utility of deploying Acoustic Recording Units (ARUs) at different distances to the mine. Evaluate whether ARUs be sensitive enough to record vehicle traffic or blasting sounds, and whether they could record sufficiently representative samples of industrial noise to strengthen the correlation with caribou movement behaviour.	a) Caribou behavioural scan monitoring is no longer completed as part of Diavik's approved Tier 3 WMMP and has been replaced with collared caribou data. Geo-fence collared caribou data have a fix rate of one location every hour when the higher rate is triggered. It is unlikley that caribou are responding to blasts, or vehicle traffic, greater than 1 hr. Fix rates would need to be every minute to detect responses from blasts (high intensity, low frequency, and very short duration). b) DDMI does not intend to deploy ARUs to monitor noise. DDMI uses Mine-activity indices such as full-time equivalents and material hauling to characterize sources of sensory disturbance including noise.
GNWT-WMMP-7: a) We recommend EMAB discuss the utility of shorter GPS collar fix rates for caribou nearer the mine complex with ENR. Questions for ENR could include: Can multiple 'geo-fences' be set for the collars? Would more frequent fixes be feasible in terms of collar operability (e.g., battery life)? Would such an approach yield useful behavioural data to guide management actions?	The buffers of 10 km on roads and 30 km on mines are designed to extend beyond any currently recognized Zones of Influence on these features. Location data from these collars have proved useful in the 2022 MSc thesis of Angus Smith that assessed caribou responses to winter roads, with a focus on the road to the Gahcho Kué mine. They have also been useful in a recent 2021 report from Independent Environmental Monitoring Agency (IEMA) on how caribou respond to the Ekati mine sites and roads, and a further assessment is underway with a project led by Arctic Canadian Diamond Company for Ekati. The specific findings of the studies noted above are best drawn from the relevant reports, papers and theses. Other relevant papers have used GPS satellite collar data and survey data from caribou to assess responses to mines, roads, and other developed areas. GPS collar data from caribou and reindeer have been used in studies of responses to roads, transmission lines, and other corridors in Alaska, northern Quebec/ Labrador, and Europe. In general, more frequent locations of collared caribou and reindeer have allowed for more detailed, fine-scale analyses of how they respond to developed areas.

Revised Wildlife Management and Monitoring Plan (WMMP) - October 13, 2022 revision

EMAB submitted 7 recommendations to the GNWT-ECC on Diavik's Revised WMMP. Highlights can be found on page 50-53. EMAB's recommendations and GNWT-ECC responses are listed below. EMAB's technical review of this document can be found on our website: **www.emab.ca**.

EMAB Recommendation	GNWT-ECC Response
GNWT-WMMP-8: EMAB recommends ENR coordinate reviews of Diavik wildlife submissions using procedures similar to the WLWB. This should include review of any documents related to the WMMP, and any other submissions, including the ZOI Analysis methods document.	The Government of the Northwest Territories (GNWT) is aware having a transparent review system is important for all public reviews. The GNWT is currently in the process of reviewing public registries and exploring options to facilitate this request, which in turn would allow for ENR to conduct its own reviews.
GNWT-WMMP-9: ENR to circulate Diavik's proposed methods for ZOI analysis in time to allow comments.	On February 28th, 2023, ENR circulated the updated ZOI analysis methods for a 30-day public review period, as per Condition 1 of the July 15th, 2022, letter from the Minister of ENR. Comments are to be sent to WMMP@gov.nt.ca during the public review period. Following the 30-day review, ENR will send any comments received to DDMI, who will respond to reviewer comments and indicate how feedback will be incorporated into the comprehensive WMMP.
GNWT-WMMP-10: EMAB recommends that ENR require Diavik to make a clearer commitment to contributing to GNWT-coordinated efforts.	ENR will direct DDMI to Approval Condition 3, where it states "Diavik to contribute to future GNWT-coordinated efforts to undertake period aerial-based ZOI surveys, if deemed necessary." ENR reiterates this Approval Condition is a requirement, not a voluntary arrangement.
GNWT-WMMP-11: EMAB recommends that ENR require Diavik to discuss waterbird monitoring and mitigation in detail in the revised WMMP or relevant SOP and discuss how birds/wildlife will be deterred from pit waters.	ENR has reviewed the SOPs in Appendix A of the WMMP. ENR notes that the detection of waterbirds is included in the WMMP. Waterbird management is the responsibility of the Government of Canada - Environment and Climate Change Canada (ECCC) by way of the Migratory Birds Convention Act (MBCA). ENR directs DDMI to include ECCC in any waterfowl and waterbird management plans. Additionally, ENR would direct DDMI to copy ECCC on updated SOPs referencing waterbirds and waterfowl. Finally, DDMI is to share any updated SOPs for review by ENR, with EMAB.
GNWT-WMMP-12: EMAB recommends that ENR not accept discontinuance of caribou behaviour monitoring in Diavik's WMMP. Any alternative methods such as geofence collar analysis should take place in addition to the existing behaviour monitoring requirement.	Approval Condition 6 states DDMI and EMAB to collaborate and submit a plan for ENR approval within 120 days of receipt of this Reason of Decision and indicate how this plan will improve the ability of caribou behaviour monitoring program. ENR requests DDMI collaborate with EMAB to identify and evaluate various methodologies (e.g. group scans, focal observations and geofence collars), in determining if caribou behaviour changes with distance from the mines and submit the plan for approval to ENR. ENR recognizes that to date, DDMI has never collected focal scan behaviour data. ENR has not made a determination regarding the methodology utilized for the caribou behaviour monitoring program for Diavik. ENR acknowledges the differing interpretations of the October 22 Board meeting. However, the issue of collaboration between DDMI and EMAB remains outstanding, and ENR supports the involvement of EMAB in methodology selection. Diavik is requested to provide opportunities for the involvement or active participation in the implementation of the monitoring programs. ENR promotes a co-operative approach regarding the caribou behaviour monitoring program and directs further discussion between the parties to select appropriate methodologies.
GNWT-WMMP-13: See EMAB's recommendation GNWT-WMMP-8.	See ENR's response under GNWT-WMMP-8.

EMAB Recommendation	GNWT-ECC Response
GNWT-WMMP-14: EMAB recommends Diavik promptly contact ENR when pumped levels of processed Kimberlite are anticipated to reach any raptor nest within six weeks (i.e. applying safety measures, QA and QC measures).	ENR recognizes the value of adding a time component for when Diavik will contact ENR for advice on mitigation. ENR recommends Diavik revise this recommendation to include contacting ENR six weeks in advance of flooding any raptors' nests as well as providing ENR the status of nests (whether it is presently occupied or not). ENR notes that under the Wildlife Act: "Birds and nests 51. (1) Subject to section 17, no person shall, unless authorized by a licence or permit to do so, destroy, disturb or take (a) an egg of a bird; (b) the nest of a bird when the nest is occupied by a bird or its egg; or (c) the nest of a prescribed bird." Prescribed birds for the purpose of paragraph 51(1) (c) and 52 of the Wildlife Act are birds of prey (raptors) as set out in Schedule B of the Wildlife General Regulations. Bullet (c) protects unoccupied raptor nests.

Zone of Influence Analysis Plan

EMAB submitted 2 recommendations to Diavik via the GNWT-ECC on the Zone of Influence Analysis Plan. Highlights can be found on page 55. EMAB's recommendations and Diavik responses are listed below. EMAB's technical review of this document can be found on our website: **www.emab.ca.**

(DDMI-WMMP-76): Diavik to answer the following questions in detail: a) Why was 90% chosen as the study area-seasonal range overlap cutoff? Please discuss the ecological and analytical impacts of different threshold levels. Please discuss the same in relation to 100% overlap of the Ekati-Diavik mine complex, what happens if less of the mine-complex is inside the annual-seasonal range? b) How flexible will this threshold be if it means sample sizes are continually inadequate for ZOI analysis? What if the annual-seasonal range only overlaps a smaller, but still high (e.g. 80 or 85%) proportion of the study area?	The deadline for Diavik responses was May 29, 2023, but we did not receive Diavik responses by time of writing this report. Diavik said that they did not receive EMAB comments from the GNWT-ECC.
(DDMI-WMMP-77): Diavik to answer the following questions in detail: a) Has DDMI monitored dust deposition at the Vegetation and Lichen monitoring plots during operations? b) Could empirical measures of dust deposition collected during operations be used to correlate with Total Material Moved to understand the strength of that relationship rather than making assumptions?	The deadline for Diavik responses was May 29, 2023, but we did not receive Diavik responses by time of writing this report. Diavik said that they did not receive EMAB comments from the GNWT-ECC.

TABLE OF ACRONYMS

Acronym	Definition
AEMP	Aquatic Effects Monitoring Program
AGM	Annual General Meeting
CIRNAC	Crown-Indigenous Relations & Northern Affairs Canada
CSR	Comprehensive Study Report
DFO	Department of Fisheries and Oceans
EAAR	Environmental Agreement Annual Report
EAQMP	Environmental Air Quality Monitoring Program
ECC	Environment and Climate Change (GNWT)
ECCC	Environment and Climate Change Canada
EMAB	Environmental Monitoring Advisory Board
EPA	Environmental Protection Act
EQC	Effluent Quality Criteria
FCRP	Final Closure and Reclamation Plan
FF	Far-Field
GHGRP	Greenhouse Gas Reporting Program
GNWT	Government of the Northwest Territories
ICRP	Interim Closure and Reclamation Plan
KIA	Kitikmeot Inuit Association
LdG	Lac de Gras
LKDFN	Lutselk'e Dene First Nation
MDMER	Metal and Diamond Mining Effluent Regulations
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVLWB	Mackenzie Valley Land and Water Board
NCRP	North Country Rock Pile (aka WRSA – see below)
NI	North Inlet
NF	Near Field
NPRI	National Pollutant Release Inventory

TABLE OF ACRONYMS

Acronym	Definition
NSC	North South Consultants
NSMA	North Slave Metis Alliance
NWRSA	North Waste Rock Storage Area (aka NCRP or WRSA)
PHC	Petroleum Hydrocarbons
PK	Processed Kimberlite
PKC	Processed Kimberlite Containment Facility
PKMW	PK to Mine Workings
QAPP	Quality Assurance Project Plan
RER	Re-evaluation Report
SEC	Slater Environmental Consulting
SGP	Slave Geological Province
SNP	Surveillance Network Program
SOI	Substance of Interest
SWRSA	South Waste Rock Storage Area (aka SCRP or WRSA)
TG	Tłı̨chǫ Government
TK/IQ	Traditional Knowledge / Inuit Qaujimajatuqangit
TSP	Total Suspended Particulates
WTA	Waste Transfer Area
WLWB	Wek'èezhìı Land and Water Board
WMMP	Wildlife Management and Monitoring Program
WMP	Wildlife Monitoring Program
WMR	Wildlife Monitoring Report
WMMR	Wildlife Management and Monitoring Report
WRRB	Wek'èezhìı Renewable Resources Board
YKDFN	Yellowknives Dene First Nation
ZOI	Zone of Influence


EMAB Photo

Working with *the* People *for the* Environment

HOW TO CONTACT US

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