INDEPENDENT ENVIRONMENTAL
MONITORING AGENCY

A public watchdog for environmental management at EKATI DIAMOND MINE

2020-2021

ANNUAL REPORT

PLAIN LANGUAGE

MINING AT EKATI

Arctic Canadian Diamond Company Ltd. is mining diamonds using large open pits and underground tunnels to remove the kimberlite rock that contains the diamonds.

1 Long Lake Containment Facility

The Long Lake Containment Facility is a tailings pond, and is the final destination for the crushed, wet kimberlite that remains after the diamonds are remove. The LLCF was once a lake that is now divided into five sections (Cells A to E) by dykes (rock walls) so the processed kimberlite can settle. Water is eventually released into lakes downstream when it is clean and pollutants are below the amounts set in the water licence.

2 Main Camp

This area includes an accommodation building for hundreds of workers, a power plant, a truck shop and a processing plant where the diamonds are removed from the kimberlite.

3 Waste Rock Piles

Rock that does not contain diamonds is piled in layers totaling 50 to 70 metres high.

4 Waste Management Facility

The building where recycling, composting, and burning of waste happens. This waste facility deals with regular or domestic waste from offices, buildings and the cafeteria at the mine site.

5 Pigeon Pit

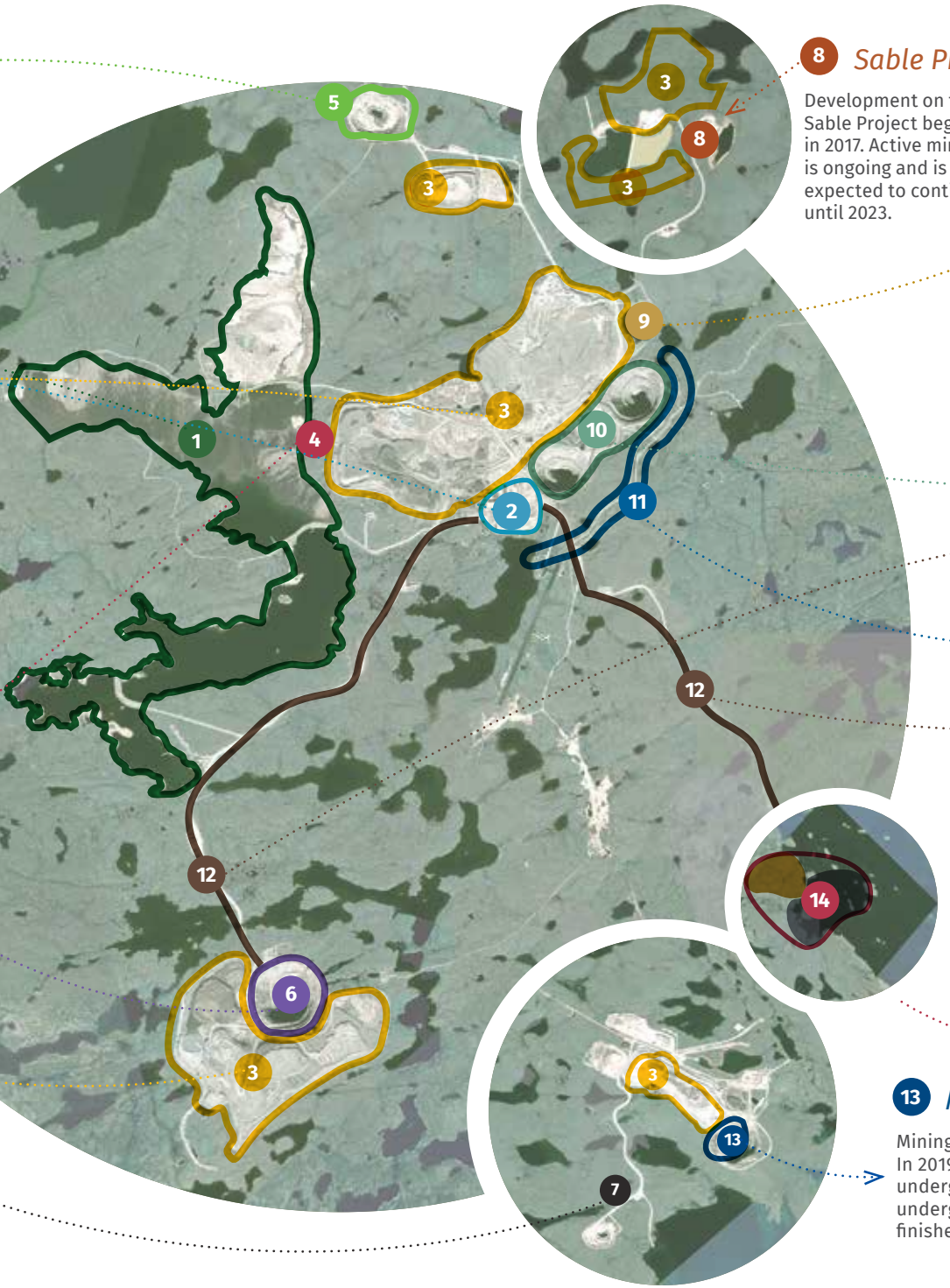
Pigeon pit is a relatively small pit which began development in 2013. It is currently being actively mined and is expected to be active until 2022.

6 Fox Pit

This is the biggest pit at Ekati. Fox pit began development in 2001. Mining of the pit was finished in early 2015.

7 Lynx Pit

The Lynx Project officially started development in 2013. The pit has been actively mined since 2015 and the water licence it is approved under expires in 2021.



8 Sable Pit

Development on the Sable Project began in 2017. Active mining is ongoing and is expected to continue until 2023.

9 Beartooth Pit

Started in 2004, Dominion finished mining Beartooth pit in 2009. The Beartooth pit started being used for storing processed kimberlite in 2012.

10 Panda and Koala Pits

Starting with Panda in 1997, open pit mining of these two sites has finished. Underground mining started in Panda in 2003, and finished in 2011. Underground mining started in 2004 at Koala, and continued until 2019. Processed kimberlite has been deposited into Panda and Koala Pits beginning in 2019.

11 Panda Diversion Channel and Pigeon Stream Diversion

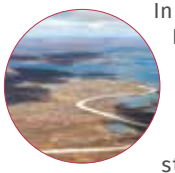
The Panda Diversion Channel and Pigeon Stream Diversion are man-made streams diverting water around pits that would otherwise flow into the pits. Fish, mostly grayling, use the new channels for travel and spawning. The Pigeon Stream Diversion was completed in 2014, and the Panda Diversion Channel was completed in 1998.

12 Haul Roads

Dominion has built all-weather roads to connect the pits to Main Camp. Dominion carefully applies chemical dust suppressants or water to reduce dust on the roads. Currently there are 141 km of road at the Ekati mine site.

13 Misery Pit

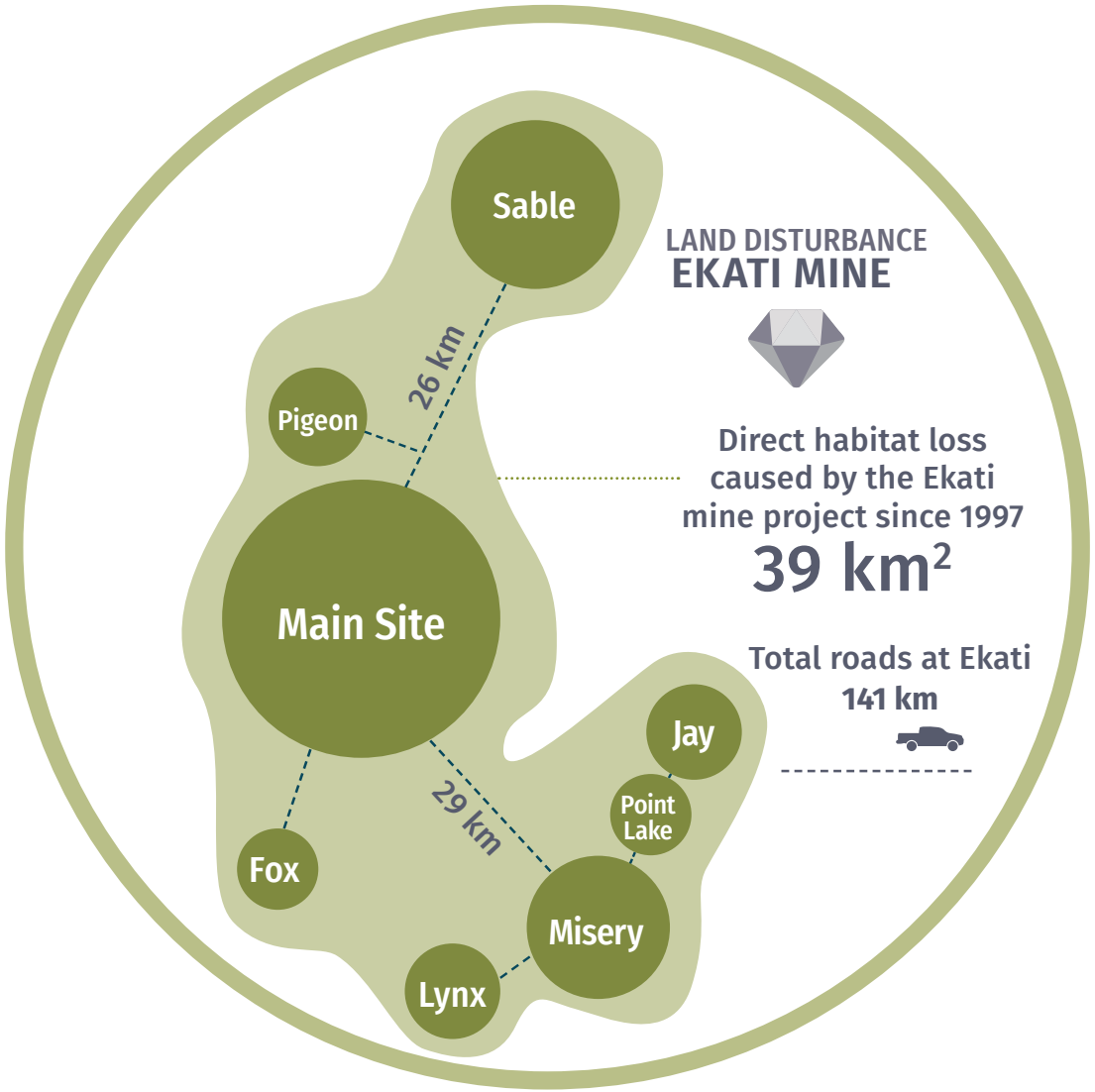
Mining stopped the Misery pit in 2005. In 2019, work began on developing underground mining at the pit. The underground portion is expected to be finished in 2023.



14 Jay Project

In the spring of 2018 Dominion decided that work planned for the Jay Project would be put on hold for a year to complete an optimization study. If the Jay Project proceeds, it is expected to extend the life of the Ekati mine from to 2024 to 2034.

LAND DISTURBANCE AND ROAD LENGTH



LAND DISTURBANCE
EKATI MINE

Direct habitat loss caused by the Ekati mine project since 1997
39 km²

Total roads at Ekati
141 km

LAND DISTURBANCE
YELLOWKNIFE

City of Yellowknife estimated footprint (area shaded green)
30 km²

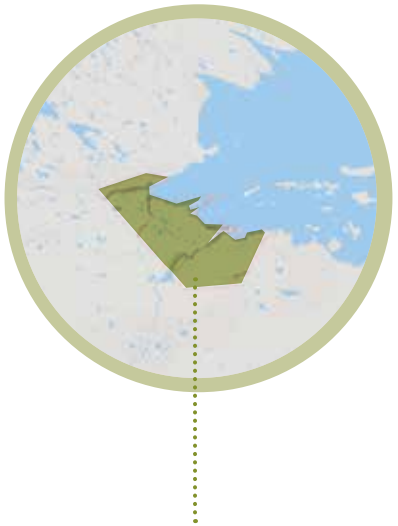
LAND DISTURBANCE

BEHCHOKǪ̀

Behchokǫ̀ estimated footprint (area shaded green) **2.4 km²**

LAND DISTURBANCE

KUGLUKTUK



Town of Kugluktuk estimated footprint (area shaded brown) **2.5 km²**

	Approx Land Disturbance	How much bigger is the Ekati mine?
YELLOWKNIFE	30 km²	x 1.3
KUGLUKTUK	2.5 km²	x 15
BEHCHOKǪ̀	2.4 km²	x 16
CAMBRIDGE BAY	1.6 km²	x 24
ŁUTSELK'E	1.3 km²	x 29
WHATI	0.8 km²	x 47
GAMETI	0.8 km²	x 47
WEKWEÈTÌ	0.5 km²	x 76

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MESSAGE FROM THE CHAIR

I am pleased to present the 2020-21 Annual Report of the Independent Environmental Monitoring Agency. The report summarizes our activities over the past year and offers recommendations to the company and regulators on how they may improve their environmental management of the Ekati Diamond Mine. The report is available in technical and plain language versions.

This past year has been a difficult and challenging one for all of us, and the mine. The COVID-19 global pandemic brought about many changes in how we do business, from working from home and cancellation of in-person meetings and consultations, to the temporary suspension of operations at the mine for worker health and safety. As you are reading this, I hope that you and your family are well.

Beginning in mid-March 2020 the company suspended operations at the Ekati Diamond Mine in response to COVID-19. A care and maintenance crew stayed on-site to maintain mine infrastructure. During the temporary suspension, the company was still responsible for all regulatory compliance and subject to inspections. The only exception was where the regulator provided an exemption from the requirements due to unforeseen circumstances and important health and safety requirements that made compliance monitoring difficult. The company resumed mining operations in February 2021.

In April 2020 Dominion Diamond Mines ULC (Dominion) filed for insolvency protection under the *Companies' Creditors Arrangement Act*. A part of this process was searching for a new buyer for the mine. In February 2021 Dominion sold the Ekati mine. The new operator is Arctic Canadian Diamond Company Ltd.

This past year the Agency continued to monitor the company's activities at Ekati and continued to review and provide recommendations on their environmental management and monitoring activities. The Agency also communicated with the company on a weekly basis for any updates. We all learned to use Zoom for important "in person" meetings such as our Annual General Meeting. The Agency had plans to conduct a community meeting in Wekweètì in May, but COVID-19 restrictions prevented this meeting from occurring. We hope to be able to visit soon.

In 2021 there was a change in Agency staff. Our Communications and Administrative Specialist, Shannon Moore left to take up another challenge. We thank her for contributions and welcome Jamie Mistry to the Agency.

I am looking forward to a new year where we can meet again face to face with the company and communities to discuss the important issues at Ekati. On behalf of all Agency Directors I would encourage you to contact the Agency at any time with your comments and concerns, or if you wish for us to visit your community.

Marsi, mahsi, quiannamik, quana, merci, thank you.

Jaida Ohokannoak

www.monitoringagency.net

RECOMMENDATIONS

HIGHLIGHTS

- Each year the Agency provides recommendations to Arctic Canadian Diamond Company Ltd., the Wek'èezhìi Land and Water Board, and applicable federal and territorial government departments based on the review of information and comments from the past 12 months.

- This section includes Agency recommendations from the past year and the responses we received to those recommendations.

RECOMMENDATIONS TO ARCTIC DIAMOND

PUBLIC EDUCATION NEWSLETTER

RECOMMENDATION 1

The Agency recommends that Arctic Canadian Diamond Company re-activate preparation and distribution of a clear language periodic newsletter designed to inform the public of major developments and activities taking place at the Ekati mine.

ARCTIC DIAMOND RESPONSE:

Arctic acknowledges that newsletters have not been distributed since the Spring/ Summer 2019 edition. Both 2019 and 2020 were challenging years for the Ekati Diamond Mine, and production and distribution of the newsletter were not feasible.

Arctic recently took ownership of the Ekati Diamond Mine in February 2021. Arctic is in the process of rebranding and reviewing all publications and communications strategies. While Arctic can not commit to restarting the newsletter at this time, the Company acknowledges that the newsletters were largely well- received and could be a useful communications strategy for the Ekati Diamond Mine in the future.

TRADITIONAL KNOWLEDGE FRAMEWORK

RECOMMENDATION 2

The Agency recommends that Arctic Canadian Diamond Company update the current Traditional Knowledge Management Framework (2017) so that it is applicable for the entire Ekati mine site and the TK obtained is in correspondence with guiding principles and protocols from whom the knowledge is gathered. It is recommended that the framework be developed in collaboration with and approved by Indigenous Governments and Organizations.

ARCTIC DIAMOND RESPONSE:

The Traditional Knowledge Management Framework (2017) was initially developed by the Traditional Knowledge Elders Group (TKEG) with the understanding that the group's involvement would be required
for any revisions or updates to the Framework. Arctic is currently in the process of restarting the TKEG after suspending the group due to the Companies' Creditors Arrangement Act (CCAA) process and subsequent suspension of operations at the Ekati Diamond Mine in 2020. Once the TKEG has been re- established, Arctic will continue to work with the group and IGO's to ensure the Framework is meeting their expectations.

As per Measure 7-1 of Jay Project Report of Environmental Assessment, Arctic is to "consult with each Aboriginal group affected by the Jay Project, in a culturally appropriate manner, while developing the protocols". While Arctic acknowledges IEMA's opinion on the matter, it is the business of Arctic and the affected communities to maintain the contents of the Framework and to update the document as required. Under new ownership, Ekati Diamond Mine personnel are committed to maintaining regular contact with Northern Indigenous partners and ensuring they are engaged on how Traditional Knowledge is collected, stored, managed and used.

SUMMARY OF SHUT DOWN AND SALE OF EKATI MINE 2020-21

DATE	ACTION
MARCH 20, 2020	• Operations at Ekati put on hold because of COVID-19 restrictions. • Most employees were laid off. • A crew of about 60 workers per shift rotation (120 in total) stayed on site to maintain things so the mine would be ready to operate again when possible. • Most environmental monitoring continued during this time.
APRIL 20, 2020	• Dominion filed for credit protection. • The reasons were their financial situation and the halt in global diamond sales because of COVID-19. • Court-ordered direction limited their ability to spend money. Because of that, they needed to reorganize their debt and try to sell Ekati.
SEPTEMBER 2020	• An entity of Washington Group made an initial reserve bid to buy the mine. • The courts accepted the bid. But the buyer and people that issue surety bonds could not agree to terms.
DECEMBER 2020	• Arctic Canadian Diamond Company Ltd. reached an agreement to buy Ekati.
JANUARY 2021	• By the end of the month, Ekati was back to full operations.
FEBRUARY 2021	• February 3, Dominion finalized the sale to Arctic Canadian Diamond Company Ltd.

CURRENT CONDITIONS AND EXPLORATION

HIGHLIGHTS

- The company did no exploration on the main Ekati claim block, at Glowworm Lake, and Lac de Gras/Harry Winston projects. In 2021, they expect to resume exploration.

- The company intends to mine three kimberlite pipes at Point Lake, as a bridge project to possible longer term mining.

Misery pit including waste rock pile. Photo courtesy of Arctic Canadian Diamond Company Ltd.

IMPORTANT CONCEPTS IN THIS SECTION (alphabetical order)

Land use permit
A company or individual must have a land use permit if they plan to carry out any land-based activities, especially if those activities may trigger the thresholds outlined in land use regulations.

Mineral exploration
Search for materials that appear in high enough concentrations and amounts to be extracted and processed for profit.

Threshold
A defined point, level, or condition where, if things change beyond that point, further change can cause lasting harm to land and/or water and the beings that live there.

Water licence
A company or individual must have a water licence if they plan to carry out any activities that may affect water quality and/or quantity in the area.

EXPLORATION SUMMARY

Ongoing exploration involves widespread drilling in many parts of the main Ekati claim block:

- Between Misery and Jay pipes
- North of the current mine site
- Locations east (Glowworm Lake) and south of Lac de Gras (near MacKay Lake)

Exploration permits allow the company to keep drilling on the main claim blocks, and to expand drilling at Lac de Gras and Glowworm Lake. During the winder road season, before operations shut down in March 2020, the company resupplied fuel at Lac de Gras and Glowworm Lake. They have not provided updates on exploration plans for 2021.

Jay road and location of permitted Jay pit. Photo courtesy of Arctic Canadian Diamond Company Ltd.

POINT LAKE DEVELOPMENT

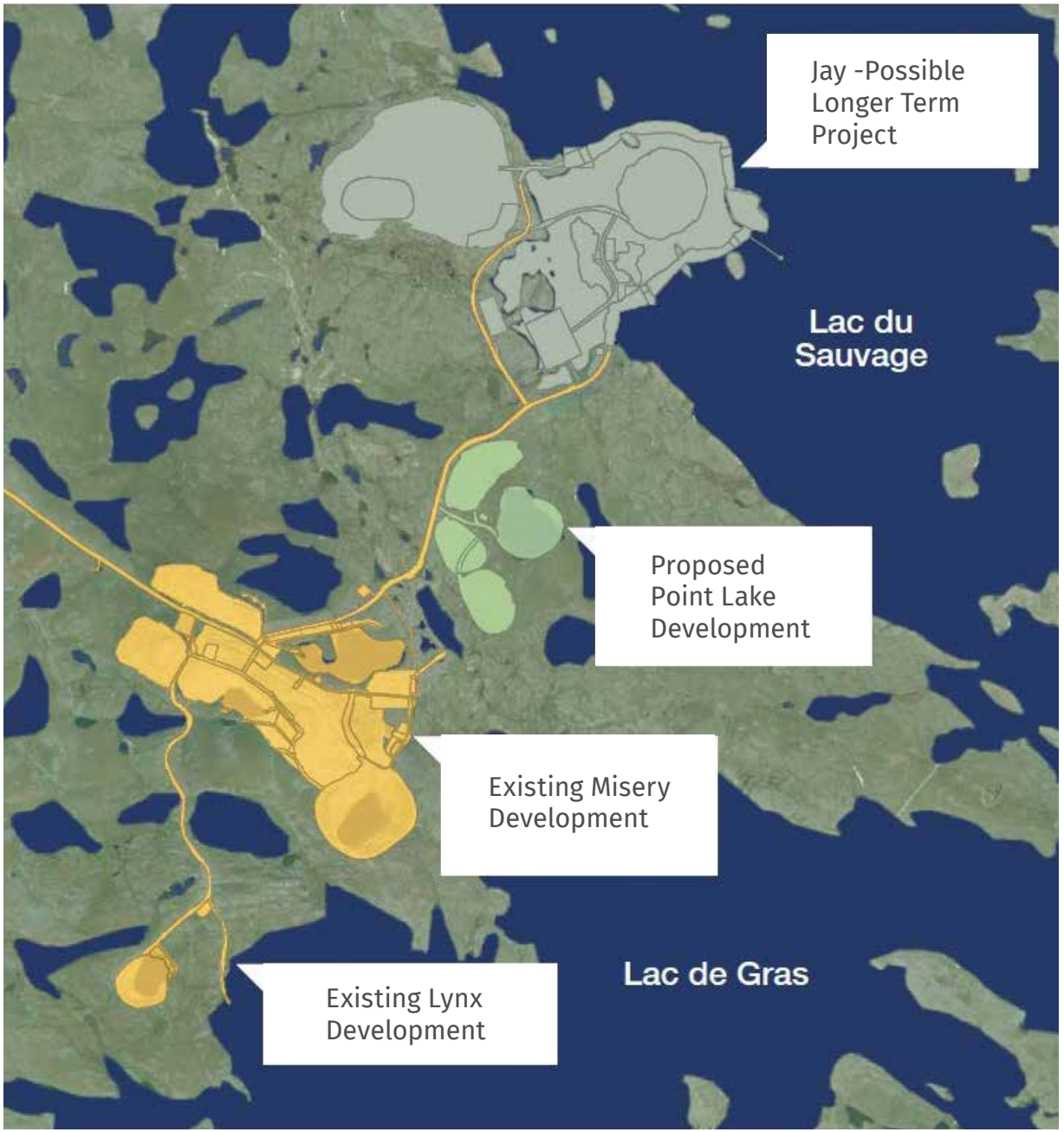
In early 2020, the company stated their intent to get approvals to develop a single pit at Point Lake, to mine three pipes. This is located between Misery and the Jay project. The Point Lake project would last four to five years to provide a continuous supply of ore for future mining operations.

IEMA believes that developing kimberlite pipes in new areas represents a significant geographic expansion of mining operations.

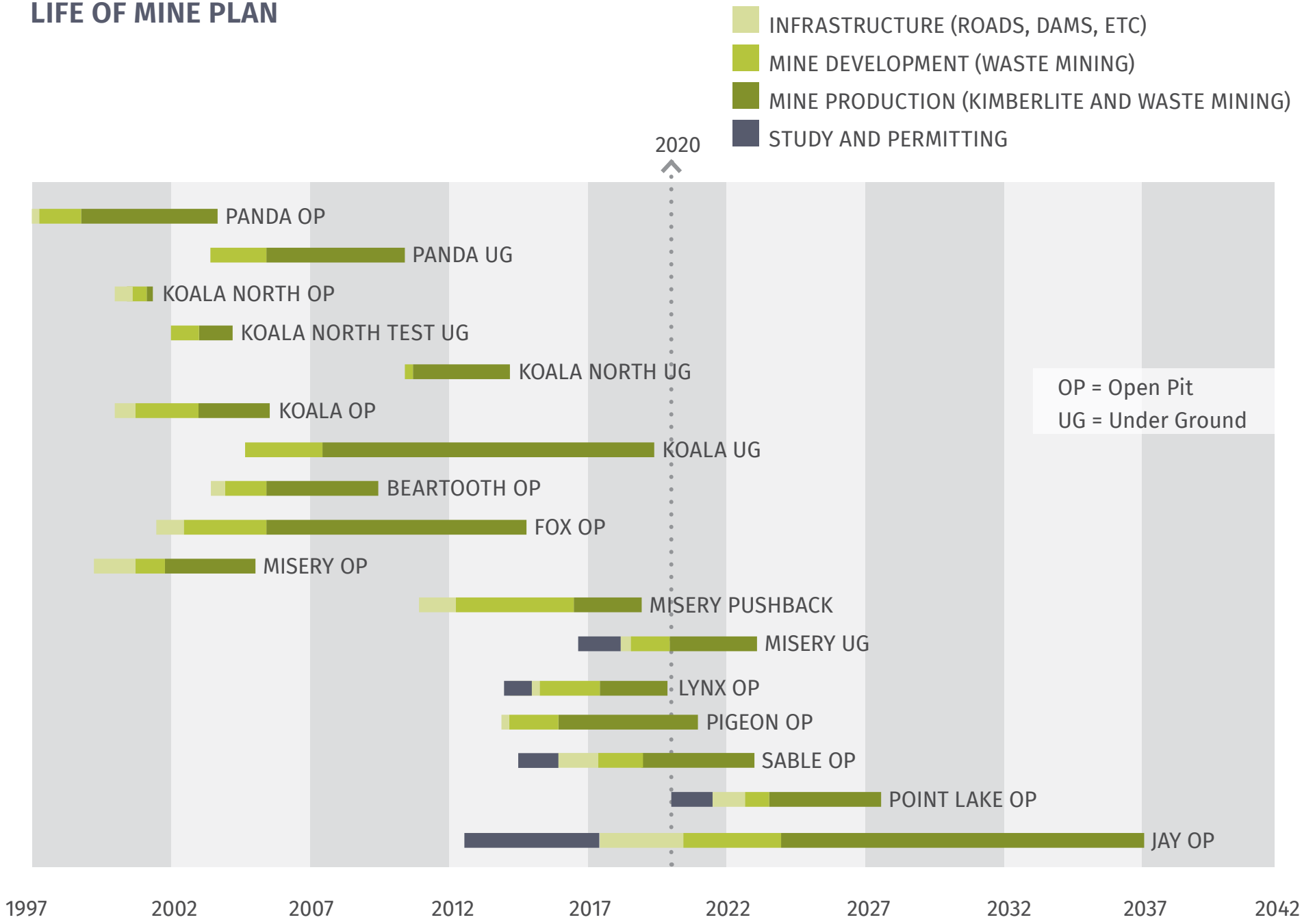
IEMA ASSESSMENT

Early info on Point Lake infrastructure suggests this would narrow the wildlife travel corridor through the Lac du Sauvage – Lac de Gras area. This may significantly increase impacts on movement of caribou and other wildlife, as Point Lake is close to Misery and the proposed Jay project.

IEMA will keep monitoring exploration activities, to track possible future developments.



LIFE OF MINE PLAN



AGENCY ACTIVITIES

HIGHLIGHTS

- Because of COVID-19 restrictions, communications with communities were limited to quarterly updates and information meetings.
- A scale model of Ekati is available to take to communities and meetings, to help people understand the site and discuss the project.

Site visit July 2019.

MEETINGS

- Three board meetings in Yellowknife.
- Annual general meeting November 2020.

ANNUAL EKATI SITE VISIT

No site visits this year because of COVID-19 restrictions.

IEMA WORKSHOP AND QUARTERLY MEETINGS

No travel, indoor gatherings, workshops, or community visits because of COVID-19 restrictions.
To improve communications with society members and communities:

- Sent quarterly updates and held an informal meeting on topics of interest.
  First meeting: March 15, 2021 to discuss interim closure and reclamation plan before the March 24-26 workshop. During the meeting/conference call people discussed information and questions, and shared information.
  Participant feedback was positive.
- Plan to continue these in the future.

Other initiatives:

- Conducted external audit of IEMA performance. Noted some areas to improve.

- Developed site-wide scale model of the mine site.
  Computer image projected on 4' X 8' terrain model.
  Can be updated to show changes at the site.
  Designed to take to communities and meetings.

- Completed detailed analysis of the caribou collar data for the Bathurst and Beverly Ahiak herds.
  When the report is done, it will be on IEMA website.

- Started to document contents of IEMA resource room.
  Information dates back to 1990s.
  Converting to digital format and will go online.

TECHNICAL REVIEW AND INPUT

- Participated in 10 reviews with Wek'èezhìi Land Water Board.

- Commented on wildlife reports and changes to environmental monitoring programs.

- Followed the creditor protection process and eventual sale of the mine.

Wildlife Effects Monitoring Program

Similar comments for the past few years with little progress.

Main concerns:

- Not clear how the company uses monitoring data to trigger management actions.
  No apparent link between specific thresholds to trigger actions and follow-up to assess effects.

- Caribou road surveys show no numbers and locations.
  Could use this information to better

understand caribou distribution within the mine site, link to where the company implements enhanced mitigation, and where to increase monitoring and mitigation.

- The company should show how they use collar data to trigger more monitoring and mitigation, and individual pathways of collared caribou to assess and evaluate how effective and efficient mitigation is.

- The company needs to provide the long-promised summary report on monitoring wildlife with cameras.

Aquatic Effects Monitoring Program Annual Report 2019

Fish in lakes downstream of Long Lake and King Pond facilities show rising levels of selenium in their bodies. This is a concern. It appears selenium gets into fish tissues from the sediments, and maybe the benthic organisms that live there, that larger fish eat.

The company should study how selenium gets into fish tissues. They should set thresholds to limit the increase of selenium in the aquatic system.

Studies and Reports

IEMA made comments on other reports and proposed plans:

- Waste Rock Management Plan 6.0 (May 11, 2020)

- 2019 Air Quality Monitoring Program Report (July 20, 2020)

- 2019 Water Licence and Environmental Assessment Annual Report (August 17, 2020)

- Monitoring and Compliance Update for Ekati mine (September 2, 2020)

- Water Licence Renewal Application (Jan 12, 2021) and draft Water Licence (March 29, 2021)

- Sable Pit – Two-Rock Pond Outfall Design Report (February 5, 2021)

- Closure and Reclamation Progress Report (February 17, 2021)

- Open Water Exceedance Notice – Potassium (March 16, 2021)

IEMA COMMUNICATIONS

- Annual Report: technical and plain language versions.

- Website: information about environmental management at the mine; resources added when available.

- Social media: Facebook and Twitter

- Biannual newsletter the *Ekati Monitor*: Issue #20 in spring 2020 and Issue #21 in the fall.

Printed copies go to subscribers including schools and community offices in NWT and Nunavut.
Digital version emailed to those that subscribe on the website.

WILDLIFE EFFECTS

HIGHLIGHTS

- In 2020, mine workers saw 5,604 caribou, mainly in winter: 4,850 during road surveys and 740 during surveys of Misery road power lines.
- With the mine shut down in late March and fewer workers on site, the company reported fewer wildlife sightings and incidents than other years.
- The company has again delayed the summary report on monitoring wildlife with cameras.

Grizzly bear at the Ekati mine. Photo courtesy of Arctic Canadian Diamond Company Ltd.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Adaptive management
A management system with continual monitoring. If a mitigating action does not work, other actions are used to keep the impacts within accepted levels or below thresholds.

Mitigating, mitigation
An action that is supposed to reduce the negative impacts of a condition or situation.

Monitoring
Collecting and analyzing repeated observations and measurements to evaluate change and impacts of change. Watching habitat and wildlife, and 'keeping an eye' on things all the time.

Threshold
A defined point, level, or condition where, if things change beyond that point, further change can cause lasting harm.

Zone of influence
Area where mining activities can cause fewer caribou to occur.

ACTIVITIES

The wildlife effects monitoring program records the wildlife present on site and how the company responds. The 2020 report is the 23rd for Ekati and included:

- Visual surveys of roads, power lines, and Long Lake facility.
- Monitoring behaviours.
- Camera surveys along infrastructure and adjacent areas.

The report focuses on wildlife habitat and caribou, grizzly bears, wolves, wolverines, foxes, raptors, and breeding birds. It gives details of surveys, sightings, incidents, and management actions. Many activities are required under the caribou road management plan.

EKATI MINE FOOTPRINT—HABITAT LOSS

The current reporting period gives no update for 2020 on habitat loss due to mining or roads. There was a small increase in habitat loss in the Sable waste rock storage area.

Since the project started in 1997, the footprint has caused 3,898 ha (39 sq. km.) direct habitat loss, measured at the end of 2019. As of 2018, the company has built 141 km of roads.

WASTE MANAGEMENT

The company keeps working to improve waste management practices and reduce food-related attractants at landfills. The main purpose is to reduce wildlife incidents and keep wildlife away from dangerous areas such as airstrips, high traffic areas, and active pits.

The number of surveys at the landfill was similar to the annual average since 2011. With the mine shut down and fewer workers on site, surveys showed

the lowest amount of misdirected waste and attractants since the surveys started.

The company shipped off site over 220,000 kg of solid waste and nearly 30,000 L of liquid waste.

WILDLIFE MANAGEMENT AND INCIDENTS

In 2020, compared to 2019, there were fewer wildlife incidents that involved direct interaction between wildlife and humans or infrastructure. 2020 numbers were similar to those reported in 2011, 2013, and 2014.

The company reported six wildlife incidents during 2020: five with grizzly bears, using deterrents. This compares with 35 bear incidents in 2019.

Pit blasting is cancelled or postponed if wildlife, including nesting raptors, are within 1 km of the area. The company did not report how much blasting took place in 2020. But no blasting was cancelled or postponed.

No caribou have died because of mining activities since 2010. A vehicle hit and killed a wolf on the Misery road in January 2020 the first incident like this since 2002.

MONITORING CARIBOU

Information sources for caribou monitoring included:

- Distribution info from satellite collared cows that GNWT monitors
- Incidental caribou observations
- Behaviour surveys
- Monitoring Long Lake facility
- Road and Misery road power line surveys
- Wildlife camera monitoring

Traffic volume was much less; most happened from January to March.

- Misery (about 500 round trips)
- Sable roads (about 2,500)

The maximum monthly traffic was on the Sable road in January, with an average of one vehicle every 18.6 minutes. The company presented no data over time, for light vehicles (pickup trucks), or for trucks on the Tibbitt–Contwoyto winter road.

Workers recorded 5,604 caribou during 141 incidental sightings on 80 separate days. Most (83%) were recorded in winter; the rest mostly during two migrations. Based on collar maps, workers saw about 1,500 caribou from the Bathurst herd in early November.

GNWT collar data shows that caribou from the Bathurst and Beverly/Ahiak herds were present at Ekati during winters 2019-20 and 2020-21. Workers saw caribou throughout the mine site, including larger groups (>100 individuals) at several places along the Misery road and near the Pigeon pit. They surveyed the Long Lake facility for 41 days and saw only four individuals.

During road surveys, workers counted 4,850 caribou in 138 sightings over 86 days. About two-thirds were on the Sable road with about 550 in the largest group. They also counted 740 caribou in 50 sightings during Misery Road power line surveys and 5,604 with incidental sightings. The wildlife effects monitoring program concludes that "... roads do not impede caribou movement".

Workers did six behaviour surveys and 21 scan surveys within 500 m of mine infrastructure. Behaviour surveys look at individual behaviours; scan surveys look at group behaviour such as bedding, feeding, running. With stressor events (vehicles), caribou showed alert behaviour in five of six cases that lasted an average of 41 seconds. The wildlife effects monitoring program concludes that these results may suggest that caribou show some tolerance for areas close to the mine (< 1km from infrastructure).

In 2011, Ekati started the a study to monitor wildlife with cameras. They use motion-triggered cameras to better understand how caribou respond to mine infrastructure and roads; what factors affect their response. In 2020, workers placed 89 cameras along Misery, Sable, and Jay roads; at the Lac du Sauvage narrows; and the esker near Jay road.
The report of camera survey results is delayed.

Photo courtesy of Arctic Canadian Diamond Company Ltd.

MONITORING GRIZZLY BEARS

Workers monitor grizzly bears through incidental sightings. They saw 91 individuals on 68 occasions, including 14 family groups (two or more bears together). They were across the mine site, except for low numbers along the northern part of the Sable road. Many sightings were likely the same individual(s) recorded many times.

This is the lowest number of sightings since records started in 2015, probably because of fewer workers on site after late March.

MONITORING OTHER WILDLIFE

In 2020, workers sighted:
- 37 wolves on 23 occasions

Lowest number since records started in 2001, probably because of fewer workers on site

Evenly distributed throughout the site
- 13 wolverines
- 82 foxes
- 10 moose
- Raptor nesting in two active pits

Deterrents not needed because of no open pit mining activity

In 2020 they did not do the North American Breeding Bird Survey for the first time in 18 years.

Comparing Caribou Sightings 2019 and 2020

Semi-permeable barrier effects	2019	2020
# caribou travelling through the area	2,554	3,163
% caribou within 500 m of a road	76%	87%
% caribou travelling across the road or standing on a road	14%	23%

IEMA ASSESSMENT

The 2020 wildlife effects monitoring program reports on sightings, monitoring, waste management, and incidents and management actions. The company did most of the monitoring programs required in the report. There were fewer sightings and incidents, probably because of fewer workers on site. The report included mapping caribou sightings from road surveys. This is a welcome addition.

The 2020 report missed an opportunity to assess the impacts of road traffic on caribou. The company monitored wildlife during nine months of reduced mining activity. This info would allow them to compare caribou movements throughout the site with and without road train and haul truck traffic.

For example, the table to the left compares caribou sightings from 2019 and 2020 road surveys. It shows a higher percent in 2020 closer to the roads than in 2019. This suggests that large truck traffic may reduce caribou access / movement throughout

the site. This would be a stronger comparison if the data separated sightings into operating versus care and maintenance periods, and considered daily traffic levels.

IEMA comments about the 2020 report are similar to comments we have made in other years.

The company makes limited use of caribou collar data—only broad seasonal characterizations. The caribou road mitigation plan uses collared caribou as an action level to start more intense monitoring and mitigation. But they have never reported on how often and when this happened.

Ekati mine owners gave money to buy 50 geo-fenced collars, to provide info on caribou movement specific to Ekati. There is no evidence that the company has used these data to assess and evaluate mitigation methods. They provide no info on individual movements or how collar data links to and improves monitoring and mitigation.

Caribou Crossing Sign. Photo courtesy of Arctic Canadian Diamond Company Ltd.

- For example, they could use individual collar data to assess if the Misery road / power line impedes caribou movement. Other data suggest that current mitigation may not be effective at helping caribou move through the area.

The 2020 report on monitoring wildlife summarizes distribution of collared cows. It should also include the data from collared male caribou.

The 2020 report gives a short background and summary of results from camera monitoring. They refer to a more complete summary report that covers camera data from 2011 to 2019. But they do not provide that summary report and should do so right away. This is an important issue to IEMA.

As noted in other years, the company does not give specific data on triggers to stop work or close roads, and mitigation outcomes. They mention adaptive management but only partly describe and report it.

- Limited info on how effective mitigation is.

- No link to specific thresholds from the caribou road mitigation plan to trigger a management activity

- No follow-up monitoring to see how effective a management activity is.

Because of these and other shortfalls, the company makes many unsupported claims (such as 'roads do not impede caribou movement'). And they present no robust data to support these claims.

Workers did frequent road surveys, but the report does not include data for daily sightings. These data would provide an excellent way to show the links between caribou distribution, and where the company has enhanced mitigation; where they could further enhance monitoring and mitigation.

Right now, IEMA has no way to evaluate adaptive management.

- If and how monitoring methods are effective to trigger enhanced mitigation.

- If the mitigation is effective; how effective it is.

The company should integrate data from incidental sightings, road and power line surveys, and monitoring of the Long Lake facility. This could lead to a more complete picture of caribou distribution at the mine site and possibly make monitoring and mitigation more effective and efficient. For example, a detailed comparison of surveys of Misery road and power lines could examine if power line surveys are still needed.

IEMA would be pleased to discuss with the company ways to make monitoring and reporting more effective and efficient. We note that when they responded to our comments on the 2019 report, they agreed that some changes could be helpful.

Caribou grazing at the Ekati mine. Photo courtesy of Arctic Canadian Diamond Company Ltd.

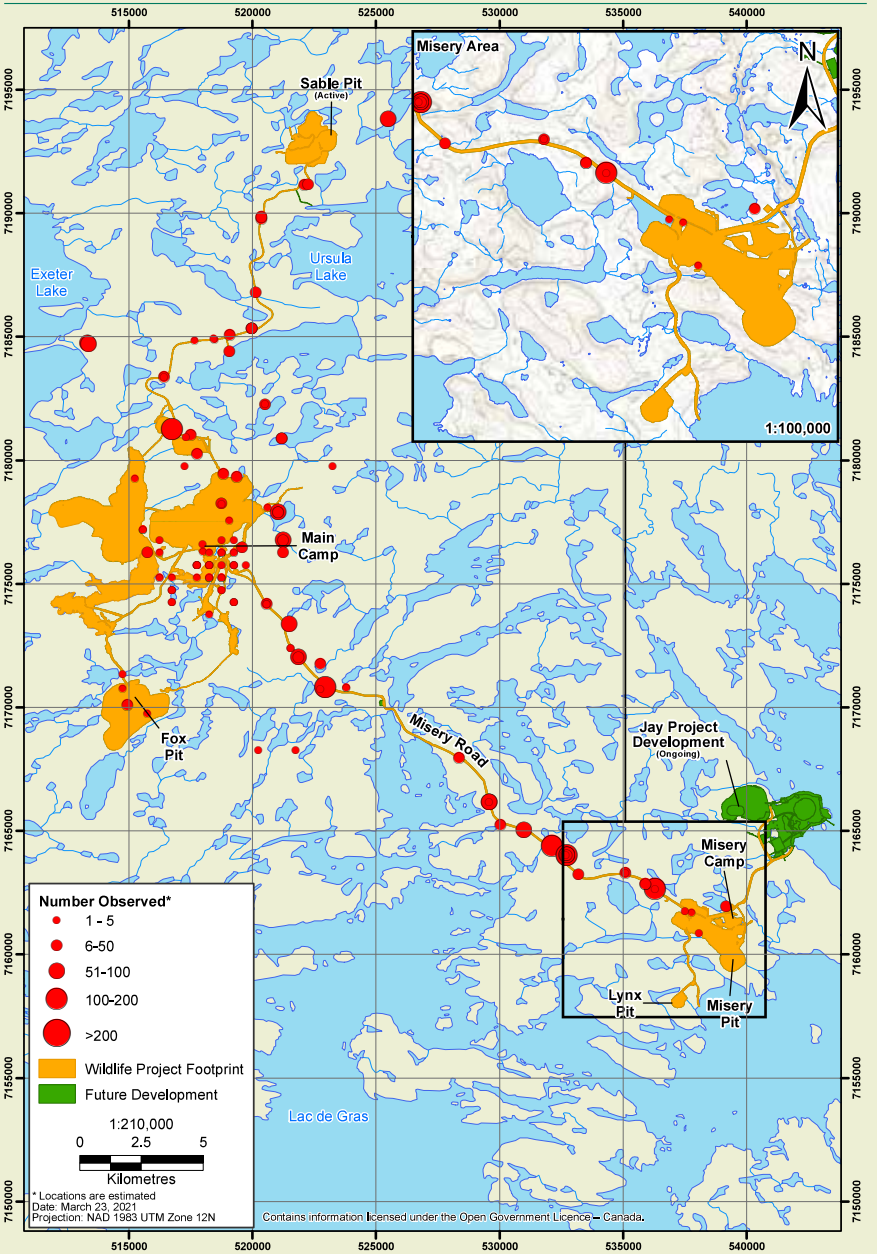


Figure 5.3-1: Incidental Caribou Observations at the Ekati Diamond Mine, 2020

www.erm.com Project No.: 0587934-0002 Client: ARCTIC CANADIAN DIAMOND COMPANY LTD. GIS # EKA-23-393a

Figure 3. Incidental caribou observations at the Ekati Diamond Mine, 2020

AQUATIC EFFECTS

HIGHLIGHTS

- Very little ore processed in 2020 because mine operations suspended in March. Water quality in lakes downstream of Long Lake and King Pond did not change much compared to other years.
- Total mercury added to the list of water quality variables because of increasing levels in fish in Koala watershed in 2018.
- No discharge from Two Rock Sedimentation Pond again this year. Wek'èezhìi Land and Water Board has not approved the monitoring plan.
- Low action levels exceeded for plankton for the first time.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Action level
When the concentration of a substance goes beyond a certain level, defined ahead of time, where the mining company must take action to reduce or remove (further) harm.

Aquatic environment
Water (lakes and rivers), sediments (bottom of lakes and rivers), and all the beings that live in water and sediments (e.g. micro-organisms, fish).

Baseline
A starting point or measurement, to compare and see how each part of the aquatic environment changes over time.

Benchmark
A standard against which to compare or assess things.

Benthic
Animals and plants that live at the bottom of a lake, wetland, or stream.

Chloride
Elements that in high amounts in water can affect the taste of water and affect the survival, growth and reproduction in water plants, bugs and fish.

Concentration
The amount of a given substance within a defined area or volume.

Discharge
To allow wastewater to flow out from where it was held.

Effluent
Liquid waste or sewage discharged into a river, lake, or other water body.

Mitigating
Making something bad less severe or serious.

Phosphorus
A nutrient that makes plants grow. When too much is in lakes, it can cause overproduction of phytoplankton which can use up a lot of oxygen when the excess phytoplankton dies.

Potassium
A metal naturally present in water, that in too high concentrations can impact growth and reproduction in water plants and bugs.

Threshold
A defined point, level, or condition where, if things change beyond that point, further change can cause lasting harm.

Toxic, toxicity
Poison, poisonous.

Variables
All the elements in water and lake bottoms that Arctic Canadian Diamond Company Ltd. measures in the aquatic environment to keep track of how things change.

Wastewater
Used water from any part of mining operations, including underground, pits and storage facilities, surface runoff, storm water, sewage, etc.

Watershed
An area of land where rain and snowmelt flows into certain creeks, rivers, and lakes, which in turn flow to larger water bodies.

BACKGROUND

Each year the company monitors and studies the aquatic environment downstream of mining operations. They sample lakes and streams, and background sites. They keep track of any changes in the quality of water and sediments, and the organisms that live there (e.g. benthic organisms, plankton, fish). They must show how mining activities affect the aquatic environment.

Ekati mining activities affect five watersheds:
- Koala–Lac de Gras
- King–Cujo
- Desperation–Carrie Pond
- Pigeon–Fay–Upper Exeter
- Horseshoe

Because of COVID-19 restrictions, the company did not do some surveys:
- Snow survey
- Stream hydrology and benthos
- Sediment quality.

They usually survey sediment quality every three years and it was due in 2020. They now plan to do it in 2021.

MAJOR ACTIVITIES THAT AFFECT WATER QUALITY IN DOWNSTREAM LAKES

Ekati has three major wastewater management facilities: Long Lake Containment Facility, King Pond Settling Facility, and Two-Rock Sedimentation Pond. These are the main activities related to water quality.

- Throughout 2020, the company discharged fine processed kimberlite slurry, treated sewage, and surface sump water into the Long Lake facility. Once the slurry settles out and separates, they pump the wastewater to Cell C.

- From January to March, the total fine processed kimberlite sent to Long Lake from the process plant was less than 5% of the last three years.

- From January to March, the company pumped 186,000 m^3 of fine processed kimberlite into Koala pit.

- The process plant recycled almost 5.8 million m^3 of water from Long Lake.

- From June 29 to October 25, the company discharged 16 million m^3 of water from Long Lake facility to Leslie Lake.

- In 2019 and 2020, the company pumped no wastewater from King Pond facility to Cujo Lake.

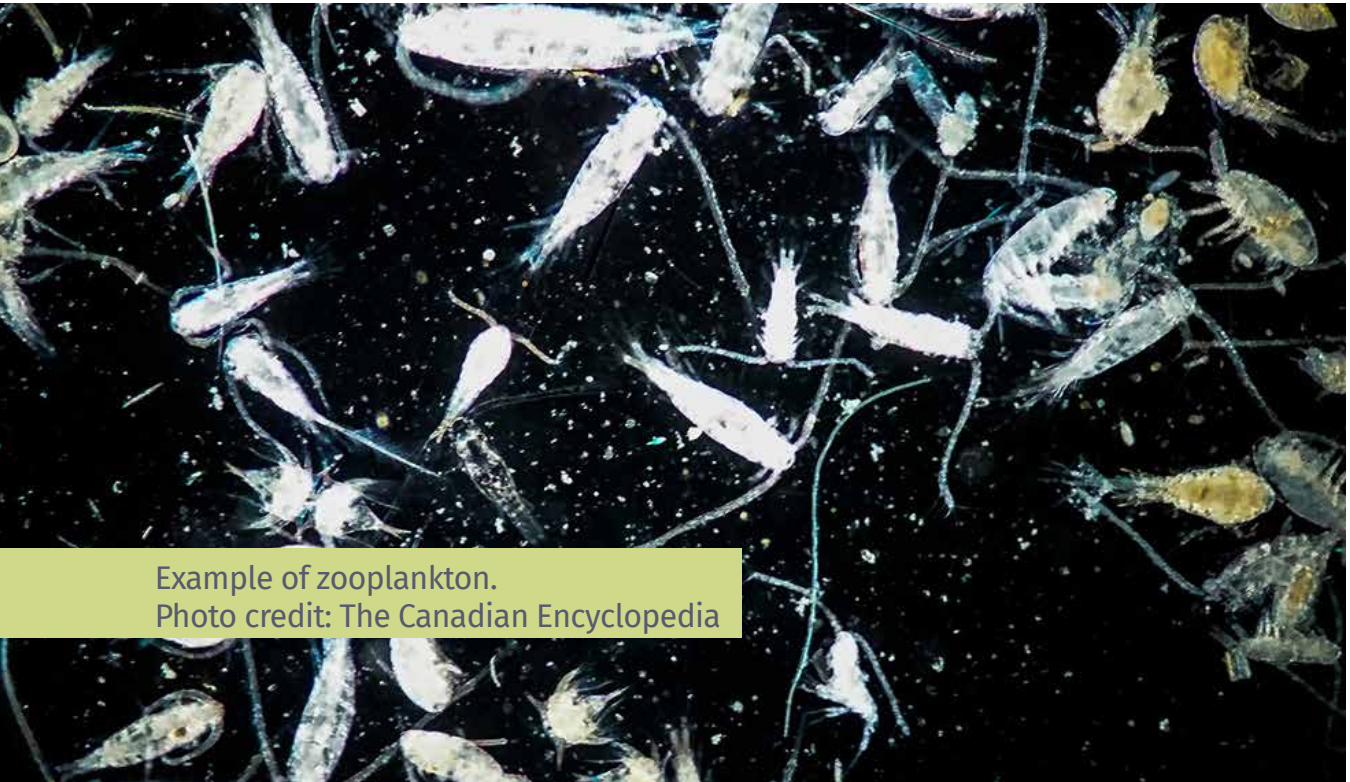
- A new pumping system for Misery minewater started in early 2020. The ‘mud wizard’ removes a large part of suspended solids before the wastewater goes to King Pond facility.

- The company discharged no wastewater from Two-Rock pond. They are waiting for regulatory approval.

AQUATIC EFFECTS MONITORING—3-YEAR RE-EVALUATION

Every three years the company re-evaluates the program to monitor effects to the aquatic environment. They submit changes they want to the Wek'èezhìi Land and Water Board. In March 2021, the Board approved the latest plan.

The only change was to add mercury to the list of water quality variables.
This was added because of high levels of mercury in fish in Koala watershed lakes.



Example of zooplankton.
Photo credit: The Canadian Encyclopedia

AQUATIC RESPONSE FRAMEWORK

The aquatic response framework uses pre-set benchmarks and action levels to give early warning of problem changes in the downstream environment. The action levels are set below thresholds that could have a negative impact. If monitoring exceeds the action levels, the company develops a response plan.

There are three action levels.

- Low action level: a variable exceeds 50% of a benchmark
- Medium action level: a variable exceeds 70% of a benchmark
- High action level: variable exceeds 100% of a benchmark

In 2020 four water quality variables exceeded an action level.

- Leslie Lake, Koala watershed: low action level, chloride under ice and potassium under ice, extending to open water.
- Cujo Lake, King-Cujo watershed: low action level for oxygen under ice, medium action level for phosphorus in open water.

RESPONSE PLANS

The 2019-2020 Annual Report has a brief summary of the response plans when chloride and potassium exceeded action levels. In November 2020, the company updated the phosphorus response plan. It focuses on plankton, as phosphorus has a direct influence on them.

In 2019, the company finalized biologic benchmarks and included them in the aquatic response framework. 2020 is the first time that plankton exceeded an action level. The company says that past nutrients are the reason; that they do not need to take action to mitigate.

- Leslie and Moose lakes: low action level exceeded for phytoplankton and zooplankton composition.
- Cujo Lake: low action level exceeded for phytoplankton biomass and density, and zooplankton composition.
- Fay Bay: low action level exceeded for phytoplankton biomass.

Cujo Lake Dissolved Oxygen

Almost every winter Cujo Lake has less oxygen than fish need. Low action level exceeded for oxygen under ice happened again this year. As in other years, the company installed an aerator to mitigate. But it broke down. IEMA expects them to keep trying to aerate during the 2021-22 winter.

From the end of March to early May, Cujo Lake had low oxygen from the surface to the bottom. Two reference lakes had similar conditions that started a month later (end of April).

A follow-up report looks at oxygen levels in sub-Arctic lakes (White and Alexia Lakes) that mining operations do not impact. It shows that oxygen levels in these lakes are sometimes below levels that fish need to live. This happens for two main reasons. Decomposition of phytoplankton, zooplankton and fish uses oxygen that is not replaced because of ice cover. Air and light cannot penetrate and activate phytoplankton that produce oxygen through photosynthesis.

Cujo Lake is more similar to White Lake in depth. But in 2020, oxygen levels in Cujo Lake were more similar to the levels in Alexia Lake, which is shallower. This suggests that other things affect oxygen levels, such as location (mining in Misery area) and basin shape. The company made no conclusions about this.

Two-Rock Outfall Report

Two-Rock Sedimentation Pond receives wastewater from the Sable pit. Solids settle out and the company discharges water directly into Horseshoe Lake. In 2020, they proposed to discharge water from Two-Rock into a rocky streambed, upstream of Horseshoe Lake, through an end-of-pipe diffuser.

The Wek'èezhìi Land and Water Board did not approve this. They asked the company to study and update the shape and boundary of the discharge plume. There was no discharge in 2020. They need to finalize the Two-Rock report one full year before they discharge wastewater from Two-Rock to Horseshoe Lake.

An outstanding question related to Two-Rock is the fate of grayling habitat in a stream west of the Two-Rock – Horseshoe stream. IEMA is concerned that Two-Rock outflow will affect this habitat if part of it happens to flow west. The company suggests this is not possible with the low volume of discharge. The Board directed the company to analyze the potential for wastewater to impact the grayling habitat and include that in the updated report.

Jay Aquatic Effects Monitoring Program Design Plan

In October 2019, the company submitted plan 1.1. The Board did not approve the plan. They said it must include:

- Describe spatial variation of important water quality variables in Lac Du Sauvage.
- Use core samplers to collect mud in lake bottoms, for the purpose of getting the sediments on the lake bottom that were deposited there in the most recent years, especially in lakes where mine impacts are most likely.
- Define more triggers for slimy sculpin (a minnow).
- Take over monitoring one of Diavik's far-field sampling sites in eastern Lac de Gras, once their aquatic effects monitoring stops at the scheduled closure.
- Use the same methods as Diavik, to monitor water quality, to be able to compare data and deal with cumulative impacts on Lac de Gras from the two mines.

IEMA ASSESSMENT

IEMA is pleased with the Wek'èezhìi Land and Water Board decision on the Two-Rock and Jay plans. They give stronger protection to aquatic environments downstream of Sable and Jay mining operations.

IEMA is also pleased that the company included mercury in the list of water quality variable examined, starting in 2020. This is welcome because of higher levels of mercury in lake trout in Kodiak Lake.

Over the past five years, action levels were exceeded for potassium in the Koala watershed. IEMA is concerned about this. If this continues, the company should consider if potassium loading can create future long-term toxicity in sensitive aquatic life, such as clams and crustaceans.

MINING EFFECTS ON WATER QUALITY FLOWING THROUGH THE KOALA AND KING-CUJO WATERSHEDS.

→ Flow from effluent source to ultimate receiving lake in watershed

● increased over time in comparison to reference lake/stream or different from a constant

○ elevated but not changing through time

◆ upper bound of 95% exceeded the SSWQO, water quality benchmark, or CCME guideline during ice-covered or open water season

★ indicates observed mean exceeded the SSWQO, water quality benchmark or CCME guideline during ice-covered or open water season

Parameters Monitored	Variables elevated in Koala watershed: Long Lake Containment Facility → Lac de Gras									Variables elevated in King-Cujo watershed: King Pond → Lac du Sauvage			
	Leslie	Leslie-Moose	Moose	Moose-Nero	Nema	Nema-Martine	Slipper	Slipper-Lac de Gras	Lac de Gras (S2)	Cujo	Cujo Outflow	Christine-Lac du Savage	Lac du Sauvage
pH	○	○	○	○	○		★ [1]		★	○	○	○	★
Alkalinity	○	○	○	○	○	○	○	○	○	○	○	○	●
Hardness		○	○	○	○	○	○	○	○	○	○	○	
Total Dissolved Solids	○	○	○	○	○	○	○	○	○	○	○	○	
Chloride	○	○	○	○	○	○	○	○	○	○	○	○	●
Sulphate	○	○	○	○	○	○	○	○	○	○	○	○	●
Potassium	●	○	○	○	○	○	○	○	○	○	○	○	○
Total Ammonia	●	○	●	●	●					●	○	○	○
Nitrite	○	○	○	○	○								
Nitrate	○	○	○	○	○	○							
Total Phosphate-P		●								○	●	○	○
Total Organic Carbon	○	○	○	○	○	○	●	○	○	●	○	○	○
Antimony	○	○	○	○	○	○	○						
Arsenic	○	○	○	○	○	○				●	●	●	●
Barium	○	○	○	○	○	○	○	○	○	○	○	○	
Boron	●	○	○	○	○	○				○	●	●	○
Molybdenum	○	○	○	○	○	○	○	○	○	○	○	○	●
Nickel	●	●	○	●	●	●	●	●		●	●	●	●
Selenium	○	○	○	○						○	○		
Strontium	●	○	○	○	○	○	○	○	○	○	○	○	●
Uranium	○	○	○	○	○	○	●	●	●	○	○		

1 pH also below benchmark in reference lakes

TRADITIONAL KNOWLEDGE AND ENGAGEMENT 2020-21

HIGHLIGHTS

- COVID-19 restrictions prevented in-person engagement with communities.
- Very few traditional knowledge projects and preservation programs happened.

Meeting with the Kugluktuk Municipal Council in 2017.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Knowledge holders

Indigenous people recognized within their own communities for their expertise and depth of knowledge and experience.

Traditional knowledge; Indigenous knowledge

The entire, interconnected knowledge system of a group of Indigenous people: spirituality, values and beliefs, environmental knowledge, transmission of knowledge, and the code of practices.

COMMUNITY ENGAGEMENT

Due to the COVID-19 restrictions and the credit protection process, the company did not engage with communities very much. But they did provide communities with updates about the credit process and the shut down.

TRADITIONAL KNOWLEDGE ELDERS GROUP (TKEG)

For the second year in a row, the elders group did not meet. This group was first set up to provide input to mine design and operations, and closure plans for Jay project. Since then, the scope expanded and traditional knowledge from this group applies to the whole mine site.

ENVIRONMENTAL MONITORS

Before mine operations shut down, community members regularly participated in environmental monitoring programs at Ekati. In 2020, these were limited.

In March 2020, the company and community members monitored cliff-nesting raptors that were trying to nest within the Misery, Lynx, Pigeon, and Sable pits.

With less interaction, community members became less familiar with changes at the mine site.

COMMUNITY-BASED TRADITIONAL KNOWLEDGE PROJECTS

The company normally supports community-based traditional knowledge projects and community outreach programs that Indigenous communities direct and implement. This year the company did not contribute to the same number of programs as they have in other years.

IEMA ASSESSMENT

In February 2020, IEMA hosted a wildlife and mine closure workshop. People made many important recommendations related to traditional knowledge.

Community participants see a need to review how the company collects traditional knowledge and uses it at the mine site. They recommend that the elders group meet more regularly, including with youth and Indigenous government staff.

Workshops and meetings are a way for the company to explain to the elders group the purpose and value of the traditional knowledge they collect; how and where they plan to use the information.

Project planning should include a clear strategy for using traditional knowledge. It offers much more than observed data for environmental monitoring. It should be included in interpreting and analyzing monitoring results.

People also suggested having a verification process, similar to the peer-review process for science-based research. When the company produces a draft report, community knowledge holders should confirm that the traditional knowledge included is accurate.

When people share information across cultures, IEMA recognizes that there is potential to misinterpret traditional knowledge, including when it is put in a report. A verification process can help ensure that the company presents and uses traditional knowledge appropriately and accurately.

The proposed Point Lake project is an example of how to improve the way the company uses traditional knowledge. There is a need to gather traditional knowledge specific to the Point Lake area during the pre-permitting stages of the project. This provides input to the design and development of all parts of the mine. The company should make this a priority once COVID-19 restrictions ease.

IEMA notes that the water licence states that the licence holder must:

- Identify all recommendations based on available traditional knowledge.
- Describe how the submission uses the recommendations.
- If they do not adopt a recommendation, say why.

IEMA looks forward to seeing more input from traditional knowledge and more participation of community members. This input and participation should include assessing and monitoring impacts on water, wildlife, and closure planning.

AIR QUALITY 2020-21

HIGHLIGHTS

- Air quality is still within standards and guidelines.
- In 2022 we expect the three-year report on the air quality monitoring program.

Haul truck at pit.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Ambient air quality
The concentration of pollutants in the surrounding air.

Concentration
The amount of a substance in a defined space; the amount of different pollutants in the surrounding air.

Dust suppression
Actions that prevent or reduce the amount of dust spreading into the air.

Greenhouse gases (GHG)
Gases in the Earth's atmosphere that trap heat. They allow sunlight to pass through and warm the earth, but prevent the warmth from leaving. Most common GHGs: water vapour, carbon dioxide, methane, ozone, nitrous oxide, chlorofluorocarbons

Meteorological
The science of weather and climate; the conditions of the atmosphere in an area.

Monitoring
Collecting and analyzing repeated observations and measurements to evaluate change and impacts of change. Watching air quality and 'keeping an eye' on things all the time.

Particulates/Particulate matter
Particulates are very tiny bits of dust, smoke, and other harmful materials in the air. Some are big enough to see with your eyes; others are so small you need a microscope.

Particulate matter is a mix of particulates and liquid droplets.

ACTIVITIES

Under the environmental agreement, the company must monitor air quality and report every three years.

- Daily: meteorological—weather and climate
- Yearly: GHG and other contaminants
- Every 6 days: total suspended particulates and fine particulates
- Continuous: sulphur dioxide, nitrogen dioxide, nitric oxide, nitrogen oxides
- Summer: total dustfall, acid and metal deposits
- Every three years: snow chemistry and lichen tissue

In 2020 COVID-19 restrictions delayed monitoring snow chemistry and lichen tissue. The mine site was in temporary care and maintenance. Arctic Canadian

Diamond Company Ltd. continued to monitor air quality and give the results in their 2020 environmental agreement / water license report.

AIR QUALITY MONITORING RESULTS

During 2020, air quality at the mine site did not exceed any standards.

GHG emissions

- Estimate 104.2 ktCO2e (kilotonnes of CO2 equivalent). 37% lower than 2019.

Ambient air quality

- Total suspended particulates: below standards
- Nitrogen dioxide and sulphur dioxide: below standards; lowest from April to June due to suspended mining activity.

Dustfall

- Below standards; highest concentration next to Misery haul road.
- No EnviroKleen™ dust suppressant applied

IEMA ASSESSMENT

The company proposes to expand in the south half of the claim block: Point Lake Project. IEMA is concerned this will increase problems with air quality.

- Blasting
- More traffic on haul roads
- Deposits of rock for roads and pads

IEMA recommends that the company update the plan to monitor and manage air quality, before they start these activities.

The proposed Point Lake expansion is near the proposed Jay Project. IEMA also recommends that the company implement the 2016 plan to monitor and manage air quality for the proposed Jay Project, such as:

- Install passive air samplers and continuous air monitoring station.
- Develop thresholds and triggers for nitrogen dioxide, fine particulate matter, and total suspended particulates as part of an adaptive management framework.

WASTE ROCK MANAGEMENT

HIGHLIGHTS

- Important questions remain over methods the company uses to assess how well waste rock can neutralize acid conditions.
- The company has delayed submitting a framework to manage seepage and the results of a broad site-wide study into neutralizing potential of waste rock.

Sable road. Photo courtesy of Arctic Canadian Diamond Company Ltd.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Landfarm
A place to treat contaminated soil.

Landfarming
Landfarming is a process to treat contaminated soils. The contaminated soils are mixed with the soil surface and sometimes turned over, to mix in air. Clay or another barrier may act as a liner to keep contaminants from leaking into groundwater.

Mitigation, mitigating
An action that is supposed to reduce the negative impacts of a condition or situation.

Metasediment
A type of metamorphic rock—rock transformed by heat, pressure, other natural actions.

Neutralize
To make something ineffective or harmless.

Overburden
Rock or soil covering a mineral deposit. It is removed to get to the ore or rock that contains the desired mineral(s).

Seepage
The slow escape of liquid or gas through a porous material or small holes. In this case, liquids escaping from waste rock piles that may contain contaminants.

Till
A coarse collection of clay, sand, gravel, and boulders mixed together and deposited by glaciers.

WASTE ROCK STORAGE AREAS

Waste rock is overburden that contains few or no diamonds. It is dug up and moved to storage areas, to give access to the kimberlite ore. These waste rock storage areas are permanent—they stay in place when mining is done. The company designs them to be physically stable in the long term, to stay frozen in the centre, and to have a balance between area and height.

Ekati has five waste rock storage areas, named for the pits they serve:

- Panda/Koala/Beartooth
- Fox
- Sable
- Pigeon
- Misery/Lynx

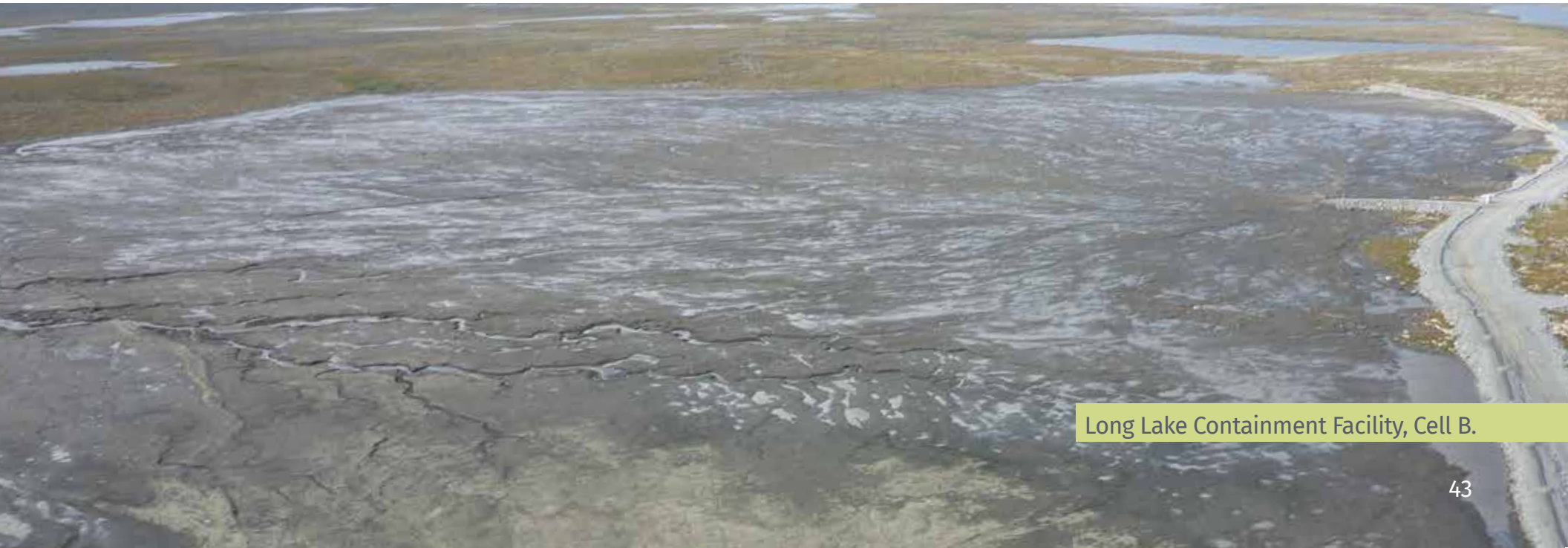
The storage area for coarse kimberlite rejects is another large pile of waste rock. This ore has low or no diamonds and is rejected from the process plant. The storage area is next to the Panda/Koala/Beartooth waste rock

storage area. The table below shows the amount of waste rock put in each storage area in 2020. Another waste rock storage area is approved as part of the future Jay project.

In 2020, the company deposited four million wet metric tonnes (wmt) of waste rock. This compares to more than 20 million mt deposited at the same areas in 2019.

Waste Rock and Coarse Kimberlite Rejects Deposited in 2020 (wmt)

Source	Storage area	Amount (wmt)
Sable pit	Sable waste rock storage area	2,882,319
Pigeon pit	Pigeon waste rock storage area	1,007,257
Pigeon pit	Coarse kimberlite rejects storage area	88
Misery underground	Misery/Lynx waste rock storage area	21,865
Central processing facility	Coarse kimberlite rejects storage area	258,190
	Total	4,169,837



Long Lake Containment Facility, Cell B.

MONITORING WASTE ROCK AND COARSE KIMBERLITE REJECTS

The company regularly tests samples of waste rock and coarse kimberlite for acid base accounting, and major and trace elements, including metals. In 2020, eleven samples were collected and tested compared to 83 samples in 2019. This reflects less mining activity in 2020.

The company reports no major changes from other years. 2020 results show:

- Samples of coarse kimberlite rejects, Misery underground granite, and Pigeon diabase: non-potential acid generating.

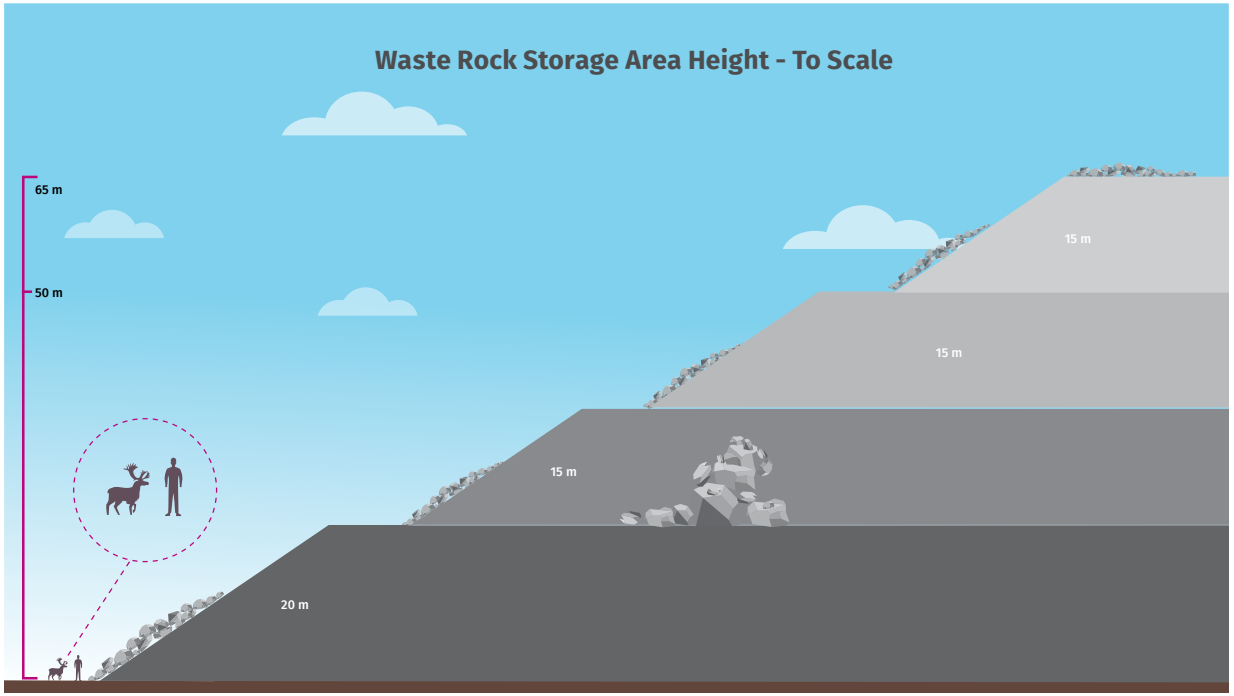
- Samples of Pigeon metasediment: non-potential or uncertain acid generating.

The 2020 lab tests for acid base accounting changed from other years. So it is important to take care if comparing 2020 with 2019 results.

NEUTRALIZING POTENTIAL IN WASTE ROCK

Over the past two years, IEMA has looked closely at the methods the company uses for acid based accounting. In 2020 they used the modified Sobek method to define neutralizing potential. In other years they used the standard Sobek method. IEMA is concerned that the modified method may still not accurately show conditions.

The Wek'èezhìi Land and Water Board agrees with IEMA. Questions remain about the standard and modified Sobek methods. In 2019, to help clarify and resolve the issue, the company started a broader site-wide study into neutralizing potential: to look at characteristics of waste rock, minerals they contain and how much of each one, and a test that models, in the lab, how rock weathers. The results of this study are delayed. The Board and IEMA expect the company to submit them in 2021.



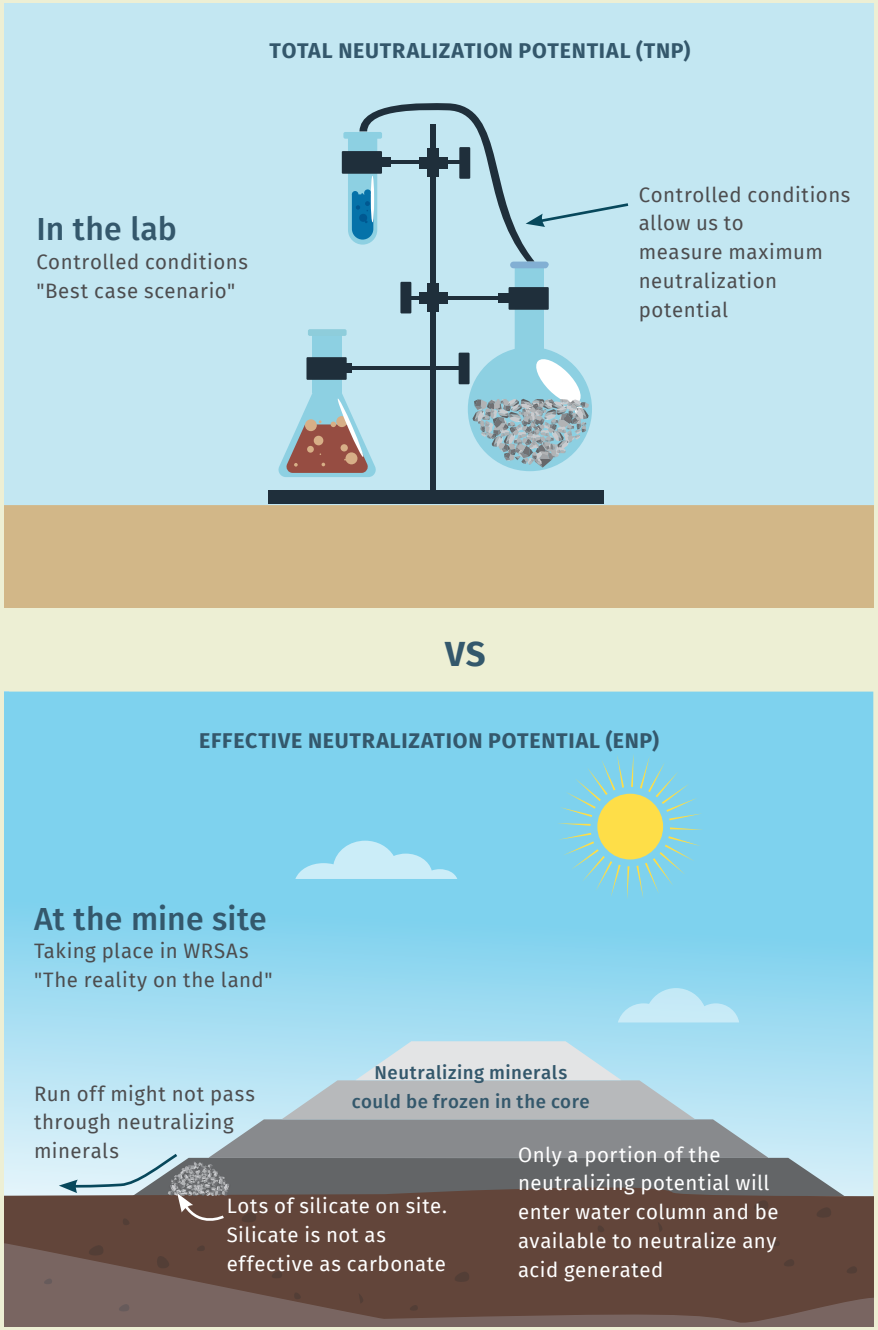


Diagram 2: Neutralization Potential

What is acid mine drainage? How is neutralization potential related to acid mine drainage?

Acid mine drainage happens when mine operations expose sulfide-bearing rock to water and air, where they react to form sulfuric acid. This acid can dissolve other harmful metals from nearby rocks and cause them to leach out and flow into nearby lakes and streams. Some say that acid mine draining is the biggest long-term problem that the mining industry faces.

If the rock has the right minerals, they may neutralize the acid. Then the problems with acid mine drainage may be reduced or removed. Some common minerals that can help neutralize acid are: carbonate, silicate, aluminum, iron hydroxides and oxides, and aluminosilicate. But the reactions and reaction rates vary widely. Certain factors affect the potential of any rock to neutralize acid: the specific minerals in the rock, the concentrations of each mineral, and the wzeathering that takes place where the rock is located.

Most waste rock at Ekati has low amounts of carbonate minerals and relies on silicates to neutralize acid. Compared to carbonate minerals, silicate minerals react more slowly to acid conditions.

- **Total neutralizing potential** is a test that shows the total or cumulative amount of acid that a rock is able to neutralize. The test involves dissolving and measuring the neutralizing minerals in a rock sample, including those that may not work under actual field conditions.

- **Effective neutralizing potential** is the actual amount of acid a rock is able to neutralize in the conditions where it is located. No single test can measure this; combined testing is difficult, time consuming, and expensive.

MONITORING GROUND TEMPERATURE FOR WASTE ROCK

The company uses ground temperature cables to measure temperatures within waste rock storage areas and toe berms. Measurements in some locations were limited because the cables didn't work. The company reports that 2020 ground temperatures are similar to 2019 trends.

- Panda/Koala/ Beartooth storage area and toe berm, Misery storage area, and Fox toe berm: in a permafrost condition, except for the active layer.

- Large parts of Fox storage area: still not frozen.

In the past, ground temperature cables were always installed vertically. In 2019 the University of Waterloo installed the first horizonal cable on the 529 m bench of the Pigeon storage area. To date the Sable storage area has no cables. The last data for ground temperature in the coarse kimberlite storage area is from before spring 2014.

MANAGING SEEPAGE

As a condition of the water licence, the company must monitor the quality of all seepage from waste rock storage areas and report their findings every year. Because mining activities shut down in March 2020, they did a reduced program. They sampled only the seeps that flow over land and enter a nearby lake or stream. So it is important to take care if comparing 2020 results with results from other years.

- 14 samples collected from 10 seeps that come from these storage areas: Panda/Koala/Beartooth, Fox, Pigeon, and Misery.

- Six samples collected from various locations in June, seven in late August, and one from Fox storage area after a major rainfall in July.

- No samples from seepage reference stations or coarse kimberlite storage area.

- Compares to 75 seepage samples collected in 2019.

Monitoring results show that nearby waste rock affects seepage in different ways. Some samples show acid drainage, metals weathering and leaching, and residue from explosives and fine rock flushing. With other samples these effects are small and seepage quality is more like background surface water at reference stations.

The company must report any seeps that exceed certain criteria, plus any corrective action they take. These are called 'seeps of potential concern'. In 2020, the company reported five seeps of potential concern, compared to four in 2019.

- Seep-019 exceeded dissolved aluminum criteria—located between the northeast boundary of the Panda/Koala/Beartooth storage area and Bearclaw Lake.

- Seep-357 exceeded total and dissolved sodium—located between the north boundary of the Panda/Koala/Beartooth storage area and Bearclaw Lake.

- Seep-362 exceeded total suspended solids—located between the southwest boundary of the Fox storage area and South Fox Lake.

- Seep-081 exceeded total and dissolved aluminum, cadmium, iron, potassium, and total copper—located between the Jay crusher pad and Cujo Lake.

- Seep-059 exceeded total and dissolved cadmium—located between Misery camp and Lac de Gras).

Of these, 019 and 081 were 'seeps of potential concern' in 2019. 059, 357, and 362 were new 'seeps of potential concern' in 2020.

The company installed four silt fences between the Misery storage area and Cujo Lake. The purpose was to reduce the level of suspended solids entering the lake from seep-081. They reported no other corrective actions for other seeps of potential concern.

IEMA ASSESSMENT

During mining operations, the company must design and manage waste rock storage areas. They must implement strategies to deal with long-term acid drainage and metal leaching. These have important effects on closure planning.

In 2020, little progress was made to resolve the outstanding question of how best to measure neutralizing potential of waste rock at Ekati. Although the company changed their method, it is not clear if these changes or improvements reflect conditions in the natural environment. To measure the actual or effective neutralizing potential, the methods must consider all the conditions where the rock is located, including weathering. There are also issues related to comparing 2020 results with results of other years.

Measuring effective neutralizing potential of waste rock is a difficult and controversial topic. The issues extend way beyond Ekati. At a workshop in March 2021, the company, the Board, IEMA, government regulators, and Indigenous governments and communities discussed closure and reclamation planning. Participants agreed that the topic of neutralizing potential needs a solution. IEMA is hopeful that the company's site-wide study will add to the discussion and, when completed, help to resolve the issues.

The company reported five seeps of potential concern in 2020 compared to four in 2019. But it is difficult to draw year-to-year conclusions because of the reduced sampling program.

Seepage from waste rock storage areas is a significant long-term risk to the environment. The company needs to manage this while the mine is operating and following closure. In 2019, IEMA suggested that it is not satisfactory to use current criteria to evaluate risk from seeps. The criteria on the water licence are developed for large points of controlled discharge, such as from the Long Lake facility. Other seepage has different flow volumes, receiving water bodies, point of entry shape, mixing zones, and dilution characteristics.

In response, the company started to develop a new framework to manage seepage, to replace the current method. The framework will include ecological thresholds, action levels, and adaptive management strategies designed for certain seepage sources. IEMA expected them to submit the framework in 2020. This was delayed and we now expect it during summer 2021.

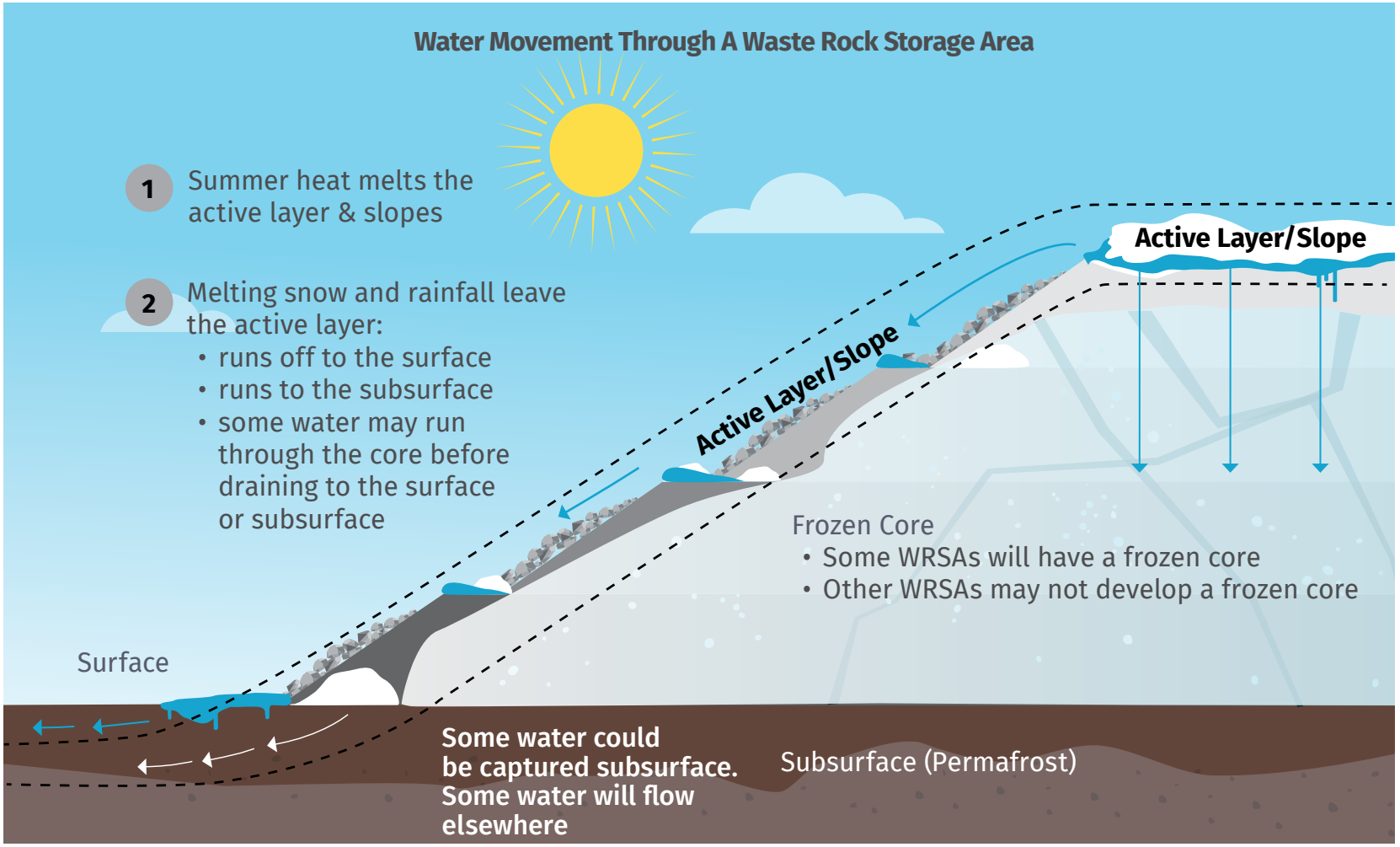
The environmental risk from seepage depends on three main factors:

- Type and concentration of contaminants leaving waste rock storage areas.
- Volume of flow.
- Sensitivity of the nearby / receiving environment.

Seepage monitoring gives good information about the type and concentration of contaminants. Aquatic effects monitoring measures the state of nearby lakes and streams. But there is limited good information about the annual and seasonal volume of

seepage flow. To get this information, IEMA suggests installing instruments to measure real time surface and subsurface flow at selected locations.

The company has stated that they do not need permafrost conditions to ensure that waste rock storage areas have long-term physical and geochemical stability. IEMA suggests they need to keep monitoring ground temperatures, to understand the processes that take place within the rock piles. IEMA encourages the company to install cables in the Pigeon and Sable waste rock storage areas, as operations permit. This is particularly important in the Pigeon storage area where potentially acid generating (PAG) metasediments are mixed with non-PAG granite.



Waste Rock Storage Areas—Footprint and Capacity

	Panda/Koala/ Beartooth	Fox	Sable	Pigeon	Misery/Lynx	Jay	Course Kimberlite Reject
Operational Status	Complete	Complete	Active	Active	Active	Future	Active
Rock Types	Granite, Diabase	Granite, Diabase, Waste Kimberlite	Granite, Diabase	Granite, Diabase, Metasediment, Till	Granite, Diabase, Metasediment	Granite, Diabase, Metasediment	Coarse Processed Kimberlite
Area Footprint (ha)	428*	383*	182**	66**	151***	227****	115***
Height Above Local Tundra (m)	40*	50*	65**	54 to 76**	65***	65****	50***
Quantity (mt)	169	214*	36.1	12.6	100	155 (planned)	39.7
Other Features	Waste Hydrocarbon Landfarm, Operations Landfill	Hydrocarbon Impacted Soils	None	None	Operations Landfill, Hydrocarbon Impacted Soils	None	None

*Areas are complete - final actual footprint and height
** Areas are active - final design footprint and height
*** Areas are active - current footprint and height
**** Area is planned – final design footprint and height

WASTEWATER AND PROCESSED KIMBERLITE MANAGEMENT

HIGHLIGHTS

- In 2020, the mine produced and stored less fine process kimberlite compared to previous years, because the mine operated for less than three months when COVID-19 restrictions suspended operations.
- Arctic Canadian Diamond Company Ltd. pumped water throughout the year from Long Lake containment facility to the process plant; then to Koala pit.
- Water discharge volumes volumes to Leslie Lake were very much higher than in other years. Because high precipitation caused higher volumes of water in Long Lake containment facility.

Misery pit including waste rock pile, camp facilities and King Pond.
Arctic Canadian Diamond Company Ltd.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Coarse kimberlite rejects
Kimberlite particles, bigger than 0.5 mm diameter, leftover as waste from the process to remove diamonds from kimberlite ore.

Effluent
Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to waters discharged into surface waters (river, lake, stream).

Fine processed kimberlite
Very small particles (sand-, silt, clay-sized), less than 0.5 mm diameter, leftover as waste from the process to remove diamonds from kimberlite ore.

Slurry
Fine processed kimberlite mixed with water.

Surface minewater
Water that is pumped or flows from open pits, underground workings or other mine areas.

Wastewater
Water that contains wastes from the mining process, including sewage and chemicals from explosives.

WASTEWATER AND FINE PROCESSED KIMBERLITE

A management plan describes how to manage wastewater and fine processed kimberlite for the whole mine site. These activities are closely linked. The process to recover diamonds produces a lot of fine processed kimberlite. This material leaves the process plant as a slurry of fine ground up rock mixed with lots of water.

MANAGING WASTEWATER

Ekati mine discharges water from three facilities that manage water.

- Two-Rock sedimentation pond manages water from the Sable site. Discharge is to Horseshoe Lake (Horseshoe watershed).
- Long Lake containment facility manages water from the main camp, Panda/Koala/Beartooth area, ammonium nitrate storage facility, Polar explosive building, Fox site, and Pigeon site. Discharge is to Leslie Lake (Koala watershed).
- King Pond settling facility manages water from the Misery and Lynx sites. Discharge is to Cujo Lake (King-Cujo watershed).

Summary of Wastewater and Processed Kimberlite at Ekati

Category	Type	Description/Source
Minewater: Runoff from facilities and water pumped from mines	Surface minewater	Water that flows or is pumped from surface infrastructure. e.g. roads, waste storage areas, truck wash bays, collection sumps.
	Open pit minewater	Water that flows or is pumped from open pits.
	Underground minewater	Water that flows or is pumped from underground workings.
Sewage: Toilet waste and greywater	Sewage – main site	Sanitary sewage system at the main site.
	Sewage – remote sites	Sewage from remote work sites. e.g. Sable camp, Misery camp.
Processed kimberlite: Material rejected from the process plant	Coarse processed kimberlite Fine processed kimberlite	Coarse kimberlite: particles > 0.5 mm diameter. Rejected from the process plant. Trucked to waste rock storage areas. Fine kimberlite: particles < 0.5 mm diameter. Discharged from the process plant in a slurry of this fine ground up rock mixed with water.

Before water goes into discharge lakes, the company collects and analyzes water samples. Water quality must meet the criteria in their water licence.

The company also uses some mined out pits to contain and manage wastewater.

- Beartooth and Panda/Koala processed kimberlite containment areas store wastewater for a time before it goes to Long Lake facility.

- For the short-term, Lynx pit stores wastewater from Misery underground that does not meet water quality criteria.

When mining at Misery ends, the company will transfer the water from Lynx Pit back to the Misery underground and pit.

In future they will use Misery pit to manage water from the Jay project, with discharge to Lac du Sauvage.

- Fox pit collects and stores local runoff, including surface minewater from the Fox area.

To manage most surface minewater, the company collects it in sumps and then pumps or trucks it to one of the three main facilities. Runoff from some roads, laydowns, and waste rock storage areas follows natural flow paths, or is directed onto the tundra. To build roads and laydown areas, the company must only use materials that have no potential to generate acid and low potential to leach metals.

The company treats all sewage wastewater in the treatment plant at the main camp. They truck sewage from remote facilities to that plant. Treated wastewater flows through a pipe to the process plant. There it mixes with fine processed kimberlite and then is discharged to one of the containment areas for processed kimberlite. In 2020, the company discharged 45,236 m^3 of sewage wastewater.

MANAGING FINE PROCESSED KIMBERLITE

In 2020, with the mine shutdown, the process plant only produced fine processed kimberlite from January to March. During that time, the company deposited fine processed kimberlite in the Long Lake facility and Koala pit. Most fine processed kimberlite and wastewater went to the Koala pit. Long Lake received much less than other years.

Despite the shutdown, the company pumped water throughout the year from the Long Lake facility to the process plant, and then to Koala pit. They moved 6 million m^3 this way—an amount similar to years with full operations. With this approach, they reduced the volume needing discharge from Long Lake facility.

Summary of 2020 Management of Open Pit and Underground Water

Mine Area	Source and Water Management Action	2020 Volumes (m^3)
Panda, Koala, Koala North	Underground: stopped in early 2019 when mining and underground reclamation is done.	0
Beartooth	Open pit: pumped to Long Lake facility.	0
	Can be used to store fine processed kimberlite and short-term to store water from other sources.	0
Fox	Open pit: pumped to Long Lake facility during operation. Currently accumulating in pit.	0
Pigeon	Open pit: pumped or trucked to Long Lake facility or Beartooth containment area.	107,678 m^3 to Long Lake 0 to Beartooth
Lynx	Open pit: pumped or trucked to King Pond facility.	9,520 m^3
	Store non-compliant water from King Pond facility.	377,360 m^3
Sable	Open pit: pumped or trucked to Two-Rock sedimentation pond.	150,970 m^3
Misery	Open pit (sumps): pumped to King Pond facility.	63,764 m^3
	Underground: pumped to King Pond facility.	222,958 m^3
	King Pond facility and open pit (sumps): pumped to Lynx Pit.	* 733,700 m^3

* The company measures flow to King Pond settlement facility from King Pond and open pit sumps after the lines join. So, we do not know the total volume from the open pit sumps.

Diagram 4: Wastewater and processed kimberlite at the Ekati mine site

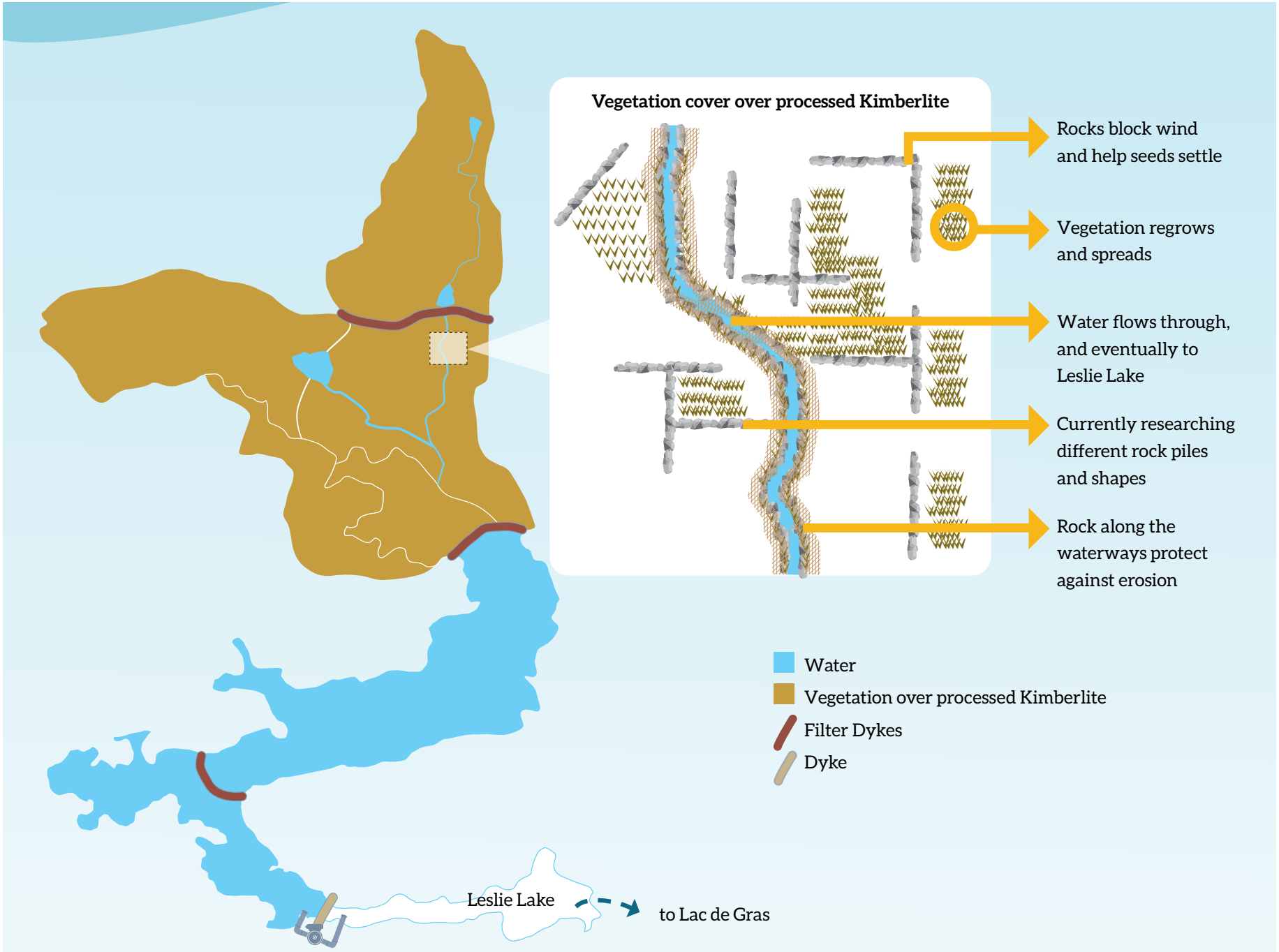


Diagram 5 : LLCF plan closure and reclamation

IEMA ASSESSMENT

Despite the shutdown in 2020 and less mining activity, the company still needed to manage wastewater. High precipitation caused high water volumes in Long Lake facility. The discharge to Leslie Lake (over 16 million m^3) was much higher than other years (0 to 12.6 million m^3).

When the plant was not operating, the company transferred about 4.8 million m^3 of water from Long Lake facility, to the process plant, then to Koala pit. This transfer helped to reduce water levels in Long Lake facility, but used up storage space in Koala pit. In the future, the company may need other management actions to deal with stored water.

The closure plan for pit lakes that contain fine processed kimberlite relies on freshwater caps to deal with long-term surface water quality. Modelling predicts how deep the cap must be so that water quality meets the standards. Current models with a 30 m cap predict that long-term levels of some contaminants will exceed water quality standards.

The models make certain assumptions and estimates about source loading. Now, as in the past, IEMA is concerned that the predictions show great uncertainty about long-term water quality in pit lakes. They may underestimate future loading and concentrations of contaminants.

There are limited or no data to support estimates of loading from some sources, such as runoff from roads and laydowns. Estimates of loading from waste rock storage areas assume that current conditions for runoff and seepage will be the same in the long term.

In version 3.0 of the closure and reclamation plan, the company proposed to do research, to determine the best depth for the freshwater cap, to meet water quality standards. In February 2020, the Wek'èezhìi Land and Water Board directed the company to revise the research plan. They must describe how the research will improve the assumptions and input terms for modelling. This updated plan will be part of version 3.1 of the closure and reclamation plan, and submitted in 2021.

IEMA considers it critical to do good research to support modelling and predictions of water quality in pit lakes. The revised research plan is an opportunity to add to the information needs for modelling, so that predictions are more accurate and complete.

CLOSURE AND RECLAMATION

HIGHLIGHTS

- In March 2021, Wek'èezhìı Land and Water Board and Arctic Canadian Diamond Company Ltd. held a workshop to discuss closure objectives. Arctic Canadian Diamond Company Ltd. must submit an updated plan by July 2021.
- The Wek'èezhìı Land and Water Board approved the return of security for Old Camp reclamation activities, with a holdback for outstanding risks and future monitoring.
- A temporary suspension of mining operations started in March 2020. It is important to move forward with detailed closure and reclamation plans, including the latest research.

Reclamation research on Long Lake Containment Facility.

IMPORTANT CONCEPTS IN THIS SECTION

(alphabetical order)

Adaptive management
A management system with continual monitoring so that if a mitigating action doesn't work, other actions are used to keep the impacts within accepted levels or below thresholds.

Contingencies
Methods to fix future events or situations that are possible, but not certain.

Benchmark
A standard against which to compare or assess things.

Financial security
The amount of money held by government to cover the total expected cost of closing and reclaiming a mine site. The mining company pays the money to the government. The government manages the money until the mining company finishes their work to reclaim the site.

Mitigating, mitigation
An action that is supposed to reduce the negative impacts of a condition or situation.

Monitoring
Collecting and analyzing repeated observations and measurements to evaluate change and impacts of change; 'keeping an eye' on things all the time.

Reclamation
The process of returning areas of land and water—disturbed by mining operations—to workable, healthy ecosystems.

CLOSURE PLANNING STATUS

In August 2018, the company submitted version 3.0 of the closure and reclamation plan. This was the first complete update since 2011. The Wek'èezhìı Land and Water Board started the review process in late 2018. IEMA and other parties gave input during a workshop in January 2019 and written comments in March. The company responded to comments in July.

In February 2020, the Board approved version 3.0, with conditions. The conditions set out requirements and timing for version 3.1. The approval does not include some parts of the plan, such as closure objectives and research plans.

The Board set conditions for more information, revisions, and engagement. For example, for the company and the Board to host a workshop to deal with 19 specific needs. Most of the issues the Board noted for the workshop directly relate to closure objectives and criteria, and the potential to neutralize waste rock.

Because of COVID-19 restrictions, the Board extended the date to complete the workshop to March 2021. Following the workshop, the Board told the company to submit version 3.1 no later than July 2021. They must report on workshop outcomes and include changes the Board noted when they approved version 3.0.

In December 2020, the company submitted their 2020 progress report for closure and reclamation. It included results of reclamation research and info about progressive reclamation activities.

MARCH 2021 CLOSURE WORKSHOP

The workshop was held March 24–26, 2021. The objectives were to:

- Align closure objectives.
- Create a process to develop closure criteria.
- Fulfill requirements the Board noted in their February 2020 reasons for decision.

The format combined in-person and virtual discussions. Workshop participants dealt with closure objectives for each part of the mine. But they did not discuss the issue of effective neutralizing potential, as noted in the Board's reasons for decision.

To support the workshop, the company provided two documents ahead of time.

- Draft criteria work plan
- Details and rationale for proposed closure objectives

On March 5, to prepare for the workshop, IEMA met with representatives of Indigenous society members. They discussed workshop materials and closure objectives and criteria.

From the workshop discussions, it is clear that participants expect closure objectives to clearly describe the probable outcomes of the closure plan, consistent with the Board's guidelines for closure and reclamation. Some of the key topics were:

- Future land use; re-vegetation
- Fish habitat in pits; how various fish habitat connects
- Requirements for freezing waste rock

A key outcome of the workshop was the company committed to submit a revised list of proposed objectives, for review and comment. Input from the workshop will inform the objectives.

RECLAMATION RESEARCH

In version 3.0 of the plan, the company described nine reclamation research plans. The Board did not approve four of them:

- #1 re wildlife behaviour and use of the site
- #4 re the cover for Pigeon waste rock storage area
- #5 re seepage from waste kimberlite
- #6 re rock co-placement at Jay waste rock storage area

The company must revise these research plans, including engagement for plan #1. IEMA is not aware of any engagement taking place in 2020.

The company's 2020 progress report (closure and reclamation) includes results of ongoing reclamation research at Long Lake facility. This research has been ongoing for many years. The progress report describes some conclusions and possible reclamation opportunities. But it makes no recommendations about how to use the results to plan and design for reclamation, at Long Lake or with other activities.

For example, the research clearly shows the benefits of adding organic matter. But the progress report does not state if this is or should be part of reclamation design, or if it is even practical. The report also has several years of results related to cover crops and vegetation. But it does not state if these will or should be part of the final plan; and if so, how.

The company needs to improve the focus and objectives of their research. To guide future research plans, they need to look to specific needs related to advancing reclamation design and the lessons already learned from the research.

PROGRESSIVE CLOSURE AND RECLAMATION ACTIVITIES

The progress report does not describe any progressive activities done in 2020. But it does describe monitoring results for progressive reclamation done in other years at Old Camp.

The report identifies possible progressive activities for the coming years. All of these relate to Panda, Koala, and Koala North pits and underground, and Pigeon pit. It does not identify any upcoming progressive activities for other, inactive mine facilities, such as waste rock storage areas.

Old Camp

In early 2014, the company got approval for the Old Camp plan for closure and reclamation. From 2014 to 2018 they did reclamation activities there.

In the 2020 progress report, the company states that Old Camp reclamation is done. That monitoring shows they meet closure objectives. Reclamation did not include digging processed kimberlite from the Phase 1 North Pond, as in the plan. The company argues that they do not need to do this to achieve closure objectives. They propose a holdback on financial security to deal with outstanding risks.

2020 monitoring results for water quality show that effluent exceeds criteria for dissolved aluminum in half the samples. 2019 results were similar. In September 2018 and 2019, arsenic also exceeded criteria, but not in 2020. The company plans to keep monitoring the area for three more years. But they say they can stop monitoring after that because natural dilution along the flow path will reduce concentrations before the water enters Larry Lake.

FINANCIAL SECURITY AND CLOSURE PLANNING

To manage public liability and risk, the GNWT holds financial security. The amount is equal to the total expected cost of closure and reclamation for Ekati, at that time. The 2020 progress report states that, on December 31, 2020 the GNWT held $282.5 million, mostly under the water licence.

EKATI Mine Reclamation Security on December 31, 2020

Security item	Amount held
Water Licence Security W2012L2-0001	$260,586,843
Ekati Environmental Agreement	$19,991,424
Jay Early Works Land Use Permit W2016F0007	$1,480,000
Pigeon Land Use Permit W2016D0005	$427,000
Total:	**$282,467,267**

Long Lake Containment Facility.

The 2020 total is $13.3 million less than the 2019 total. These are the main reasons.

- $7.9 million less: In November 2019, the Wek'èezhìı Land and Water Board approved the company's request to reduce security for Misery waste rock storage area—because they placed cover material on most of the exposed metasediment.

- $3.0 million less: In May 2020, the Board approved the company's request to update the reclamation estimate. This was based on comments and input from the review of version 3.0 of the plan.

The table to the right shows the details of reductions and increases for the main changes.

2020 Reclamation Security Adjustments

Reductions	Rationale	Increases	Rationale
$18,348,713	Reduce cover thickness on Fox waste rock storage area	$5,468,793	Update costs to decommission infrastructure
$550,495	Reduce cover thickness on landfill	$750,000	Add post-closure maintenance cost
$4,869,995	Reduce pumping times for pit filling	$684,026	Increase surface area to re-vegetate
$1,952,106	Update underground reclamation costs	$1,642,000	Increase duration of active closure monitoring
		$946,400	Increase site access costs for active closure monitoring
		$1,000,000	Increase helicopter costs for post-closure monitoring
		$11,670,040	Adjust for inflation

When the Board approved the request in May, they set some requirements for any upcoming requests. The company must submit more detailed information about inputs and assumptions. They must deal with several areas where the Board is concerned that they may underestimate liability.

The approval to adjust security related to Misery happened in 2019. But the actual adjustment did not happen until 2020. This was partly because the GNWT and the Board disagreed about where to hold the security: split between the water licence and land use permits, or all of it under the water licence. The GNWT prefers to hold separate securities under the water licence and land use permits. The Board states that security should be combined and held under the water licence.

In the Board's February 2020 decision about version 3.0 of the plan, they expressed concern that splitting the security could cause problems. They believe the split makes adjustments more difficult, and increases the admin burden and potential for error. Despite these concerns, the Board agreed to split the security. GNWT would not accept the land portion of security under the water licence.

In April 2020, the company applied to the Board, to amend the Misery land use permit, to include land-related security. In May 2020, the Board changed the land use permit, to require security of $1,397,982. The company posted it in February 2021.

In the 2020 progress report, the company asked to reduce security by $548,474 because they finished reclamation at Old Camp. They proposed a holdback of $492,492 for risk connected with the North Pond. It was not excavated as part of reclamation. In April 2021, the Board accepted this reduction and holdback.

IEMA ASSESSMENT

IEMA believes that the March workshop on closure objectives was a good way for parties to discuss what outcomes they expect after Ekati closes down. After the workshop, the company prepared a list of objectives that more clearly describe the expected outcomes of the closure plan. IEMA hopes that, in version 3.1 of the plan, the company proposes strong objectives as a basis to develop criteria and advance planning and design. As closure planning proceeds, the company must include much more detail in their closure and reclamation plans. IEMA hopes that version 3.1, due July 2021, is a step in that direction.

The March workshop had some success in discussing closure objectives. It had less success in achieving other Board purposes. There was no real discussion of how effective neutralizing potential affects closure plans. And there was no detail in the plans to develop closure criteria. IEMA considers these topics very important. There is need for further discussion in these areas.

The temporary shutdown in 2020 highlights that it is important to have in place a well-developed plan for closure and reclamation. The company does reclamation research, sometimes over many years. Some research is far enough

along that it could inform design. But closure designs and plans do not include or reflect research results.

As the mine moves toward closing down, each version of the closure and reclamation plan should have more detail; more certainty and understanding. Ekati has operated for over 20 years. Several parts of mining operations are done. Reclamation research and versions of closure design should advance from one to the next, with more detailed designs as research supports them. At the same time, designs can help to focus research on important outstanding research questions.

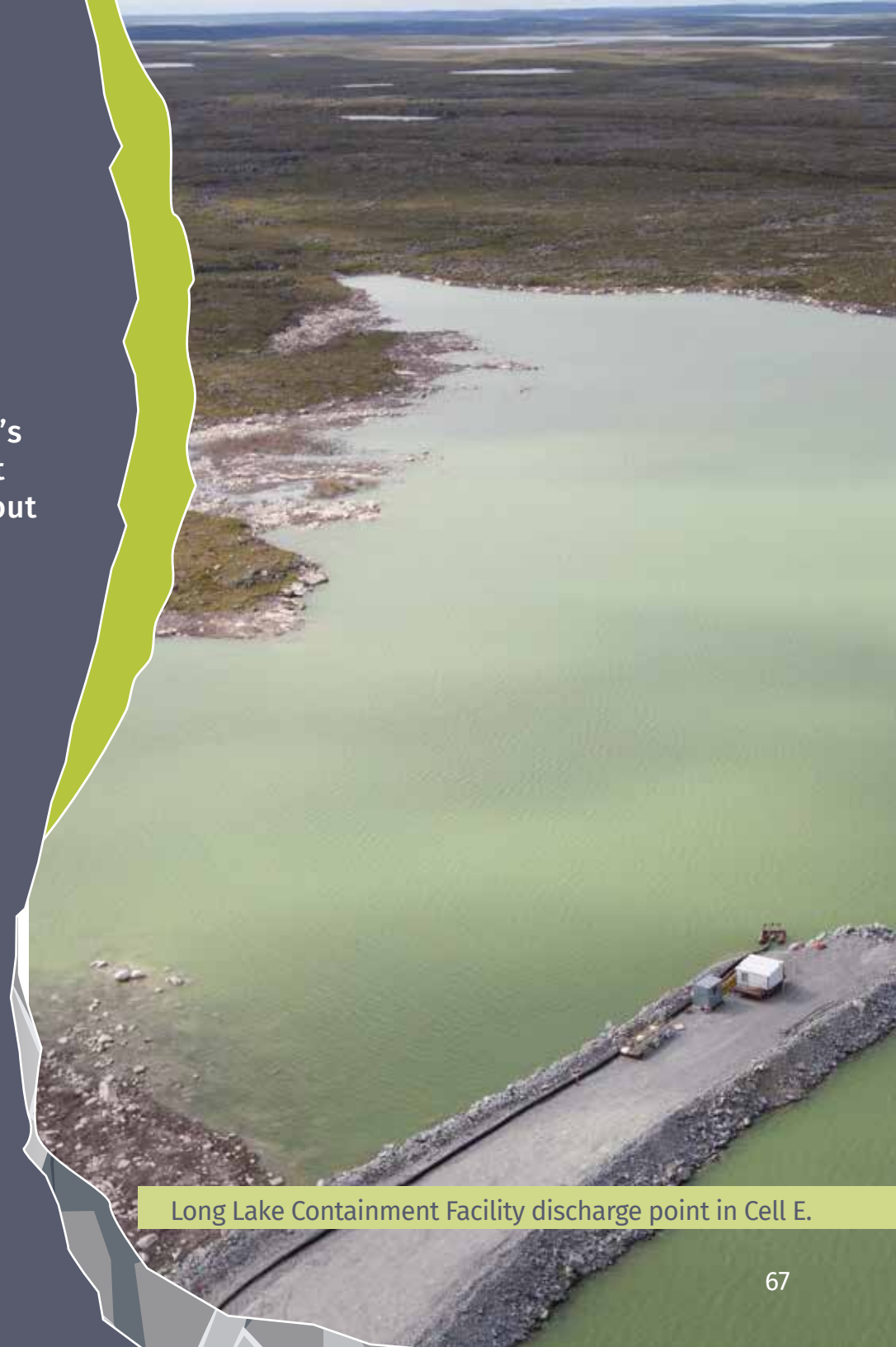
In 2020, progressive reclamation activities are limited to those directly connected with mining operations or small activities. The company should identify opportunities for progressive reclamation at other mine facilities, no longer in use, in a plan, with a schedule. Monitoring at reclaimed areas must continue until results show that post-reclamation conditions always meet objectives and criteria, and will continue to do so.

About financial security and closure liabilities, IEMA still believes that liabilities should never be more than the posted security. As mining and reclamation activities continue, the company and regulators need efficient ways to adjust security—to increase or decrease as liability changes. IEMA agrees with the Board's concerns about splitting securities between the water licence and land use permits. We note it was difficult, in 2020, to track and understand the rationale to change security. The Board now requires better documentation of proposed changes. IEMA hopes this provides needed clarity for future changes.

For the second year in a row, the Board had to consider the amount of security to hold back, to deal with monitoring and future risks in reclaimed areas. IEMA agrees with the concept of holding back. But the process to calculate the hold-back remains ad-hoc. IEMA recommends that GNWT and the Board work together to develop policies, guidelines, or directives to standardize that process.

ASSESSMENT OF THE REGULATORS

IEMA is the public watchdog for environmental management at Ekati. We monitor the company's performance and the government agencies that regulate the mine. These are our comments about how the regulators performed this year.



Long Lake Containment Facility discharge point in Cell E.

IEMA OVERALL ASSESSMENT

As in other years, the regulators are effective. They make sure that the company operates Ekati in an environmentally sound manner. Due to COVID-19 restrictions and other reasons, regulators reviewed fewer reports and submissions.

Some of the key submissions reviewed:

- Continuing work on the approval process for the interim closure and reclamation plan
- Annual progress report on closure and reclamation
- Wildlife effects monitoring program
- Aquatic effects monitoring program

GOVERNMENT OF THE NORTHWEST TERRITORIES

Two GNWT department are regulators with Ekati.

Department of Lands

With COVID-19 restrictions and mining suspended, it was more difficult for land and water inspectors to get to the mine site. From 1 April 2020 to 30 March 2021 inspectors worked with the company to do five water licence and five land use permit inspections. This is fewer inspections than other years (10 to 12 water licence inspections) but reasonable considering the circumstances.

Department of Environment and Natural Resources

Water Resources Division: provides detailed comments and analysis including technical consultant reviews.

Conservation, Assessment and Monitoring Division: administers Ekati's environmental agreement. During the creditor protection and sale process, they did a good job to coordinate and communicate.

The company still needs to complete the Environmental Impact Report. They took a very long time to respond to comments about the wildlife effects monitoring plan and the environmental assessment annual report. They did not provide the info that GNWT asked for in good time.

IEMA appreciates that the GNWT persists in getting the company to respond, to try to move the reports forward.

Wildlife Division: They hosted the wildlife monitoring meeting in February 2021. It was well attended and had some good presentations. No specific decisions or paths came forward from the meeting.

IEMA looks for progress with discussions about the caribou zone of influence. This needs a more complete look at how effective mitigation practices are and to develop more innovative practices.

The Wildlife Division has not provided any comments to the 2019 report on the wildlife effects monitoring program. But they did ask to see the company's responses to IEMA comments.

Environment Division: The NWT still does not have a complete air quality management regime, as IEMA recommended last year.

The GNWT committed to develop air regulations once review of the Mackenzie Valley Resource Management Act is complete.

IEMA looks forward to progress during the coming year for a territorial air quality management regime.

FEDERAL GOVERNMENT

Three federal departments regulators at Ekati.

Crown-Indigenous Relations and Northern Affairs Canada

Responsibility to manage land and water has devolved to GNWT. Since then this department has much less of a role in environmental regulation.

IEMA was pleased that a department rep attended the 2020-21 AGM. We hope they continue to participate in future meetings.

Fisheries and Oceans Canada

Fisheries and Oceans Canada continues to have minimal involvement with the regulatory process. They provided limited comments on fish-related items.

They have valuable local and national expertise that could benefit the Ekati regulatory process. But they interpret their mandate in ways that limit their ability to provide technical expertise, to assess possible effects of mine operations on fish in the downstream environment.

Environment and Climate Change Canada

This department provided limited comments on some but not all submissions for the aquatic effects monitoring program. This is similar to other years.

IEMA noted that their comments are generally well thought out. We believe the regulatory system would benefit if they were more involved.

WEK'ÈEZHÌI LAND AND WATER BOARD

The Board ensures effective and diligent management of Ekati's water licence, land use permits, and management plans.

IEMA notes that Board staff ensure we keep making progress to update the interim closure and reclamation plan.

Their detailed analysis of reasons for decisions is very helpful to IEMA, to understand decisions and clarify their directives.

ASSESSMENT OF ARCTIC CANADIAN DIAMOND COMPANY LTD.

HIGHLIGHTS

- During the creditor protection process and temporary shutdown, Arctic Canadian Diamond Company Ltd. and IEMA communicated regularly.
- IEMA is concerned that Arctic Canadian Diamond Company Ltd. has extensive delays in submitting reports and responding to comments.

Surface mining at Misery pit. Photo courtesy of Arctic Canadian Diamond Company Ltd.

As with everyone else, 2020-21 was a difficult year for Arctic Canadian Diamond Company Ltd.

- COVID-19 restrictions, temporary shutdown, reduced staff, travel limitations

- Creditor protection, financial restrictions

Despite these difficulties, the company deserves credit for carrying out most of their monitoring programs: aquatic, water quality, seepage. With minor exceptions, they complied with the requirements of their water license and land permits.

IEMA and the company met weekly, to stay up-to-date with the sale and on-site activities. IEMA found these meetings helpful and hopes to continue the good communication.

Because of the financial situation, the company delayed most of their annual reports and other required documents. IEMA understands a certain amount of delay. But the financial situation cannot explain the extent of delay.

- Under the Environmental Agreement, the company must submit an environmental impact report every three years. This was due in 2019.

In February 2020, the company submitted a draft for review. But the review and required discussions were cancelled. To date, the company has not set any time to complete this process.

The next report is due in early 2022. There is a pressing need to complete the review of the 2019 report.

- Every year the company must submit a Water Licence Report and Environmental Agreement Report.

In August 2020, IEMA commented on the 2019 version of these reports. We noted that the summary did not include important results from monitoring fish and seepage. The company did not make the changes we asked for. But they considered our comments in the 2020 version of these reports.

- Under the Environmental Agreement, the company must monitor and report on effects on wildlife. But there is no clear approval process for this report.

In the past, the company has mostly ignored IEMA comments on this report. In July 2020, IEMA commented on the 2019 report. The company finally responded in April 2021 as part of their 2020 report.

IEMA feels that this report needs a more formal approval process.

- To help mitigate impacts on wildlife, the company set up a number of remote cameras along mine roads, to record caribou behaviour. They promised a summary report of the results of this study—first for summer 2018, then for summer 2020, then monthly up to June 2021. To date there is no summary report.

The 2020 report of the program to monitor wildlife effects summarized high level results from the camera study. But the company will not release the study report.

This delay is unacceptable. The company needs to submit the report, to show how caribou interact with the road and how effective their actions are to mitigate impacts on caribou.

With new ownership and post-pandemic stability, IEMA hopes Arctic Canadian Diamond Company Ltd. will improve on this situation.

DIRECTOR BIOGRAPHIES

JAIDA OHOKANNOAK | CHAIRPERSON

APPOINTED BY KITIKMEOT INUIT ASSOCIATION IN 2003

For over 20 years, Jaida Ohokannoak has lived and worked in small northern communities. She currently resides in Yellowknife. Jaida has significant experience, knowledge and expertise in environmental assessment, research, monitoring and renewable resource management. She believes mining can be conducted in an environmentally responsible manner to the benefit of both industry and local peoples without long-term adverse impacts to the environment.

EMERY PAQUIN | VICE CHAIRPERSON

APPOINTED JOINTLY BY THE GOVERNMENTS OF CANADA AND THE NWT, AND DOMINION DIAMOND IN 2015

Emery Paquin is an independent environmental consultant living in Yellowknife. He has more than 35 years of environmental management experience with the northern mining industry and territorial government, and served six years as a Member on the Inuvialuit Water Board.

KIM POOLE | SECRETARY/TREASURER

APPOINTED BY THE TŁĮCHǪ GOVERNMENT IN 2015

Kim Poole first served as an Agency Director from 2006 – 2015 (jointly appointed by the Governments of Canada and NWT and BHP Billiton), but was reappointed by the Tłı̨chǫ Government in 2015. Kim is an independent wildlife biologist with over 35 years of experience in the Northwest Territories, Nunavut and British Columbia in the areas of wildlife and wildlife habitat research, and assessment and mitigation of environmental impacts related to the mining, forestry, and tourism industries.

BILL SLATER

APPOINTED BY THE NORTH SLAVE MÉTIS ALLIANCE IN 2018

Bill Slater is an independent environmental consultant with an engineering education. He is based in Whitehorse, where he has lived and worked for over 25 years. Most of his work is for First Nation governments, as a technical advisor on mining and mine closure projects. His technical focus areas include environmental effects assessment, mine closure, water quality and water management.

JESSE JASPER

APPOINTED JOINTLY BY GOVERNMENTS OF CANADA AND THE NWT, AND DOMINION DIAMOND IN 2016

Jesse Jasper retired in 2011 after 39 years of service. Since 1971 he has worked exclusively in northern Canada, focusing on land and water resource development, water monitoring studies to evaluate impacts on development. He coordinated a number of reviews and technical presentations for environmental impact assessments, including NWT Diamond Project, which is now the Ekati Diamond Mine. Jesse represented INAC and EC on a number of boards, including the Mackenzie River Basin Board, the NWT Water Board, and the Mackenzie Gas Project.

TIM BYERS

APPOINTED BY AKAITCHO TREATY 8 FIRST NATIONS (YKDFN AND LKDFN) IN MAY 2001

Tim Byers is an independent consultant living in Manitoba. He has been working on projects in the Canadian Arctic since 1980. He specializes in studies of fish, Arctic seabirds and marine invertebrates and has assisted Aboriginal communities in documenting their indigenous environmental knowledge. He would like to see more Aboriginal youth engaged in environmental sciences and Traditional Knowledge used more effectively in environmental monitoring, research and impact assessments.

RONALD ALLEN

APPOINTED JOINTLY BY GOVERNMENTS OF CANADA AND THE NWT, AND DOMINION DIAMOND IN 2017

Ron Allen has been living and working in a variety of Arctic communities since the 1970s and has worked with community groups and organizations on local cultural values, concerns and aspirations related to renewable resources. Ron moved to the Northwest Territories as a Renewable Resources Officer and transferred to Fisheries and Oceans Canada in the 1980s where he worked as a Fishery Officer and Habitat Inspector. Later, he worked as Area Manager and Area Director, delivering and managing multiple-sector operational programs including Habitat Assessment, Fisheries Management, Conservation and Protection, Science, and Administrative Services.

2020-2021

ANNUAL REPORT

A public watchdog for environmental management at EKATI DIAMOND MINE

PLAIN LANGUAGE

INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

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